MUNI FSS

JOURNAL OF PSYCHOSOCIAL RESEARCH ON CYBERSPACE
CYBERPSYCHOLOGY

Uddin, M. K., & Rahman, J. (2022). Cyber victimization and cyber aggression among high school students: Emotion regulation as a moderator. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 16*(2), Article 4. https://doi.org/10.5817/CP2022-2-4

Cyber Victimization and Cyber Aggression Among High School Students: Emotion Regulation as a Moderator

Muhammad Kamal Uddin & Jakia Rahman

University of Dhaka, Dhaka, Bangladesh

Abstract

Adolescents of Bangladesh today are facing significantly higher rates of stressors with differing severity and frequency of anxiety, depression, internalizing, and externalizing problems to mention a few (cited in Mullick et al., 2019). Many of them use cyberspace where their limited capacity for emotion regulation may put them at the risk of cyber aggression as well as cyber victimization. However, the true dynamics of the relationship between cyber aggression, cyber victimization, and emotion regulation are largely unknown. The present study is therefore undertaken to address the issue by testing the effect of two components of emotion regulation on the relationship between cyber victimization and cyber aggression. A questionnaire package including Bangla translated versions of Cyber-Victimization Questionnaire for Adolescents (CYVIC), Emotion Regulation Questionnaire (ERQ), Cyber-Aggression Questionnaire for Adolescents (CYBA), and Personal Information Form (PIF) was administered to a purposive-convenience sample of 250 high school students (48% boys and 52% girls). The students were between the ages of 11 through 17 years with a mean age of 14.77 years (SD = 1.41). Independent sample t-tests revealed significant gender differences in all major variables; hence subsequent analyses were conducted on subsamples of boys and girls. Pearson product-moment correlation showed a significant association between key variables where the association of expressive suppression with cyber victimization and cyber aggression was negative for girls and positive for boys. Hierarchical regression analyses manifested buffering effect of both cognitive reappraisal and expressive suppression weakening the relationship between cyber victimization and cyber aggression for girls. A similar pattern was observed for boys where cognitive reappraisal only weakened the relationship between cyber victimization and cyber aggression but not for expressive suppression in boys. The findings have been interpreted in the light of past studies.

Keywords: cyber victimization; emotion regulation; cyber aggression; cognitive reappraisal; expressive suppression

Editorial Record

First submission received:
June 1, 2020

Revisions received:
August 17, 2021
November 29, 2021
February 28, 2022

Accepted for publication:
March 21, 2022

Editor in charge:
Michel Walrave

Introduction

Adolescents in the twenty-first century are being raised in an Internet-dependent world. They have come to depend on electronic technologies (e.g., the internet, mobile phone, computers, etc.) such that they may find it hard to imagine a life without them. Although electronic technologies have characteristics like the convenience of usage, rapid transmission of information, and entertainment value, they are not without adverse consequences.

Cyber aggression is one of such consequences that has gained increased attention among researchers, parents, and educators nowadays. Adolescents spend more time on the Internet, which may increase the risk of cyberbullying, defined as an aggressive, intentional act carried out through electronic means, repeatedly and over time, against a victim who cannot defend him/herself (Hinduja & Patchin, 2008). However, our present study uses the terminology of cyber aggression, instead of cyberbullying. Cyber aggression incorporates a variety of intentionally harmful behaviors like spreading rumors, sending offensive messages, hacking someone's online accounts, and impersonating someone else to get others to dislike this person (Grigg, 2010). In comparison to cyberbullying, cyber aggression is a broader form of negative online behavior, and these behaviors do not have to be repetitive or include an imbalance of power, which is central to the traditional definitions of cyberbullying. Moreover, there is the possibility for abusive content to be circulated to an audience of unknown size and location. Here, the concept of power could be described by the ability to remain anonymous in cyberspace, or the ability to use superior technological skills (Vandebosch & Van Cleemput, 2009).

Opportunities for cyber aggression (CA) have grown with the expansion in the use of technology in society. It is important to point out, however, that estimates of the extent of cyber aggression vary depending on its definitions, measurement choices, and populations being studied by researchers. Scholars in recent years have been exploring the frequency and prevalence of cyber aggression through numerous studies. One of the recent studies carried out on a sample of 627 adolescents (12 to 16-year-old) showed that 63.1% reported being involved in cyber-aggression, with 31.1% admitting to being victim-perpetrators (Vale et al., 2018).

The scenario in Bangladesh concerning cyber aggression is also upsetting. The Telenor group, in a region-wide survey on 1510 high school students of ages between 12 and 18 years, has found that 49 percent of school students in Bangladesh have been victims of cyberbullying, revealing that young people are increasingly becoming vulnerable to such harassment (Unb, 2016). The study reported that the students are either "being bullied or disturbed online" or "being bullied by the same person both online and offline".

