Aftereffect of Adolescences’ Experience of Cyber Bullying on Their Mental Health: A retrospective survey

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ABSTRACT. The present study investigates aftereffects of adolescents’ experience of cyber bullying. Cyber bullying is defined as bullying via electronic communication tools. We surveyed 321 late adolescent university students in Japan. The results showed that victimization on the internet significantly raised current levels of anxiety and frustration. On the other hand, victimization on the mail did not affect current mental problems. Internet and mail had different communication function (mass communication/ personal communication), so the different function might have different psychological impacts on late adolescent mental health.

KEY WORDS: Cyber bullying, Internet, Mail, Traditional Bullying, Mental Health, Aftereffect.

Introduction

Bullying is usually defined as being an aggressive and intentional behavior that is carried out by a group or an individual repeatedly against a victim who can not easily defend him/herself (Olweus, 1993). Recent study also reflects growing concern about bullying through mobile phones or personal computers. According to previous studies (e.g., Smith, Mahdavi, Carvalho, Fisher, Russell, & Tippett, 2008), we labeled the latter type of bullying as ‘cyber bullying’ and the former as ‘traditional bullying.’

Victims involved in both traditional and cyber bullying are growing concerns. These concerns are partly spread by media reports about children who committed suicide after being victimized by bullies (e.g., Computer Fraud Security, 2008). Although such extreme consequences are rare, previous study showed that victims who were involved in traditional bullying manifested mental health problems, including both internalized and externalized symptoms (Hodges, Boivin, Vitaro, & Bukowski, 1999; Solberg, & Olweus, 2003). However, studies regarding victims involved in cyber bullying are limited (e.g., Li, 2007) and few researches examined aftereffects of cyber victimization. In the face of recent dramatic use of cyberspace, an abuse of cyberspace, such as cyber bullying, should receive more attention. Furthermore, most victims in cyberspace
survive into adolescence, so aftereffects of the cyber victimization are important. The present study aims to examine aftereffects of cyber victimization in late adolescence by applying stressor model that traditional bully researchers founded (Fekkes, Pijpers, Fredriks, Vogels, & Verloove-Vanhorick, 2006).

**Literature review**

**Mental health of victims involved in traditional bullying**

Victims of traditional bullying have mental health problems. Solberg, & Olweus (2003) conducted questionnaire survey of 5171 students from 11 to 15 years old and found that the more frequently children were bullied, the more they had negative self evaluation and depressive symptoms. Arsenenault, Walsh, Trzesniewski, Newcombe, Caspi, & Moffitt (2006) also interviewed 2232 children from 5 to 7 years old, their parents, and teachers. They found that those who were bullied had more internalized behaviors (e.g., similar symptoms of anxiety and depression) than those who were not bullied. Furthermore girls who were bullied had more externalized behaviors (aggressive behaviors: frequently fight with peers) than those who were not bullied, but not boys. Craig (1998) also surveyed 546 children around 11 to 14 years old and found that victims of traditional bullying had more symptoms of anxiety than non victims, but the level of depression and aggression did not differ significantly from victims to non victims. These studies suggested that victims involved in traditional bullying had some mental health problems, but they did not always manifest the same problems.

Previous study also showed developmental relationships between bully victimization and mental health problems. Fekkes, Pijpers, Fredriks, Vogels, & Verloove-Vanhorick (2006) presented a framework: Stress of victimization develop mental health problems. Fekkes et al. sampled a cohort of 1118 children from 9 to 11 years old in Netherlands and conducted 6-month cohort study. They found that victims felt more symptoms of depression, anxiety, and tension after 6 month, even though they controlled these states at baseline. Hodges, Boivin, Vitaro, & Bukowski (1999) also conducted one-year longitudinal survey including 393 children around 10 years old and found that victims had more internalized and externalized behaviors than those who were not victims. Rønning et al. (2009) also found 10-year aftereffects of victimization on mental health in Finland. Rønning et al. surveyed 2540 eight-year-old boys and diagnosed them after 10 years at the age of 18. They reported that victims had more psychiatric diagnose than those who were not bullied. Sourander et al. (2007) used the same data of Ronning et al. and also found that the victims had more anxiety disorders and depressive disorders than those who were not bullied. Although some studies did not support the aftereffects of victimization (e.g., Klomek et al., 2008), these collective findings suggested that victims involved in childhood bullying were likely to have mental health problems.
AFTEREFFECT OF CYBER BULLING

