

A Comprehensive Explanation of Three Factors for Cyberbullying with Smartphones

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Abstract

To explain the cyberbullying with smartphones among college students in Korea, this study classifies the extant major causal processes with three factors of individual propensity, social environment, and opportunity each of which are extracted from three major theories of self-control, social learning and opportunity respectively. Furthermore, this study attempts to grasp both main effects and interaction effects among these selected theories, expecting that cyberbullying will be thoroughly explained when we consider the systematic and comprehensive composition of these main effects and interaction effects simultaneously. As a result of analyzing 301 college students in Seoul, Korea, the three major effects derived from individual propensity, social learning and opportunity are confirmed to exert significant effects upon cyberbullying. In addition, it is shown that all interaction effects between each two variables appeared to be statistically significant. However, the results including all interaction effects among major factors show that the interaction effect between low self-control and the perceived opportunity appeared to be statistically significant, while the other interaction effects among the rest of independent variables appeared to be statistically insignificant. Despite the limited effects of two-way interaction among included factors, we learned that we still need to consider both main effects and interaction effects simultaneously to thoroughly understand the subtle processes of cyberbullying in Korea.

Keywords

Cyberbullying, Smart Phone, Low Self-control, Social Learning Factor, Opportunity, Comprehensive Explanation

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INTRODUCTION

Smartphone is a routine medium such that almost every youth or college student holds one personally in Korea. With the advent of smart phone, they become more eager to get one as a major mobile device utilizing more advanced functions within it. With the advent of computer and internet, a phenomenon of cyber dysfunction has emerged rapidly, and among those dysfunctions, vexation of cyberbullying has become one of the most routine but serious deviant behaviors (Willard, 2006). From time to time, they even commit suicides suffering from the malicious offending of cyberbullying in such a way that it terrifies the whole nation of Korea with shock and dismay. With the growth of smart phone usage among youths, the earlier types of bitter and malign internet reply evolved from naive form of negation or refusal to more destructive and poisonous cyberbullying within everyday routine activities (Lee, 2014). Furthermore, under the service of special apps provided by mobile messenger company such as Kakao, there is virtually no limit to the number of messages which can be sent with a smartphone. Out of this huge number of text exchanges, a non-negligent portion is covered with reckless swearing, slandering and even cyberbullying. If this is the case, who on earth are committing these kinds of cyberbullying and why are they doing them? This study starts from these questions and focuses on revealing the causes of such violent cyberbullying behaviors.

Unlike the violence in the internet with extended network of unknown people, the violence in the smartphone connections is different from the malignant internet comments in that it can occur within a limited range of close interpersonal connections such as friends, peers and acquaintances along the everyday routine activities. It also tends to occur easily due to the traits of such media that those devices can be easily reached, conveniently carried and immediately utilized for communication as they are part of routine lives. Cyberbullying is getting impulsive and uncontrollable more and more as they tend to carry the phones almost any time in their routine activities.

In this regard, it is necessary to reveal the complicated processes of cyberbullying in Korea where smartphones begin to be the most rapidly permeating devices. This study focuses on three major factors of cyberbullying

such as individual low self-control, social learning from friends, and the opportunity. Each of them corresponds to the three theoretical perspectives such as individual propensity factor, social-environmental factor and opportunity factor. These factors are not only dealt with independently, but also simultaneously in that we are not only interested in the individual main effects but also interested in the combined interaction effects among three factors upon the outcome.

In sum, to reveal the etiology of cyberbullying with smartphone, it will review the individual traits, social learning process and opportunity factor based on the theoretical consideration and try to test such an comprehensive and integrated approach through empirical research with collected data.

THEORETICAL BACKGROUND

Three Major Factors

In general major theories utilized in recent research on crime can be summarized into three perspectives. First, general theory of crime by Gottfredson and Hirschi (1990) focuses on the individual stable characteristics. It regards low self-control as the most critical factor for crime. Second representative theory stresses the social environment as is the case with differential association/social learning theory (Surtherland, 1947; Akers, 1977), social control theory (Hirschi, 1969) and strain theory (Agnew, 1992). Thus all the crime learning from the pro-crime environment, the social bond with that environment and the strain from the surrounded environment are causes of anti-social criminal behavior. Third theory focuses on situational and opportunity factors of crime outbreak rather than the individual propensity or social environmental traits such that it emphasizes the role of opportunity for crime (Cohen & Felson, 1979).