Cyber aggression may be motivated by different factors, reflecting varied functions. Research examining motivations for cyberbullying or cyber-aggression differentiated between proactive (an unprovoked and planful act of aggression) and reactive (impulsive response in the context of retaliation for some perceived or real threat) cyber aggression (e.g., Lapierre & Dane, 2020; Runions et al., 2017). Cyber aggression as an expression of reactive aggression can be explained by the notion that these behaviors are motivated by a victim's desire for retaliation. Thus, existing research suggests that cyber aggression is often triggered by victimization, either experienced directly or in the cyber context (e.g., Hinduja & Patchin, 2009; Wright & Li, 2013). Patchin and Hinduja (2011) argue that victimization as a source of strain produces feelings of anger and frustration, making victimized adolescents more likely to behave aggressively. Previous research has well supported the bidirectional links between different forms of cyber victimization and cyber aggression (Wright & Li, 2013). However, not all victims are equally affected, and the differences seem to be due to certain situational and personal characteristics.

Inability to regulate emotions (i.e., extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals (Thompson, 1994, p. 27) is claimed to be one of the most important factors in explaining aggressive behavior (Terranova et al., 2008). The theoretical framework of the "process model of emotion regulation" proposed by Gross (1998), focuses on two strategies, cognitive reappraisal (i.e., attempts to think about the situation to alter its meaning and emotional impact) and expressive suppression (i.e., attempts to inhibit or reduce ongoing emotion-expressive behavior), among the several involved in the emotion regulation process (John & Gross, 2004). Using this framework, researchers have examined whether attempts to cognitively regulate emotions relatively early in the emotion-generative process (e.g., reappraisal) are more effective than attempts to behaviorally regulate emotions relatively late in the emotion-generative process (e.g., suppression).

During adolescence, changes in emotional experiences might need to be regulated, such as those related to social interaction conflicts (e.g., with peers and/or parents) and risk-taking options. Emotion regulation within peer relationships is often required most when individuals get upset with one another since emotion regulation strategies aim to alter unpleasant emotions resulting from adverse experiences. Previous research has found reactive aggression to be negatively associated with emotion control (Card et al., 2008). In these cases, cyber aggression can be the result of emotion regulation being executed in socially undesirable ways. Recent research has shown that difficulty in emotion regulation is positively associated with adolescent cyber aggression (Jiang et al., 2020). Another study that sought to explain the association between adverse peer experiences and emotion regulation in adolescents has found that adverse peer experiences like victimization are negatively associated with

emotion regulation processes (Herd & Kim-Spoon, 2021). Emotion regulation difficulties appear to increase the risk of both cyber aggression perpetration and cyber victimization (Arató et al., 2021). Limited capacity in emotion control has also been found to be a predictor of cyber victimization (Hemphill et al., 2015). Thus, the association of cyber victimization with aggression in cyberspace might be explained by the inability in regulating emotions. The current study, therefore, examines whether emotion regulation moderates the relationship between cyber victimization and cyber aggression.

Cyber aggression is a form of indirect aggression, which might lead one to conclude that girls would be more likely than boys to experience cyberbullying as both victims and perpetrators. Indeed, girls are likely to maintain more close-knit connections and so more readily exchange intimate information and personal secrets, whereas boys tend to mix in larger groups and share fewer details (Dooley et al., 2009). Although some researchers have reported that girls and boys were equally likely to report harassing others online (Hinduja & Patchin, 2008), other researchers reported that boys were more likely to be cyberbullies compared to their girl counterparts (Li, 2006).

There are also gender differences in emotion regulation. According to Kerr and Schneider (2008), females appear to express their emotions less than males. Some studies found that feminine gender roles were associated with the capacity to regulate experienced emotions (Baroncelli & Ciucci, 2014). In the current study, therefore, gender differences will be also considered. The present study aims to address this gap in the literature about the bidirectional associations between cyber victimization and cyber aggression to better understand the mechanisms and the role of the emotion regulation process underlying it. The general objective of the present study is to investigate whether the association between cyber victimization and cyber aggression is moderated by the emotion regulation process in adolescents. Specifically, we hypothesized that cyber victimization would positively correlate to cyber aggression. Additionally, we expected that emotion regulation would negatively correlate to cyber aggression among adolescents. Furthermore, we expected that cyber victimization and emotion regulation would exert an interactive effect on cyber aggression. More specifically, we hypothesized that lower levels of emotion regulation would enhance the impact of cyber victimization on cyber aggression.

Methods

Sample

This was a cross-sectional study conducted at purposively selected schools of Dhaka city in Bangladesh. These schools are basically representative of high schools in Bangladesh. Data were collected from 250 students (48% boys and 52% girls). The participants were from grade six through ten and their mean age was 14.77 years (*SD* = 1.41), with a range of 11 through 17 years. They were selected by employing the incidental sampling technique. To keep consistency with the medium of instructions in the schools, all the questionnaires administered were in Bangla language.

Measures

All participants in this research responded to the following self-report questionnaires along with the demographic form. Questionnaires were administered in the following sequence:

1. Personal Information Form (PIF)
2. Cyber-victimization Questionnaire for Adolescents (CYVIC)
3. Emotion Regulation Questionnaire (ERQ)
4. Cyber-aggression Questionnaire for Adolescents (CYBA)

The Personal Information Form (PIF)

The PIF elicited demographic, personal, and social information about respondents' gender, age, grade in school, parental occupation, etc.