Mental health of victims involved in cyber bullying

Victims of cyber bullying also have mental health problems. Ybarra & Mitchell (2004) interviewed 1501 children between 10 and 17 years by phone and found that 9.1% of victims involved in cyber bullying had major depressive like symptoms, whereas only 3.8% of those who were not involved in cyber bullying had the same symptoms. Baker & Tanrıkuşçu (2010) also surveyed 165 children between 10 and 14 years and found experience as a victim of cyber bullying had a significant positive correlation with depressive symptoms. Other two studies compared mental health between victims involved in cyber bullying and victims in traditional bullying. Gradinger, Strohmeier, & Spiel (2009) surveyed 761 children from 14 to 19 years old and reported that victims involved in either cyber or traditional bullying had significantly more depressive symptoms than non victims. They also found that both victims had similar levels of depressive symptoms. Smith et al. (2008) interviewed 533 students from 11 to 16 years old and found that students perceived some types of cyber bullying (e.g., picture / video clip) had more severe impact on their mental health than traditional bullying. These collective findings suggested that victims involved in cyber bullying also had depressive symptoms like victims involved in traditional bullying.

Aims of the present study

Although previous studies informed relationships between cyber victimization and mental health problems, the studies have two limitations. First, they did not show any aftereffects of cyber victimization on mental health in late adolescence. Second, they mostly focused on depressive symptoms and did neither show any other internalized behaviors nor externalized behaviors that traditional bully researchers focused (e.g., Fekkes et al., 2006). Because the definition of bullying (aggressive behaviors against a victim and a victim cannot defend him/herself) were shared between traditional and cyber bullying (e.g., Smith et al., 2008), the similar stressor would exist in both bullying. Therefore, we applied Fekkes et al. (2006)’s stress model of traditional bullying into cyber bullying. Application of the model can cover these two limitations.

We hypothesized that participants who were cyber bullied would have more negative self evaluation than those who were not cyber bullied (H1). Participants who were cyber bullied would have more internalized behaviors than those who were not cyber bullied (H2). Participants who were cyber bullied would have more externalized behaviors than those who were not cyber bullied (H3). We also made hypotheses regarding traditional bullying. Participants who were traditionally bullied would have more negative self evaluation than those who were not traditionally bullied (H4). Participants who were traditionally bullied would have more internalized behaviors than those who were not traditionally bullied (H5). Participants who were traditionally bullied would have more externalized behaviors than
those who were not traditionally bullied (H6).

Methods
Participants
Participants were 321 students from three universities in Japan. Two of them were North east district area and the one was central east district area. Male students were 201 and female students were 113. Seven students did not answer their sex. Their mean age was 19.7 (S.D. =1.3). Two students were Thai and Korean, but the other students were Japanese.

Procedure
Present study was approved by one faculty member and three research groups, including one professor and one associate professor in Tohoku University and Yasuda Women’s University, respectively. We conducted questionnaire survey during November 2009 to January 2010. Participants received the questionnaires during beginnings or ends of classes, or between classes. When we handed out the questionnaires, we explained aims of the present study and anonymity and confidentiality of the questionnaire. All participants were voluntary and had right to stop answering the questionnaires if they wished to. After they answered the questionnaires, we collected the questionnaires.

We first questioned their self evaluations and emotional states. Then, we reminded them of experience about victimization involved in cyber and traditional bullying in high school days. This order can minimize carry-over effects of memories of high school days on current self evaluation and emotional states.