Individual propensity factor

As a representative theory of individual characteristics, the general theory of crime by Gottfredson and Hirschi (1990) focuses on the fact that most of the deviance and crime is likely to take place out of extemporaneity and impulsivity for the immediate satisfaction of the perpetrator. Thus, an internal trait which

can distinguish normalcy from deviancy is one's ability to control his/her immediate satisfaction and impulsivity, which is so-called self-control. Self-control is constructed by child-rearing practices in childhood and wages a significant role for the explanation of crime as a consistent and stable propensity for the rest of lives.

The impact of low self-control on criminal behaviors has been largely supported by previous research for a long period of time (Pratt & Cullen, 2000; Rowe et al., 1990; O'Brien et al., 1999). Given that any types of crime and deviance can be easily explained by the low self-control, it would also be a significant predictor for the cybercrime and cyberbullying (Higgins, 2005; Buzzel et al., 2006; Bhat, 2008; Malin & Fowers, 2009; Nam & Kwon, 2013). Furthermore, the role of low self-control can be maximized in the context of cyberspace where none-face-to-face contact and anonymity are prevalent. It is a lot simpler and easier for perpetrators to commit a crime in the cyberspace than in the real space because of anonymity. In addition, unlike the reality, potential perpetrators pursue immediate satisfaction and behave impulsively as they feel low levels of conscience or guilty feeling and there are low possibility of detection and punishment. In the similar vein, youths with low self-control are more likely to commit cyberbullying.

Social learning factor

Current sociological theories stress the role of factors surrounding youths such as family, school, friend and community. Out of social-environmental theories, differential association/social learning theory has been one of the most largely supported theories by empirical data analysis. Both theories argue that association with friends who are favorable to crime can be a cause of crime as youths learn the values and attitude favorable to law-violation.

Social learning factor has been largely supported in the differential association/social learning theory as it turned out to be the most important factor leading to criminal behavior in various studies (Matsueda, 1982; War & Stafford, 1991). In addition, those who contact with delinquent friends and learn deviant behaviors from them are more likely to commit cybercrime or cyberbullying than those without such friends (Skinner & Fream, 1997; Becker & Clement, 2006; Nam & Kwon, 2013; Kim, 2013; Lee & Jun, 2015). The role of delinquent

friends would be more salient in the cyberbullying context, because smartphones would be a mediating tool which is routinely carried out, routinely utilized to connect with friends, routinely used to communicate with friends and routinely influenced by connected friends. In this context, it is highly likely that one is easily seduced to commit a crime when he/she has deviant friends who are connected with each other through a smartphone.

Opportunity factor

While the major extant theories of crime are based on the positivism emphasizing the individual propensity or environmental characteristics, the classical school of criminology focuses on the situational context and conditional opportunities to commit crime rather than individual traits. That is, the discussion about the opportunity factor derives from the classicism in that decision-making of criminal behavior is based on the rational choice out of various opportunities for crime. For example, lifestyle theory (Hindelang et al., 1978) noted that the exposure to opportunity for crime is the main cause of crime occurrence, while the routine activity theory (Cohen & Felson, 1979; Miethe & Meier, 1994) proposed that the conditions for crime should be ripened with three factors such as suitable target, motivated offender and the absence of capable guardianship. These theoretical implications can be applied to the cybercrime research in that cybercrimes are more likely to occur when there are more opportunities to commit them (Yar, 2005; Holt & Bossler, 2009; Lee, 2010).

Smartphones appear to be the media devices that provide potential criminals with tremendous opportunities to commit crime. Transportability, mobility, clandestinity, multiplicity (multi-connectivity) of smartphone help people connect to a certain object anytime, anywhere, privately in hugger-mugger (Oksman & Turtiainen, 2004). These traits of smartphone make people easily grasp criminal opportunities without reference to the personal propensities to crime. Thus, transportability, mobility, clandestinity, and anonymity of smartphone can be exploited to precipitate the cyberbullying independently from individual characteristics.