Cyber-victimization Questionnaire for Adolescents (CYVIC)

Bangla translated version (Uddin & Rahman, 2018b) of Cyber-Victimization Questionnaire for Adolescents (CYVIC; Álvarez-García et al., 2016) was administered to assess how frequently the informant has been the victim of attacks via mobile phone or the internet during the previous three months. It consists of 19 statements, with a Likert-type response format (from 1 = *never* to 4 = *always*). Example of test items of the scale includes, *I received calls insulting or mocking me*. The sum of the CYVIC scale constitutes a measure of overall cyber victimization. The possible scale score ranges from a low of 19 to a high of 76. The midpoint of the scale is 47.5. A score at or above the scale midpoint indicates more cyber victimization. The reliability coefficient for this scale is α = .81.

Emotion Regulation Questionnaire (ERQ)

Bangla translated version (Uddin & Rahman, 2018c) of Emotion Regulation Questionnaire (Gross & John, 2003) is a 10-item self-report questionnaire which consists of two scales corresponding to two different emotion regulation strategies: Cognitive Reappraisal (6 items; e.g., *When I want to feel happier, I think about something different*) and Expressive Suppression (4 items; e.g., *I control my feelings by not showing them*). Items 1, 3, 5, 7, 8, 10 make up the cognitive reappraisal facet and items 2, 4, 6, 9 make up the expressive suppression facet. The 10 items are rated on a 7-point Likert type scale (from 1 = *strongly disagree* to 7 = *strongly agree*). The possible scale score ranges from a low of 6 to a high of 42 for the cognitive reappraisal subscale. And for expressive suppression subscale, possible scale score ranges from a low of 4 to a high of 28. Higher scores on each scale indicate greater use of the corresponding emotion regulation strategy and conversely lower scores represent less use. Internal consistency reliability (coefficient alpha) was .92 and .84 respectively for cognitive reappraisal and expressive suppression for the present study.

Cyber-aggression Questionnaire for Adolescents (CYBA)

Bangla translated version (Uddin & Rahman, 2018a) of Cyber-aggression Questionnaire for Adolescents (CYBA; Álvarez-García et al., 2016) is a self-report questionnaire comprising of 19 items with a Likert-type response format in which the informant was to indicate how frequently he or she has exercised the aggression described in each statement via mobile phone or the internet in the previous three months (from 1 = *never* to 4 = *always*). The reliability coefficient alpha is .91 for this scale. Example of test items of the scale includes, *I have hit a person, recorded the scene and then disseminated it*. The sum of the CYBA scale constitutes a measure of overall cyber aggression. The possible scale score ranges from a low of 19 to a high of 76. The midpoint of the scale is 47.5. A score at or above the scale midpoint indicates more cyber aggression.

Procedure

Principals from three purposively selected schools in the Dhaka city were approached in writing for the purpose of the study. After they have given their affirmative responses in having their school participate in the study, a classroom announcement explaining the general purpose of the study to the class teachers and students was made by the second author who collected the data during a class period in approximately 40 minutes. The collection of data took place from the 10th of January to 15th of February 2020. Participants were assured that their responses would be kept confidential and used only for research purposes. Participants were given general instruction verbally on how to respond before going through the items of the scale. Before going through the items they were asked to provide general demographic information (e.g., age, gender, etc.) Also, further clarifications were done whenever they faced any problems to understand the items.

Data Processing and Analysis

SPSS version 20 was used for data entry on cyber victimization, cyber aggression, and emotion regulation scale as well as information about gender, age, and socio-demographic information. Reliability of the measures was estimated by computing coefficient α. We computed mean, standard deviation, and range for all variables. Then independent sample *t*-test was carried out to examine the difference between boys and girls in the major variables. A simple correlation was calculated to examine the relationships among major variables. Finally data were analyzed using hierarchical multiple regression. The following assumptions are relevant here:

1. The relation between the predictor (independent variable) and the outcome (dependent variable) was linear as revealed in the scatter plot.
2. Multivariate normality is revealed as residuals are normally distributed.
3. Multicollinearity is manifested to be absent through testing the Variance Inflation Factor (VIF).

Finally, we have generated a graph and computed the simple slopes with the help of ModGraph (Jose, 2013) which generated the simple slopes, their t-values, and the associated significance levels.

Results

To test gender differences in major variables in this research, an independent sample *t*-test was done. Results of the *t*-test shown in Table 1 revealed significant gender differences in cyber victimization, cyber aggression, and emotion regulation. Boys were more victimized and more aggressive in cyberspace than were girls. Girls scored higher in emotion regulation than did boys. Further inspection in Table 1 shows that girls used more cognitive reappraisal than boys whereas boys used more expressive suppression than girls as a strategy of regulating emotion.