Measures
Current state
Self evaluation: We used a Japanese version of Rosenberg Self Esteem (RSE) to measure participants’ self-evaluation (Rosenberg, 1979; Yamamoto, 2001). RSE uses a 10 item scale anchored with a 5-point scale. Previous studies demonstrated the concurrent, predictive, and constructive validities of the RSE (e.g., Nugent & Thomas, 1993). Participants were asked whether following statements were applicable to them; such as ‘I feel that I have a number of good qualities’. ‘I take a positive attitude toward myself’. Each item was coded so that a high score on the item reflected high self-esteem. The items were then summed and divided by ten to create a self-esteem scale score. The Cronbach’s alpha value of the RSE was .83. The average of RSE was 3.1 (S.D. = 0.7).

Emotional state: We used 5 factors of a shortened version of the Profile of Mood States (Shacham, 1983). Five factors are widely used and have predictive and constructive validities (e.g., Shacham, 1983; Yokoyama, 2005). The 5 factors were tension-anxiety, depression-dejection, anger-hostility, frustration, and confusion factor. Each factor uses 5 item scale anchored with a 5-point scale. We calculated the sum of the items for each factor and converted the factor into a T score adjusted for Japanese adults (Yokoyama, 2005). Each average of the factor was 54.3 (11.8), 55.5
(11.8), 49.4 (10.4), 55.7 (10.2), and 58.1 (12.0), respectively. Cronbach’s alpha of the factor was also .83, .82, .80, .84, and .63, respectively. We assumed that the anger-hostility factor represented externalized behaviors, whereas the other four factors represented internalized behaviors.

**Experience of victims in high school days**

**Victim involved in traditional bullying**: Participants first read following statements: “We asked about your high school days.” Then, they read standard definition of bullying (Olweus, 1993). Then, they were asked how long they were bullied\(^1\) and given a choice of 0: never, 1: less than a week, 2: about a month, 3: about a school term, 4: about a year, and 5: about several years. Because Olweus (2003) regarded over one month as an indicator of victims, those who answered more than choice of 1 were regarded as victims in traditional bullying. Traditionally Bullied Victims (TBV) were 16 (5.1 %) and 9 were female (One participant did not answer one’s sex). Non-victims were 300. Five participants did not answer the question.

**Victims involved in cyber bullying**: Participants were also asked how long they were bullied by e-mail (Mail) and how long they were bullied by Message board, Weblog, or Profile site (the Internet) and were given the same 6 choices as the TBV. It is not uncommon in the previous studies of cyber bullying to count a single incident as an experience of cyber bullying (e.g., Raskauskas & Stoltz, 2007; Wang, Iannotti, & Nansel, 2009), so those who answered more than 0 were regarded as victims involved in cyber bullying. Cyber victims were 17 (5.5 %) and non victims were 294. Ten participants did not answer either two questions. We also divided the cyber victims into the Mail Bullied Victims (MBV) and Internet Bullied Victims (IBV), because mail is a personal communication by the electronic devices, whereas the internet is a mass communication by the devices. Different communication functions imply different effects on human behaviors. Actually, many researchers treat the two victims differently (e.g., Li, 2007; Raskauskas & Stoltz, 2007; Smith et al., 2008). The MBV were 5 and 2 were male (One participant did not answer one’s sex). The IBV were 16 and 8 were male (One participant did not answer one’s sex).

**Analysis**

First, to grasp a whole picture of the present study, we analyzed correlations among all variables we used. Second, we conducted multiple regression analysis to show original aftereffects of TBV, MBV, and IBV on current self evaluation and emotional states. Third, self evaluation and emotional states of victims and non-victims were analyzed by Man-Whitney test. SPSS 14.0 in Japanese version was used.

**Results**

**Correlations between variables**

First, we compared all variables the present study used (Table 1). Table 1 shows that every emotional factor had significant positive
correlations with each other, so each factor was
closely-linked like previous studies (Shacham,
1983; Yokoyama, 2005). RSE also have
significant negative correlations with these
emotions. These correlations were also
consistent with previous studies (e.g., Nugent
& Thomas, 1993).