The Merged Operation of Three Factors

The three factors of low self-control, social learning and opportunity exert

not only separate but also integrated influences on crime. Each of three factors is important individually for inducing criminal behaviors but when each of them is merged with each other, the leverage to criminal behavior increases dramatically. The following research provides some basis for such an merged approach of above mentioned three factors.

Low self-control and opportunity

While the general theory of crime regards the low self-control, an inner disposition developed in early childhood, as the major causes of crime. Gottfredson and Hirschi did not admit that the low self-control is the only and unique factor for crime. Trying to integrate the ideas of classical and positivistic schools of criminology in their writings, they stressed that both of low self-control and criminal opportunity should be present simultaneously as necessary and sufficient conditions for crime (1990: 22-24). In other words, even a person with low self-control does not necessarily commit a crime unless he can find proper circumstances to execute his uncontrollable inclination.

So far, in the context of the general theory of crime, most of the researchers have focused only on the effects of low self-control in the process of testing their theory, even if the general theory itself stresses both low self-control and opportunity at once in the discussion of theoretical consideration. However, some researchers proposed that low self-control and opportunity should be coupled together in testing the general theory of crime and, more recently, it tends to be supported that an integrational approach is necessary in the discussion of low self-control and opportunity (Longshore, 1998; LaGrange & Silverman, 1999; Smith, 2004; Hay & Forrest, 2008; Lee, 2010). Thus, in the context of cyberbullying, low self-control explains the cyberbullying not only alone but also in combination with the opportunity factor of smartphones utilization. That is, youths with low self-control are more likely to commit cyberbullying when they have opportunities of carrying the phones and using them illicitly or clandestinely.

Low self-control and social learning factor

In addition, the general theory of crime can also be integrated with the

social learning approach. The general theory of crime negates the role of such effects as association with delinquent friends in the developmental stage suggested by differential association/social learning theory, because it takes self-control formed in early stage of child development to be the major explanatory cause of crime and deviance. However, later research shows that association with friends besides self-control constitutes the major explanatory factor for crime and lots of researchers criticize the view that deviance and crime can be largely explained by a propensity developed in the early stage of childhood (Paternoster & Brame, 1997; Baron, 2003; Chapple, 2005).

Upon the view that individual propensity formed in early childhood and social environmental factor such as delinquent association are all necessary-sufficient condition for crime, conclusion is reached that the explanatory power gets larger when there is a theoretical integration between general theory and differential association/learning theory. The representative scholars who referred to the necessities of integrating low self-control and delinquent association were Wright and colleagues (1999). Such findings are supported by several studies (Longshore & Turner, 1998; LaGrange & Silverman, 1999; Meldrum et al., 2013; Hirtenlehner et al., 2015). Some studies show that there are interaction effects between low self-control and social learning variables such as differential association with delinquent friends on online digital piracy (Higgins & Wilson, 2007; Hinduja & Ingram, 2008). More recently, Holt and colleagues (2012) suggested in their study of cybercrime that low self-control is not only mediated through the effect of deviant friends but also interacted with the effect of deviant friends resulting in larger effect on crime. Upon these considerations, we presume that low self-control is likely to exert more effect on cyberbullying when it is incorporated with social learning factors in an integrated manner.

Social learning and opportunity factor

In addition, even if there is not enough research yet, the combination of social environmental factor such as social learning and opportunity might be a necessary-sufficient factor for crime in a near future. If youths are surrounded by an abnormal environment inculcating deviant values and attitudes, they probably deviate more easily when situational opportunities for crime are fully conditioned. Some researchers do not differentiate the social environmental factor and

opportunity as the association with delinquent friends might be regarded as an opportunity for crime (Longshore & Turner, 1998). However, the concepts of social environmental factor and opportunity are theoretically different with each other in that while delinquent association is a social environmental factor helping youths learn criminal behavior on a relatively long term basis, opportunity is situational temporary conditions helping youths commit crime more easily and quickly. In addition, as there are some studies showing that delinquent association and opportunity have interaction effects with each other (Haynie & Osgood, 2005), the social environmental factors such as delinquent association should be dealt with in the discussion of integration with opportunity factor. If this is the case, the learning factor of delinquent association exerts more strong effect on crime when it is combined with opportunity factor such as smart phone characteristics. That is, those who associate with cyberbullying friends tend to commit more cyberbullying not only by association itself, but also by the very characteristics of smartphone itself.