Table 1. *Descriptive Statistics and Test of Gender Differences in Cyber Victimization, Emotion Regulation, and Cyber Aggression.*

Variables	Range		Boys (*n* = 120)		Girls (*n* = 130)		*t*	*p*
	Possible	Actual	*Mean*	*SD*	*Mean*	*SD*		
Cyber Victimization	19–76	19–49	29.82	6.70	26.78	3.96	4.40	< .001
Emotion Regulation	10–70	21–66	43.68	8.84	46.61	9.77	−2.48	.014
Cognitive Reappraisal	6–42	9–42	25.95	9.49	30.53	7.16	−4.33	< .001
Expressive Suppression	4–28	5–28	17.73	4.64	16.08	4.72	2.78	.006
Cyber Aggression	19–76	19–47	26.52	7.47	22.64	3.81	5.24	< .001

Because there were significant differences between boys and girls in all three variables, further analyses were performed separately for boys and girls. Simple correlations among major variables were calculated and presented in Table 2.

Table 2. *Simple Correlation Between Each Variable With Each of the Other Variables.*

Variables	1	2	2(a)	2(b)	3
1. Cyber victimization		−.50**	−.58**	.24**	.67**
2. Emotion regulation	−.51**		.87**	.12	−.59**
2(a) Cognitive reappraisal	−.53**	.93**		−.38**	−.73**
2(b) Expressive suppression	−.20*	.55**	.32**		.36**
3. Cyber aggression	.67**	−.63**	−.68**	−.23**	

Note. Values above diagonal are correlation coefficients for boys and those below diagonal are for girls.
*$p < .05$, **$p < .01$.

Table 2 shows that cyber aggression is positively correlated with cyber victimization for both girls and boys. For girls, two strategies of emotion regulation (i.e., cognitive reappraisal and expressive suppression) are negatively correlated with both cyber victimization and cyber aggression. That is, the greater the use of reappraisal and suppression, the lesser is being victimized and aggressive in cyberspace. Reappraisal has also been a potentially effective technique of emotion regulation to reduce involvement in cyber aggression for boys as indicated by its strong negative correlation with cyber victimization and cyber aggression ($r = -.58$, $p < .001$; $r = -.73$, $p < .001$). However, suppression shows a different picture for boys where it is positively correlated with cyber victimization and cyber aggression ($r = .24$, $p = .009$; $r = .36$, $p < .001$) as opposed to that for girls.

Table 3. *Hierarchical Regression Assessing the Moderating Effect of Cognitive Reappraisal on the Relation Between Cyber Victimization and Cyber Aggression for Boys and Girls.*

Predictors	Boys (n = 120)						Girls (n = 130)					
	B	β	*p*	R^2	ΔR^2	*p*	*B*	β	*p*	R^2	ΔR^2	*p*
Model 1				.46	.46	< .001				.45	.45	< .001
(Constant)	4.07						5.31					
Cyber victimization	0.75	.68	< .001				0.65	.67	< .001			
Model 2				.63	.17	< .001				.60	.15	< .001
(Constant)	24.25						18.87					
Cyber victimization	0.42	.38	< .001				0.42	.43	< .001			
Cognitive reappraisal	−0.40	−.51	< .001				−0.24	−.45	< .001			
Model 3				.67	.04	< .001				.68	.07	< .001
(Constant)	2.34						−6.21					
Cyber victimization	1.12	1.00	< .001				1.28	1.33	< .001			
Cognitive reappraisal	0.44	.55	.058				0.61	1.15	< .001			
Cyber victimization × Cognitive reappraisal	−0.03	−.89	< .001				−0.03	−1.39	< .001			

To test for the moderation effect of cognitive reappraisal, we conducted hierarchical regression analysis separately for girls and boys. The results are simultaneously presented in Table 3. Table 3 shows that cognitive reappraisal has been found to be a moderator of the relationship between cyber victimization and cyber aggression for both boys and girls. Following significant interaction effect (cyber victimization x cognitive reappraisal), we plotted the results using ModGraph (Jose, 2013) in Figure 1.

Figure 1. *Graphical Depiction of Cognitive Reappraisal Moderating the Relation Between Cyber Victimization and Cyber Aggression Among Boys (Top Panel) and Girls (Bottom Panel).*