Duration of TBV, IBV, and MBV also had
positive correlation with their sex and both
their age and sex had significant positive
correlations with duration of TBV. Therefore,
when we interpret aftereffects of duration of
TBV, we need to take participants’ age and sex
into consideration. On the other hand,
aftereffects of duration of IBV and MBV
significant positive correlation with each others.
Therefore, victims in school were also victims
on the Internet and Mail (Li, 2007; Raskauskas
& Stoltz, 2007; Smith et al., 2008). Especially,
duration of IBV during high school had
significant positive correlations with current
anxiety and frustration levels.

Table 1
Correlations among internalized behaviours, externalized behaviours, self evaluation, victim
experience, and basic traits

|                | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Internalized   |     |     |     |     |     |     |     |     |     |     |
| TA             | .65 ** | .61 ** | .69 ** | .44 ** | .40 ** | .08 ** | .15 ** | .09 ** | -.00 ** | .08 ** |
| DD             | .57 ** | .69 ** | .60 ** | .50 ** | .04 ** | .10 ** | -.00 ** | -.06 ** | .03 ** |     |
| FT             | .63 ** | .48 ** | .39 ** | .00 ** | .11 ** | .05 ** | -.08 ** | .01 ** |     |     |
| CF             | .47 ** | .47 ** | .03 ** | .10 ** | .04 ** | -.02 ** | .05 ** |     |     |     |
| Externalized   |     |     |     |     |     |     |     |     |     |     |
| AH             | -.24 ** | .01 ** | .04 ** | .09 ** | .02 ** | .03 ** |     |     |     |     |
| Self evaluation|     |     |     |     |     |     |     |     |     |     |
| RSE            |     | -.01 ** | -.08 ** | .04 ** | .11 ** | -.08 ** |     |     |     |     |
| Victim Experience |     |     |     |     |     |     |     |     |     |     |
| TBV            | .27 ** | .29 ** | .17 ** | .13 ** | .05 ** | .06 ** |     |     |     |     |
| IBV            | .11 ** | .08 ** | .05 ** |     |     |     |     |     |     |     |
| MBV            |     |     |     |     |     |     |     |     |     |     |
| Basic traits   |     |     |     |     |     |     |     |     |     |     |
| Age            |     |     |     |     |     |     |     |     |     | .24 ** |
| Sex            |     |     |     |     |     |     |     |     |     |     |

a: n = 306, b: n = 308, c: n = 309, d: n = 310, e: n = 311, f: n = 312, g: n = 313, h: n = 314, i: n = 315.
*: p < .05, **: p < .01. TA: Tension and Anxiety, DD: Depression and Dejection, FT: Frustration, CF:
Confusion, AH: Anger and hostility, RSE: Rosenberg Self Esteem, TBV: duration of Traditionally
Bullied Victim, IV: duration of Internet Bullied Victim, MV: duration of Mail Bullied Victim, Sex:
counted Female as 1 and Male as 0.
Participants’ age had a significant positive correlation with their sex and both their age and sex had significant positive correlations with duration of TBV. Therefore, when we interpret aftereffects of duration of TBV, we need to take participants’ age and sex into consideration. On the other hand, aftereffects of duration of IBV and MBV were free of contaminants of participants’ basic traits.

**Multiple regression analysis**

Second, multiple regression analysis were conducted. Dependent variables of the analysis were emotional states and self evaluation, and independent variables were duration of TBV, IBV, and MBV. Basic traits were also entered as independent variables.

Collective results of the analysis were in table 2. Table 2 shows that only duration of IBV had significant coefficients, whereas duration of TBV and MBV did not have any significant coefficients. Duration of IBV especially predicted current higher anxiety and frustration levels. These findings implied that duration of IBV had aftereffects on anxiety and frustration, but duration of TBV and MBV did not have.