HYPOTHESIS AND RESEARCH METHOD

Hypothesis

This research is focused on three factors - individual propensity factor, social learning factor and opportunity factor - to figure out their effects on cyberbullying. Low self-control as an individual propensity factor, number of cyberbullying friends as a social learning factor and finally the perceived opportunity of cyberbullying as an opportunity factor were considered to find their effects on cyberbullying.

Based on the prior discussion, let us suggest the following hypotheses.

HT 1: The lower the self-control is, the more cyberbullying they commit.

HT 2: The more cyberbullying friends they have, the more cyberbullying they commit.

HT 3: The higher the perceived opportunity of cyberbullying is, the more cyberbullying they commit.

In addition to the independent main effects of these three factors, we

assumed that there must be specific interaction effects among these factors as their necessary and sufficient conditions appear to be mixed together. Based on this discussion, we added the fourth hypothesis on the interaction effect between low self-control and number of cyberbullying friends, the fifth hypothesis on the interaction effect between low self-control and opportunity perception, and finally the sixth hypothesis of interaction effect between number of cyberbullying friends and opportunity perception.

HT 4: Low self-controlled youths are more likely to commit cyberbullying when the number of delinquent friends with cyberbullying experience is high. That is, the interaction effect between low self-control and cyberbullying friends will be positively significant.

HT 5: Low self-controlled youths are more likely to commit cyberbullying when their perceived opportunity is high. That is, the interaction effect between low self-control and opportunity perception will be positively significant.

HT 6: Youths with cyberbullying friends are more likely to commit cyberbullying when their perception of opportunity is high. That is, the interaction effect cyberbullying friends and opportunity perception will be positively significant.

To test the hypotheses, we analyzed our data with SPSS PC 18.0 using multiple regression analysis targeting the cyberbullying as our dependent variable.

Research Methods and Measurement

This research surveyed the college students as they appeared to be the most frequent users of smartphones. The study population of this study is the subset of students attending 4-year-course colleges and universities in the metropolitan city of Seoul. Out of the study population, we waged a two-stage sampling process selecting 5 colleges first and drew about 60 students from each college reaching 304 people in total. The survey was waged for two weeks in July, 2018 and the total number of questionnaires taken back from selected students was 304, but one was excluded due to untrustworthy responses. Out of these 303 students, only 301 of students appeared to have smartphones, and we

analyzed only these students who had smartphones.

The included variables are measured as follows. First of all, the dependent variable of cyberbullying, based on the study of Willard (2006), was measured by insult/defamation, sexual harassment and stalking, which are the most representative cyberbullying activities in Korea. We combined the following three dummy questions based on their experience of each item, 1 if yes and 0 if no. The questions are 1) whether they have sworn to or insulted someone or spread false rumor or information about someone, 2) whether they have sexually harassed someone, and 3) whether they have repeatedly stalked someone, during the last 1 year.

Next, each of the three independent variables represents individual traits, learning process and opportunity. First of all, individual traits are measured by low self-control based on the study of Grasmick and colleagues (1993). Their original six traits are 'impulsivity, simple tasks, risk seeking, physical activity, self-centered, and temper'. We asked two questionnaire items for each of the six traits utilized in Grasmick and colleagues resulting in 12 items in total. Each of them was measured in 5-point Likert scale ranging from "never agree" to "very agree" and their reliability was high ($\alpha=.832$). The impulsivity was measured by two items of 'I am more likely to behave on impulse' and 'I tend to act on the spur of the moment without thinking what would happen later.'