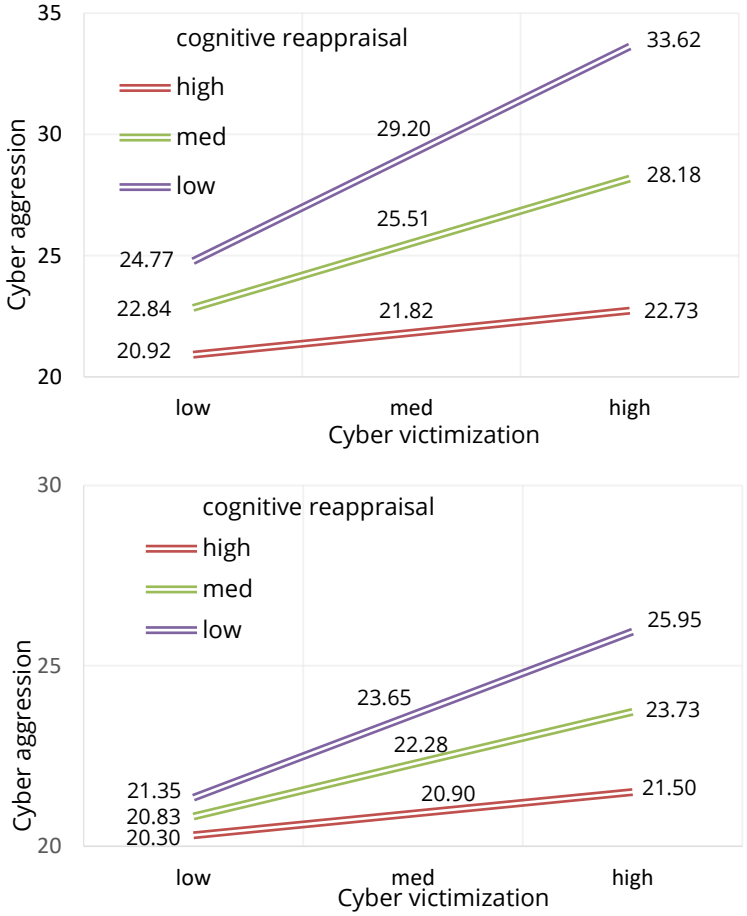


Figure 1 is a classic triangle pattern showing the fan effect (modest spread) on the right side with a positive slope. It shows a dynamic in which the relationship between cyber victimization and cyber aggression was weakest for respondents who reported high levels of cognitive reappraisal and strongest for respondents who reported low levels of cognitive reappraisal.

Simple slope analyses as presented in Table 4 clearly demonstrated that all three lines were significantly different from zero with increasing regression weights for high, medium, and low cognitive reappraisal for girls (β = .15, p = .033; β = .37, p < .001; β = .58, p < .001). The regression line for high cognitive reappraisal yielded almost a flat slope indicating a weak relationship between cyber victimization and cyber aggression for this group. Further, the fact that all three moderation groups yielded almost identical means for a given point in Figure 1 (in this case at low cyber victimization end) strengthens our argument that moderating variable cognitive reappraisal had its greatest impact on the other end of the continuum, in this case, the high end of cyber victimization. This supports our prediction that cognitive reappraisal served as a buffer weakening the victimization-aggression relationship.

Table 4. *Test of Significance of Simple Slopes of Three Moderation Lines of Cognitive Reappraisal.*

	Boys (n = 120)			Girls (n = 130)		
	High	Medium	Low	High	Medium	Low
Simple slopes	.14	.40	.66	.15	.37	.58
Standard errors	.11	.07	.10	.07	.05	.06
t-values	1.27	5.41	6.85	2.16	7.05	9.58
p-values	0.20	0.00	0.00	0.03	0.00	0.00

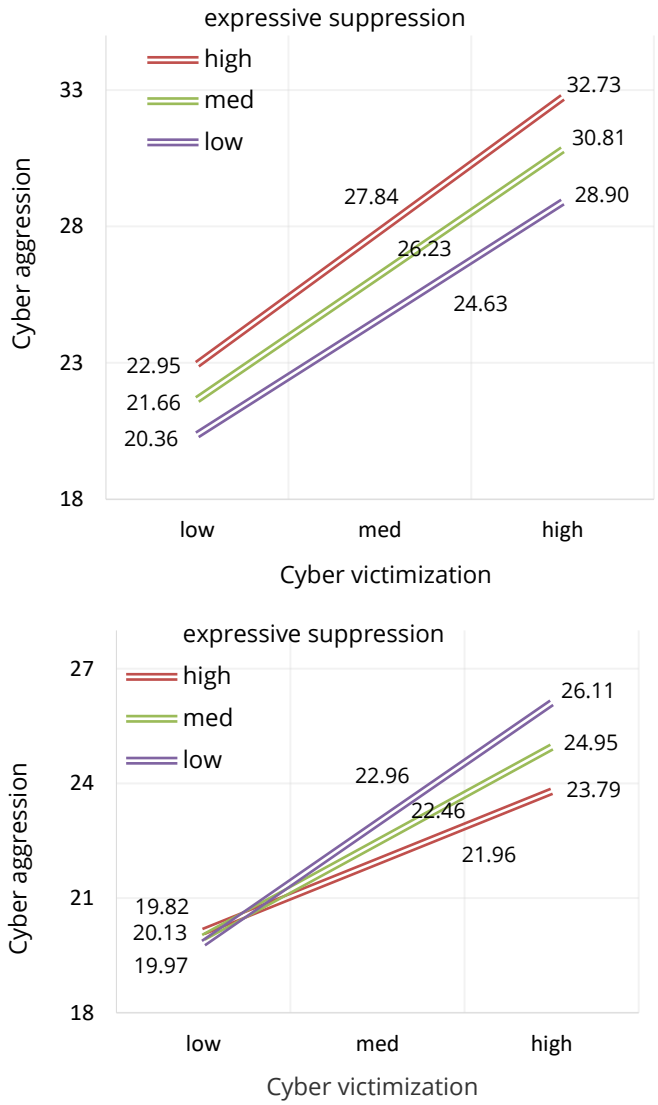
Table 5. *Hierarchical Regression Assessing the Moderating Effect of Expressive Suppression on the Relation Between Cyber Victimization and Cyber Aggression for Boys and Girls.*

