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Cyberbullying victimization and depression: self-esteem as a mediator and approach coping strategies as moderators

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ABSTRACT

Objective: The percentage of victims of cyberbullying among college students seems to increase. However, research on the mechanisms by which cyberbullying victimization (CV) suffer from depression is scarce. This study has purpose to figure out the mediating role of self-esteem (SE) as well as the moderating role of approach coping strategies in the association between CV and depression among Vietnamese college students. **Methods:** A total of 606 Vietnamese university students completed the Self-Esteem Scale, The Self-Report Coping Scale, The cyberbullying victimization scale, DASS 21. **Results:** The results indicated that SE partially mediated the relation between CV and depression among Vietnamese college students as well as approach coping strategies moderated the involvement between CV and depression among Vietnamese college students. **Conclusions:** Our findings can help psychological service providers identify the methods by which cyberbullying sufferers related to depression and provide interventions to reduce depression for cyberbullying victims.

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Introduction

Cyberbullying has become a concern for psychologists and educators in recent years. So far, there has not been a consistent definition of cyberbullying and the definition of cyberbullying has changed in various studies.¹ Based on the definition of Tokunaga,² we have determined that cyberbullying is the act of posting news or comments, videos, photos that include annoyance or threatening contents to ridicule or humiliate others to cause shamefaced, frightened feeling or psychological injury through technology equipment and social networks. Victims of cyberbullying are not only middle and high school students, but also college students. According to statistics, the proportion of victims of cyberbullying among college students is on the rise. Studies reported prevalence of cyberbullying victimization (CV) among college students vary greatly, ranging from 24.1%³ to 94.9%.⁴ Notably, in a recent study of cyberbullying, Myanmar, Khine et al.⁵ reported that 40.8% of male and 51.1% of female college students were victims of cyberbullying. According to Selkie et al.⁶, research on cyberbullying in college students is important because this stage of older adolescence can form habits that can persist into young adulthood. Moreover, cyberbullying was significantly linked to academic;^{7,8} symptoms of depression (DE)^{6,9,10} and suicidal ideation⁸ among college students. Thus, exploring the factors that can contribute to increase or decrease the negative consequences of cyberbullying among college students is of

great theoretical and practical significance. However, there is little understanding of cyberbullying and its negative impact on Vietnamese college students. Therefore, the aim of this study is to find out whether CV can significantly predict DE symptoms in Vietnamese college students and expand previous studies by investigating the moderating and mediating mechanisms in this relation.

The association between CV and DE

DE is known as one of the negative consequences of cyberbullying. According to Schäfer et al.¹¹, depressive symptoms associated with depressed, desolate or irritable feeling accompanying cognitive and somatic metamorphosis which effect on the individual's functioning. DE is an ordinary mental health issue among youth¹² and college students are at high possibility of DE.¹³ However, less is known about whether and how CV rises the possibility of college students' DE. Regarding the relation between CV and DE, previous research has reported that CV tends to develop depressive symptoms among younger adolescents.^{14–17} Similar results were found in the sample of American, European college students^{18,19} and Vietnamese college students.¹⁰ This demonstrates that despite cultural differences between countries, victims of cyberbullying tend to suffer from DE. There is research explaining that suffering CV is considered negative peer assessment or social exclusion, which leads to a

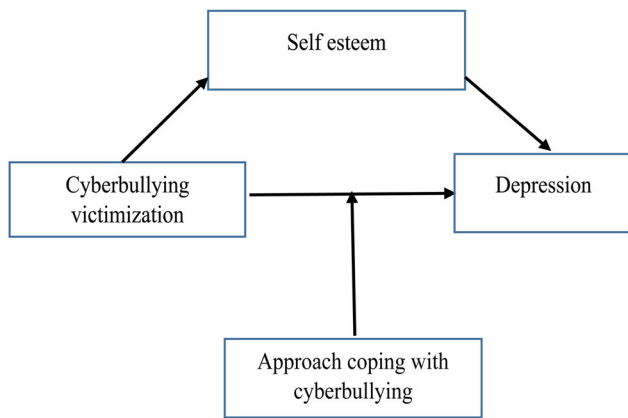


Figure 1. Hypothetical model.

negative self-evaluation and psychological issues (low self-esteem (SE), stress, anxiety and DE) of victims.²⁰ According to Mustaffa et al.,²¹ the rise in DE leads to an increase in suicidal ideation in college students.