**Comparison between victims and non-victims**

Third, self evaluation and emotional states of victims and non-victims were analyzed by Man-Whitney test. Since MBV and TBV did not differ from non victims about self evaluation and emotional states, we presented only IBV and non-victims. Table 3 shows significant differences between IBV and non victims regarding internalized behaviors, such as tension, anxiety, frustration, and depression.

| Dependent variables | TA  | DD  | AH  | FT  | CT  | RSE |
|---------------------|-----|-----|-----|-----|-----|-----|
| Independent variables | TBV | .07 | .07 | -.00 | .00 | .03 | -.02 |
| IBV | .13* | .09 | .03 | .12* | .09 | -.08 |
| MBV | .05 | -.03 | .09 | .04 | .02 | .06 |
| Age | -.02 | -.09 | .01 | -.09 | -.04 | .13* |
| Sex | .06 | .04 | .02 | .01 | .05 | -.10 |
| Effect size | $R^2$ | .04 | .02 | .01 | .02 | .01 | .03 |
| $F$ | 2.5* | 1.4 | 0.7 | 1.5 | 1.0 | 1.8 |

* $N = 300$

*: $p < .05$, TA: Tension and Anxiety, DD: Depression and Dejection, FT: Frustration, CF: Confusion, AH: Anger and hostility, RSE: Rosenberg Self Esteem, TBV: duration of Traditionally Bullied Victim, IBV: duration of Internet Bullied Victim, MBV: duration of Mail Bullied Victim, Sex: counted Female as 1 and Male as 0. $R^2$: Adjusted $R^2$
Although the confusion factor did not reach significance ($U = 1589$, $p = .06$), the effect size was nearly medium ($d = .48$), so we thought IBV had more confused than non-victims. On the other hand, externalized behaviors and self esteem did not have significant differences between IBV and non-victims. The small effect size also suggested the small differences. Therefore we regarded that experience of IBV have aftereffects on internalized behaviors, but not externalized behaviors and their self esteem.

**Discussion**

The present study examined the aftereffects of cyber victims. We admitted limitations of our study that the participants were only university students and some victims who had not entered university were not included in our study, so the generalization of the present study was limited. Furthermore, retrospective study could bias participants’ experiences in high school age. However, the findings of the present study suggest important implications for psychological impact of computer use on individual. As hypothesized, participants who were cyber bullied have more

|                      | Internet Bullied Victims | non victims on the Internet | $U$  | $d$  |
|----------------------|---------------------------|-----------------------------|------|------|
|                      | $n = 16$                  | $n = 296$                   |      |      |
| Internalized behaviors | TA                        | 62.7 a                      | 10.3 |      |
|                      | DD                        | 63.6 a                      | 9.8  |      |
|                      | FT                        | 61.0 a                      | 9.4  |      |
|                      | CF                        | 63.5 a                      | 11.5 |      |
| Externalized behaviors | AH                        | 52.9 a                      | 10.0 |      |
| Self evaluation      | RSE                       | 2.9 a                       | 0.4  |      |

$U$: Wilcoxon rank-sum test, $d$: effect size

- $a$: $n = 15$, $b$: $n = 295$, $*: p < .05$, $**: p < .01$. TA: Tension and Anxiety, DD: Depression and Dejection, FT: Frustration, CF: Confusion, AH: Anger and hostility, RSE: Rosenberg Self Esteem.
internalized problems, such as tension, depression, and frustration than those who were not. This finding supported H2. Those who were cyber bullied were not significantly different from those who were not in terms of their externalized behaviors, and self-evaluation. These findings neither support H1 nor H3. According to previous findings (Baker & Tanrıkulu, 2010; Gradinger et al., 2009) and our findings, cyber bullied victims might be more likely to suffer from their internalized emotion, rather than their externalized emotion and self-evaluation.

On the other hand, experience of TBV did not have any significant aftereffects. These findings did neither support our hypotheses (H4, H5, and H6) nor match with previous studies (Fekkes et al., 2006; Hodges et al., 1999; Rønning et al., 2009; Sourander et al., 2007). However, the previous studies did not always show the same symptoms caused by TBV and one study did not find aftereffects of experience of TBV (Klomek et al., 2008). These studies and the present study suggested that TBV may manifest various symptoms, but not always the same symptoms. Therefore, TBV infrequently suffered from negative mental health.