Predictors	Boys (n = 120)						Girls (n = 130)					
	B	β	p	R^2	ΔR^2	p	B	β	p	R^2	ΔR^2	p
Model 1				.46	.46	< .001				.45	.45	< .001
(Constant)	4.07						5.32					
Cyber victimization	0.75	.68	< .001				0.65	.67	< .001			
Model 2				.50	.04	.002				.46	.01	.132
(Constant)	−0.29						7.15					
Cyber victimization	0.70	.63	< .001				0.63	.65	< .001			
Expressive suppression	0.34	.21	.002				−0.08	−.10	.132			
Model 3				.50	.002	.543				.49	.03	.010
(Constant)	5.03						−7.73					
Cyber victimization	0.51	.45	.119				1.19	1.24	< .001			
Expressive suppression	0.05	.03	.924				0.83	1.03	.019			
Cyber victimization × Expressive suppression	0.01	.28	.543				−0.04	−1.18	.010			

The similar pattern was observed for boys where lines for medium and low groups were significantly different from zero with increasing regression weights for high, medium, and low cognitive reappraisal (β = .14, p = .205; β = .40, p = .000; β = .66, p < .001). The regression line for high cognitive reappraisal yielded a flat slope indicating no relationship between cyber victimization and cyber aggression for this particular group. Further, the fact that all three moderation groups yielded almost identical means for the low end of cyber victimization (see Figure 1) strengthened our argument that cognitive reappraisal had its greatest impact on the high end of cyber victimization.

To test for the moderation effect of expressive suppression, we conducted hierarchical regression analysis separately for girls and boys. The results are presented in Table 5. We found a completely different picture for boys and girls. Table 5 shows that expressive suppression did not moderate the relationship between cyber victimization and cyber aggression for boys but did for girls. We plotted the results using ModGraph (Jose, 2013) in Figure 2.

Figure 2. *Graphical Depiction of Expressive Suppression Moderating the Relation Between Cyber Victimization and Cyber Aggression Among Boys (Top Panel) and Girls (Bottom Panel).*



In Figure 2, different patterns are noticeable for boys and girls that indicate two different types of relationships between cyber victimization and cyber aggression. In the top panel, there is a very positive slope to the lines, which reflects the significant main effect of cyber victimization on cyber aggression. Also, there is a moderate spread or separation of the lines, which signifies the main effect of expressive suppression on cyber aggression. However, the lines are essentially parallel, which indicates a non-significant interaction. It means the relationship between cyber victimization and cyber aggression did not differ by different levels of expressive suppression for boys. In the bottom panel of Figure 2, three non-parallel lines converged on a single point showing a dynamic in which the relationship between cyber victimization and cyber aggression was weakest for respondents who reported high levels of expressive suppression and strongest for respondents who reported low levels of expressive suppression.

Table 6. *Test of Significance of Simple Slopes of Three Moderation Lines of Expressive Suppression for Boys and Girls.*

	Boys (n = 120)			Girls (n = 130)		
	High	Medium	Low	High	Medium	Low
Simple slopes	.73	.68	.64	.46	.63	.79
Standard errors	.10	.07	.11	.09	.06	.09
t-values	7.33	9.42	5.54	5.21	9.84	8.81
p-values	0.00	0.00	0.00	0.00	0.00	0.00

In Table 6, simple slope analyses showed that all three lines significantly differ from zero with progressive regression weights for high, medium, and low expressive suppression for girls (β = .46, p < .001; β = .63, p < .001;

β = .79, $p < .001$). Further, the fact that all three moderation groups yielded almost identical means (close to 20.00) for the low end of cyber victimization (see Figure 2) strengthened our argument that expressive suppression had its greatest impact on the high end of cyber victimization.

Computation of the simple slopes for boys demonstrated almost identical regression coefficients in case of low, medium, and high moderation groups (β = .64, $p < .001$; β = .68, $p < .001$; β = .73, $p < .001$). This simply signifies that correlation between cyber victimization and cyber aggression did not significantly vary with levels of expressive suppression.

It is evident that both cognitive reappraisal and expressive suppression had moderating effects on the relationship between cyber victimization and cyber aggression for girls. It is further observed that cognitive reappraisal had a greater impact than expressive suppression on the relation between cyber victimization and cyber aggression for girls. Please see Tables 5 and 6 where simple slopes for all three lines were flatter for cognitive reappraisal than for expressive suppression. However, the picture was partly different for boys where cognitive reappraisal only (but not expressive suppression) came to play a significant moderating role in the relationship. Furthermore, cognitive reappraisal had a slightly better moderating effect for boys than girls since no significant relationship for the high cognitive reappraisal group was observed between cyber victimization and cyber aggression in the case of boys. These findings will be interpreted in greater detail in the discussion.