Second, the learning process is measured in the context of association with friends who have an experience of cyberbullying. It was measured by three items of number of friends who have experiences of following cyberbullying activities: 1) swearing to or attacking someone or spreading false rumor or information, 2) experiences of harassing someone sexually, and finally 3) experiences of stalking someone repeatedly.

Third, opportunity was assessed by perceived opportunity of cyberbullying. We use three questions, 'I have many opportunities to commit cyberbullying with my smartphone', 'I can easily do cyberbullying with my smartphone wherever the place is while I carry it', 'I can use my smartphone furtively with anonymity in committing cyberbullying'. Each of them was measured in 5-point Likert scale ranging from "never agree" to "very agree" and their reliability was high ($\alpha=.792$).

Finally, the controlling variables in this research are demographic variables

such as gender and age. Gender has two categories of 'male' and 'female', age was measured from 18 to 28.

RESULTS

<Table 1> shows the socio-demographic traits of respondents. Gender distribution was evenly measured between male and female such that the former was 149 (49.5%) and the latter was 152 (50.5%). Age distributed from 18 to 28 and its mean score was 21.48. 22 was the mode with 56 (18.6%).

Table 1. Socio-Demographic Traits

	Classification	Frequency	Rate(%)
Gender	Male	149	49.5
	Female	152	50.5
Age	18-years-old	23	7.6
	19-years-old	35	11.6
	20-years-old	48	15.9
	21-years-old	43	14.3
	22-years-old	56	18.6
	23-years-old	48	15.9
	24-years-old	25	8.3
	25-years-old	12	4.0
	26-years-old	10	3.3
	27-years-old	0	0
	28-years-old	1	0.3
Total		301	100

Before we get to the major data analysis, we reviewed an overall distribution of the number of smart phone cyberbullying, which appears in <Table 2> such that while 'violent attack' was experienced by 35 youths (11.6%),

'sexual harassment' was experienced by 22 youths (7.3%) and 'stalking' was experienced by 12 youths (4.0%).

Table 2. Frequency of Cyberbullying Experiences

Cyberbullying	Number of youths	%
Violent attack	35	11.6
Sexual harassment	22	7.3
Stalking	12	4.0

<Table 3> shows the descriptive statistics of major variables in the study. The mean score of low-self-control as an individual trait with a range of 12-51 was 34.173, while that of the number of cyberbullying friends as a social-learning factor with a range of 0-3 was as low as .573. The mean score of the perceived opportunity factor with a range of 3-15 was 9.037. The mean score of number of experiences of cyberbullying, which is the dependent variable, for the last 1-year with a range of 0 to maximum of 3 appeared to be as low as only .229

Table 3. Descriptive Statistics of Major Variables

Variables	Mean	S.D.	Range
Low Self-control	34.173	7.573	12-51
# Cyberbullying Friends	0.573	0.924	0-3
Opportunity	9.037	3.488	3-15
# of Cyberbullying	0.229	0.592	0-3

<Table 4> shows the results of multiple regression analysis waged to test the hypotheses upon the dependent variable of smartphone cyberbullying. Based on the OLS (Ordinary Least Square) method, it compares the differentiated effects of individual propensity factor, social learning factor and opportunity factor upon cyberbullying. Results shows that hypothesis 2 presuming the highest effect ($\beta=.399$) of cyberbullying friends as a social learning factor was supported at the significance level of $p<.001$. The next one is individual propensity factor supporting the hypothesis 1 in such a way that the effect of low self-control effect appeared to be significant at the level of $p<.001$. And opportunity factor was significant at the $p<.001$ level supporting the hypothesis 3.

As for the controlling variables, gender was significant in such a way that male appeared to commit significantly more cyberbullying at the level of $p < .05$, while the effect of age was not significant at all.

In addition, the second to fourth analyses of <Table 4> show the results of the interaction effects among the three factors. The second result shows that the interaction effect between low self-control and cyberbullying friends appeared to be statistically significant at the level of $p < 0.05$ supporting the hypothesis 4. The third result also shows that the interaction effect between low self-control and the perceived opportunity was statistically significant at the level of $p < 0.001$ supporting the hypothesis 5. The fourth result reveals that that the interaction effect between cyberbullying friends and the perceived opportunity was also statistically significant at the level of $p < 0.01$ supporting the hypothesis 6.