We also found that experience of IBV had significant aftereffects on internalized behaviors, such as anxiety and frustration, whereas experience of MBV did not have any significant aftereffects. These findings suggested different communication function (Internet as mass communication and mail as personal communication) have different impacts on human emotional states, even though the electrical devices might be the same (mobile phone or personal computer). Previous studies surely focused these differences (e.g., Li, 2007; Raskauskas & Stoltz, 2007; Smith et al., 2008), but the studies did not show any relationship between communication function and emotional states. Our study uncovered the links between past internet victimization and current anxious or depressive levels. The study also implied that different communication function via the device were important factor on human health.

Findings of the present study were interpreted two ways. First, both anonymity and worldwide attention on the internet make mental health of IBV worse. The anonymity of the internet makes IBV indefensible. IBV cannot know bullies on the internet (e.g., Baker & Tanrıkulu, 2010; Smith et al., 2008; Ybarra & Mitchell, 2004), whereas bullies can attack IBV at any time. Furthermore, most contents on the internet cannot be deleted by IBV (e.g., Gradinger, Strohmeier, & Spiel, 2009), whereas the contents were always available for everybody in the world (e.g., Computer Fraud and Security, 2008; Raskauskas & Stoltz, 2007). IBV cannot defend themselves and cannot delete personal information or disparaging remarks on the internet even though the bullying was finished. As a result, contents that IBV want to keep dark have been always exposed to other people since the bullying. In other words, their victimization never ends. These situations may cause significant negative impacts on their mental health.

On the other hand, traditional and mail
bullying were basically personal and victims can defend themselves through the change in address. TBV can defend themselves, when they transferred their school. MBV can defend themselves, when they changed their mail address. Furthermore, most contents on the mail can be deleted by victims and the contents were usually available only for small local group members. This means that when the bullying was finished, the contents were naturally disappeared. These mail traits may protect MBV from negative impact on their mental health.

The second interpretation of the findings was difficulty to offset internet victimization with alternative positive experience. IBV were aggressed repeatedly by anonymous person (Computer Fraud and Security, 2008; Raskauskas & Stoltz, 2007). In order to offset the victimization, victims receive complements repeatedly by anonymous person. However, this alternative offset rarely happens. As a result, IBV suffered from their negative experience on the internet.

On the other hand, traditional and MBV can easily offset their victimization with alternative experiences. For example, because TBV were aggressed repeatedly by peers, their positive relationships with peers can offset their victimization. Actually, good peer relationships have significant protective effects on internalized and externalized behaviors (Hodges et al., 1999). In the similar way, heartfelt praise by mail would have protective effects on mental health, because MBV were aggressed repeatedly by mail. Therefore, TBV and MBV can recover from their negative mental health via their good peer relationships. Good peer relationships may also compensate of negative experience of IBV.

Conclusion

The present study contributed to studies on bullying in practical and theoretical ways. First, our study examined aftereffects of cyber victimization. Cyber victimization, especially internet victimization, had negative impacts on late adolescent mental health. Our finding suggested the importance of adolescent cyber space. Hence, to understand adolescents, psychologists have to take into account not only their real life, such as family and classroom, but also cyber life, such as activity on web sites. Understandings of cyber life could shed a light on adolescent health from another perspective.

Second, our study also examined different psychological impact of computer (mobile phone) uses on individuals. Internet victimization had significant aftereffects on late adolescent health, but mail victimization did not. Internet use gives all people power of mass communication. Surely, mail use facilitates personal communication, but did not give the power of mass communication. Difference of power might cause different aftereffects. For example, people who were written into personal information on websites would suffer than those who were written on e-mail, because they cannot delete information on websites like e-mail. Division of cyber bullying into personal and mass communication categories could help
to show more detailed relationships between usage of computer and human mental health.

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1 In Japanese, ‘bully’ usually means traditional bullying, so this question asks about traditional bullying. In English, bullying means both cyber and traditional bullying, but it only means traditional bullying in Japanese.