Discussion

The present study examined whether the association between cyber victimization and cyber aggression among high school students is influenced by their degree of emotion regulation in terms of cognitive reappraisal and expressive suppression strategy. To attain that goal, data were collected from 250 high school students using self-report questionnaires. Before the main analysis, we conducted a preliminary analysis that showed significant gender differences in all the major variables under investigation (i.e., cyber victimization, cyber aggression, and emotion regulation). So, subsequent analyses were performed separately on boys and girls.

The independent sample *t*-test indicated that boys were more victimized and more engaged in aggressive activities in cyberspace than their counterparts. According to stereotyped gender trends, cyber aggression has been seen as a more concealed emotional strategy that has been more related to girls (Marcum et al., 2012; Slonje & Smith, 2008). On the contrary, boys would continue using direct forms of aggression, which are more visible than those employed by girls. Some studies have even demonstrated that boys employ more indirect aggression than girls. Specifically, the transcultural study by Artz et al. (2013), conducted with 5,789 adolescents from six countries found that more boys (46.8 %) than girls (31.7 %) employed indirect aggression with peers. As the study concluded, this result was not in harmony with generalized beliefs that indirect aggression was more of an issue among girls than it was for boys. Our findings confirmed previous research showing that boys were more likely to engage in aggressive activity in cyberspace (Sullivan & Stoner, 2012).

Cyber victimization and cyber aggression in the present study were observed to have positively correlated with each other for both boys and girls which supports our hypothesis regarding the relationship between cyber victimization and cyber aggression. There is also ample evidence showing the positive association between cyber victimization and cyber aggression (Lozano-Blasco et al., 2020). Emotion regulation within peer relationships is often required to deal with negative emotions like unhappiness, fear, and anger effectively. Individuals unable to do so may engage in externalizing behavior like aggression in an attempt to repair, dismiss or avoid their internal distress. According to Baroncelli and Ciucci (2014), cyber aggressors perceive themselves as less able than their non-aggressive peers in using emotions and regulating them. Thus, engagement in aggression in cyberspace might be explained by the self-perception about their failure in regulating emotions. Intervention programs should be designed with the awareness that the self-perception about adolescents' failure in regulating emotions might result in cyber aggression so that adolescents may choose the best ways to deal with their emotions like anger and frustration. These programs may focus on teaching cyber victims appropriate ways to alleviate their negative feelings. Such a strategy may help to decrease cyber aggression among these adolescents.

We further found that boys use expressive suppression more than girls do and girls use reappraisal more than boys do as a strategy for regulating their emotions. Gross and John (2003) also found that males scored significantly higher than females in suppression scales of the Emotion Regulation Questionnaire (ERQ). Earlier studies also found males to be emotionally less expressive in daily communication and use more emotion-expressive suppression than females (Chaplin & Aldao, 2013; Parkins, 2012). For example, females cry more often

than males (Ross & Mirowsky, 1984). Matud (2004) has observed that females used more emotional and avoidance coping styles, whereas males adopted more rational coping and emotional-expressive suppression which is in line with our current findings.

As our study indicated, expressive suppression is positively correlated with both cyber victimization and aggression for boys, but, it failed to play a moderating role in the relationship. That is, the correlation between cyber victimization and cyber aggression did not significantly vary with levels of expressive suppression for boys which can be taken to suggest that suppression is not an effective way of eliminating negative emotion for boys. The findings also provided evidence for a negative association between cyber aggression and cyber victimization and confirmed the moderating role of expressive suppression for the relationship between cyber victimization and cyber aggression for girls. Our moderation graph depicts the relationship more clearly where one can notice that the relationship between cyber victimization and cyber aggression was weakest for those who had high levels of expressive suppression and strongest for those who had low levels of expressive suppression. The observed moderating effect of expressive suppression on the relation between cyber victimization and cyber aggression among girls may mean that girls who use expressive suppression strategy to regulate their unpleasant emotions resulting from cyber victimization are more likely to be less aggressive in cyberspace. This finding is particularly in line with the notion that the ability to suppress negative emotion reflects the internalization of a cultural norm that discourages behaviors offending another's feelings (Matsumoto & Juang, 2013; Nam et al., 2018).

In the present study, cognitive reappraisal has been found to be a moderator of the relationship between cyber victimization and cyber aggression for both boys and girls. Respondents reporting high levels of cognitive reappraisal displayed the weakest relationship between cyber victimization and cyber aggression. This result suggests that cognitive reappraisal possibly served as a buffer for weakening the victimization-aggression relationship for boys and girls. This could be attributed to the fact that cognitive reappraisal might act as a potentially effective technique to reduce individuals' engagement in aggressive behavior (Denson, 2015).