Table 4. Multiple Regression of Three Factors upon Cyberbullying(N=301)

Ind.Var	DV: Cyberbullying									
	(1)		(2)		(3)		(4)		(5)	
	B	B	B	β	B	β	B	β	B	β
Male	-.146*	-.123	-.132*	-.111	-.105	-.089	-.157**	-.132	-.111	-.093
Age	.024	.083	.024	.085	.032*	.110	.023	.079	.030*	.104
Low Self-control	.015***	.188	.014***	.177	.014***	.004	.014***	.184	.014***	.176
Cyberbullying Friends	.256***	.399	.227***	.353	.245***	.382	.232***	.362	.218***	.339
Opportunity	.030***	.177	.031***	.180	.033***	.196	.029***	.172	.033***	.192
LSC*CF			.010*	.127					.005	.059
LSC*Opp					.004***	.212			.004***	.186
CF*Opp							.022**	.129	.014	.082
Adj R Square	.348		.359		.389		.361		.396	
F	32.670***		28.739***		32.522***		28.952***		25.328***	

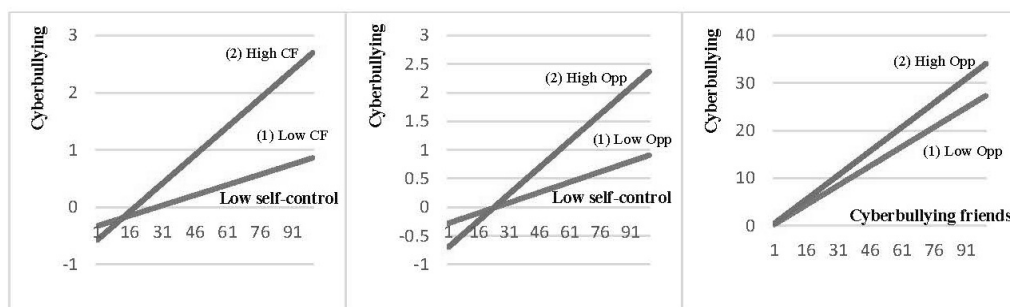
*= $p < .05$; **= $p < .01$; ***= $p < .001$

Upon the outcome of <Table 4>, we need to analyze the interaction effect on cyberbullying more in detail to understand the true meaning of interaction effect itself. To begin with, we divide the score of cyberbullying friends into low (1) and high (2) based on the mean score, and for each case we reran a

regression analysis with the independent variable of low self-control. In the case of low (1) cyberbullying friends, the regression equation was $y = -0.341 + 0.012x$ and the effect of low self-control appeared to be statistically significant. Also in the case of high (2) cyberbullying friends, the regression equation was $y = -0.607 + 0.031x$ and effect of low self-control appeared to be significant too. Notably, as <Figure 1> shows, this result approves the hypothesis 4 arguing that youths with low self-control are more likely to commit cyberbullying when they have high cyberbullying friends.

In a similar manner, when we classified opportunity into low (1) and high (2) with an independent variable of low self-control, the results of regression analysis are as follows. First in case of low opportunity (1), the regression equation appears to be $y = -0.293 + 0.012x$ and in the case of high opportunity (2), the equation was $y = -0.729 + 0.031x$. And results show that the effects of low self-control were statistically significant on both cases of low and high opportunity. Especially, as <Figure 2> shows, this result approves the hypothesis 5 revealing that low self-controlled students are more likely to commit cyberbullying when their perceived opportunity is high.

In addition, in the case of classifying opportunity into low (1) and high (2) and waging regression analysis with an independent variable of cyberbullying friends, as <Figure 3> shows, the regression coefficient for the first case was $y = -0.001 + 0.273x$ while that of the second case was $y = 0.105 + 0.339x$ such that both cases had statistically significant effects of cyberbullying friends. Particularly, results show that youths with cyberbullying friends are more likely to commit cyberbullying when they have high perception of opportunity.



e. <Figure 1> Regression of low self-control upon cyberbullying conditioned by by cyberbullying friends

f. <Figure 2> Regression of low self-control upon cyberbullying conditioned opportunity

g. <Figure 3> Regression of cyberbullying friends upon cyberbullying conditioned by opportunity

On the other hand, the fifth analysis result of <Table 4> including all three interaction effects among major factors testing the integrated hypotheses shows that only the interaction effect between low self-control and the perceived opportunity appeared to be statistically significant at the level of $p < 0.001$, while the other two interaction effects among the rest of independent variables appeared to be statistically insignificant.

DISCUSSION AND CONCLUSION

This study examined the effects of individual propensity factor, socio-environmental factor and opportunity factor, each of which is an important factor from three main theories, upon the smartphone cyberbullying behaviors of Korean college students. To test the hypothesis, we measured low self-control, social learning (cyberbullying friends) and opportunity out of above three factors. Furthermore, this study is focused on the integrated effect of three factors in such a way that each factor would exert not only the separate main effect but also the combined interaction effects as necessary conditions in the explanation of cyberbullying behavior.

The study results are shown in <Table 4> where the effect of social learning factor such as cyberbullying friends appeared to be the largest at the significance level of $p < .001$, the next was low self-control at the level of $p < .001$, and the last was the perceived opportunity at the level of $p < .001$. Upon these outcomes, we can conclude that the cyberbullying behaviors are affected by all three factors of individual propensity factor, social learning factor and the opportunity factor each of which are derived from three major theories respectively and an integrated perspective with these three theories is necessary to fully understand the mechanism of smartphone cyberbullying.

As the tables showed, this study also revealed that not only the main effect on the cyberbullying behavior, all interaction effects between each two independent variables appeared to be statistically significant. This outcomes support the integrative hypotheses. That is, the youths with low self-control tend to commit more cyberbullying behavior when opportunity or cyberbullying friend provides more advantageous situation or environment for cyberbullying. In

addition, it is shown that college students with cyberbullying friends tend to commit more cyberbullying behavior when opportunity provides more advantageous situation.

However, an analytic outcome including all interaction effect in a model showed that the interaction effect between low self-control and opportunity factor appeared to be statistically significant. However, some of the study prediction did not appear to be supported in that the interaction effect between low self-control and social learning factor and the interaction between social learning factor and opportunity factor came to be insignificant. This outcome supports the integrative argument of Gottfredson and Hirschi in that low self-control tends to work along with opportunity factor.

Extant studies don't find any interaction effect as there are so many inconsistent studies showing different outcomes on the interaction effect. For example, Holt and colleagues (2012) suggest that the effect of low self-control tends to work more for youths who have more delinquent friends showing that the interaction effect is working, while there is a study showing that low self-control work more for youths who have less delinquent friends (Medrum et al., 2009) which is contrary to the outcome of former study, and even another study found that their interaction effects are not significant at all (McGloin & Shemer, 2009). What it means is that the original discussion of integration within the realm of general theory of crime was supported while the further discussion of theoretical integration was not supported.

In these regards, we learned that it is necessary to consider not only the main effects of low self-control, social learning factor and opportunity factor but also the interaction effect among them to grasp the better understanding of cyberbullying behavior, at least in Korea. So, we have tried to investigate not only the main effects, but also the interaction effects among independent variables. However, it is still limited in that it does include only the two-way interaction among the three excluding the three-way interaction covering all three variables simultaneously. In that sense, we still need to delve into the details of interaction effect among the three factors to build a more comprehensive model of integration. This study is also limited in that the sample of students from 5 colleges are not enough to represent the Korean college students and generalize the results to the population. In addition, further detailed analysis considering the

effects of time order between cyberbullying and delinquents friends would be necessary. Despite these limitations, this study is still valuable in that it delves into the complicated mechanisms of main effects and interaction effects among the three major criminological theories to understand the cyberbullying of Korean college students. At this time, this study is limited to the violence within the purview of cyberbullying, but we expect more active and expanded study upon diverse types of violent behavior in the future. Also, more expanded study upon cyberbullying is highly recommended.

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