In light of the previous research findings, cyber victimization may be considered a source of strain, provoking feelings of frustration and rage (Wright & Li, 2013). The consequence of these highly depends on the emotion regulation strategy used by the victim to deal with their feelings of rage and frustration. Our findings are consistent with the assertion that, while suppression could be of practical utility in certain situations, it might not alleviate negative emotions in the way that reappraisal does (Gross & John, 2003; Ortner et al., 2013). Individuals who use suppression at higher levels may experience a greater amount of negative emotions and get engaged in cyber aggression unless they use another adaptive emotion regulation strategy like reappraisal. Higher levels of suppression with higher levels of reappraisal can be a potentially effective emotion regulation process while higher levels of suppression without reappraisal may not.

Suppression of emotions may be protective in some cases like managing high-intensity emotions or in coping with traumatic events like cyber victimization for girls as we found in our study. But, suppression in the long-term may be unhealthy without other emotion regulation strategies (e.g., cognitive reappraisal). Previous studies suggest that the chronic use of suppression should be associated with more adverse outcomes like feeling more negative emotion, coping less effectively, ruminating more, and getting less social support, all the factors known to increase the risk for depressive symptoms (Cameron & Overall, 2018). We, therefore, expect suppression to be related to increased levels of aggression and violent behavior. This study demonstrated that cyber victimization and suppression of emotion can be the source of strain leading to higher cyber aggression. Educators and researchers should pay close attention to multiple forms of strain and intervention programs should be designed to address sources of strain as well as to promote the use of effective emotion regulation processes.

Findings from this research suggest areas where school psychologists, counselors, teachers, and parents could become more aware of, and actively involved in the prevention of cyber aggression. Interventions that can develop more adaptive emotion regulation styles might reduce the occurrence of these aggressive behaviors. Preventive strategies focusing on cognitive processes such as slowing down reactions, as well as teaching effective problem solving and conflict resolution skills would be essential in preventing cyber aggression. Researchers and school practitioners should plan both prevention and intervention programs paying particular attention to gender differences.

Even though our study contributes to the growing literature on adolescents' motivations for engaging in cyber aggression, we acknowledge that other factors may influence aggressive behaviors in the digital environment. While many adolescents in our country have access to such technologies at home, school, and the library, there

still is a large percentage that does not. Follow-up research may be carried out to explore whether access to technology has a role in the relationships observed in the present study.

Several limitations of this study require attention. Firstly, the nature of the study does not allow for causal inferences (i.e., cross-sectional design) regarding cyber aggression, for which an experimental or/and longitudinal design would have rather been more appropriate. Further, the data were provided by adolescent participants and the constructs were assessed using self-report indicators, thus increasing the risk of socially desirable responses. Although adolescents themselves seem to have more direct knowledge of their behavior than do their parents, teachers, and peers, future research should gather information from other sources (e.g., peer reports) for a more objective outcome. Lastly, as the present sampling design was purposive-convenience, future studies must replicate this with a large sample to explore important socio-demographic variables and other psychological characteristics that might contribute to the current findings. Further research should be conducted to explain the inter-correlations among the factors more rigorously.

Acknowledgement

This work has been supported by the National Science and Technology (NST) Fellowship awarded to the second author by the Ministry of Science and Technology, Government of the People's Republic of Bangladesh.

Conflict of Interest

The Authors declare that there is no conflict of interest.

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About Authors

Muhammad Kamal Uddin is Professor and Chairman of the Department of Psychology at the University of Dhaka, Bangladesh. He earned PhD degree in Psychology from Kyushu University, Fukuoka, Japan in 2006 receiving prestigious Monbuso Scholarship of the Japan Government. Dr. Kamal's current research focuses on cyber psychology, internet and facebook addiction, school psychology, psychometrics, child and family studies and so on. To his credit, Dr. Kamal has 81 research articles including a chapter in the book *Advances in Cognitive Science* published by Sage, India. Kamal has visited 20 countries and presented his research findings at conferences, seminars, symposiums, workshops, and training held in Greece, Italy, Turkey, Spain, Switzerland, India, China, and Japan. Dr. Kamal is General Secretary of the Bangladesh Foundation for Human Resource Development and Management. He is the founding President of the Bangladesh School Psychology Society (BSPS) and the Bangladesh Psychometric Society (BPS). Dr. Kamal is an enlisted lyric writer of Bangladesh Television.

Jakia Rahman is a young and committed Lecturer in the Department of Psychology at the University of Dhaka, Bangladesh. She has obtained MS (Thesis) degree in School Psychology and BS (Honors) degree in Psychology from the Department of Psychology at the University of Dhaka. Till date, she has published 4 research articles in peer-reviewed academic journals. She has been supervising theses for Masters and Bachelor Degrees. Apart from her regular activities in teaching and research she is involved with many outreach programs such as facilitating training and workshops in the field of Psychology and Education. Ms. Jakia is member of national and international learned bodies and societies. She is the Secretary of the Bangladesh School Psychology Society (BSPS).

✉ **Correspondence to**
Muhammad Kamal Uddin, Professor and Chairman, Department of Psychology, University of Dhaka, Dhaka 1000, Bangladesh. mu_psy@du.ac.bd