SE as a mediator

According to Rosenberg²², SE refers to an individual's favorable or unfavorable attitude toward themselves. Various studies have demonstrated that SE was associated with victims of cyberbullying and DE. Previous studies reported that cyberbullying leads to a decline in the victim's SE.^{23–26} Some scholars have explained the association between CV and SE. The relationships and peer acceptance plays an important role in developing a positive sense of self;²⁷ however, becoming a victim of cyberbullying (excluded, harassed, and/or denigrated repeatedly) makes individuals more inclined to withdraw from friends and family,²⁸ experiences higher levels of friend rejection,²⁹ less positive interactions with others, and thus sponsors to an inability to spread a positive sense of self.²⁵ On other hand, there are many researchers are interested in the relationship of SE and DE.^{30–34} Previous researches have indicated that low SE was a cause of DE for individuals. For example, the vulnerability model suggests that individuals with low SE tend to experience higher DE.^{31–34} Longitudinal studies have also supported the vulnerability model that individuals' SE negatively predicts their level of DE.³⁰ According to Mann et al.³⁵, individuals with low SE tend to lead to inappropriate coping behaviors or high-risk behaviors that can increase their DE.

Approach coping strategies as moderators

Folkman and Lazarus³⁶ defined coping as perceptive and behavioral exertions produces to grasp, tolerate, or decrease external and internal requirements and conflicts. Roth and Cohen³⁷ argued that coping strategies includes approach coping strategies and avoidance coping strategies. In this study, strategies for coping with cyberbullying are considered as behaviors that victims fight cyberbullying, minimize the risk of cyberbullying and the negative consequences of CV.³⁸ Approach strategies for coping with cyberbullying

were identified as behaviors that seek to escape cyberbullying situations. Previous studies have also shown that effective coping strategies (approach coping, problem – focused coping) can reduce the risk of DE in individuals.^{39–41} For cyberbullying victims, several researchers have argued that approach coping strategies was related to decreased DE.^{9,42} Approach coping strategies can reduce the risk of DE because these are coping strategies that attempt to solve the problem, so the individuals are more likely to feel good about themselves,⁴³ thereby reducing negative self-assessment, increasing confidence, and reducing the risk of DE. Some approach coping strategies (e.g. seeking support strategy, assertiveness strategy) are considered to be a useful solution for stopping cyberbullying and they also contribute significantly to emotional coping.⁴⁴

Expanding the existing theories about the association between CV and DE, Machmutow et al.⁴² explored the moderating mechanism of this association. They reported that some approach coping strategies (e.g. seeking support strategy, assertiveness strategy) moderated the involvement between CV and DE. In particular, students who more frequently used seeking support strategy expressed lower degrees of DE symptoms. According to the buffering hypothesis of social support, support from peers and family may decrease the negative effects of stress (DE symptoms.)⁴² Therefore, becoming CV can be considered stressful situation⁴⁵ and the effective coping strategies (approach coping, problem – focused coping) can protect individuals from the harmful effects of stress (as CV.)⁴⁶

Many reports have explored the mediating role of social support,¹⁰ mental insecurity,⁴⁷ parental mediation strategies and hopelessness,^{45,48} as well as the moderating role of social support,⁴⁷ self-compassion⁴⁵ and family dinners⁴⁹ in the association between CV and DE or mental health among adolescents and college students. However, little is known about the mediating role of SE and the moderating role of approach coping strategies in the association between CV and DE among college students. In Vietnam, a number of studies related to cyberbullying and strategies to deal with cyberbullying have been conducted among middle school students,⁵⁰ high school students.^{51–53} In research context using Vietnamese university students as sample, there is research reporting that social support partially mediated the association between CV and DE;¹⁰ however, no studies have investigated the mediating role of SE and the moderating role of approach coping strategies in the association between CV and DE. This study aims to fill these gaps in the literature.

This study

Based on previous studies, we found that SE and approach coping strategies are related to CV and DE. However, it remains unclear the mediating impact of SE and the moderating impact of approach coping strategies in the association between CV and DE. Therefore, this study studies the mediating role of SE in the association between CV and DE in Vietnamese college students, as well as the moderating role

of approach coping strategies on DE in Vietnamese college students. As shown in Figure 1, we hypothesize as follows:

<DQ> Hypothesis 1: SE would mediate the association between CV and DE in Vietnamese college students (CV would be negatively associated to SE and SE would be negatively associated to DE).

Hypothesis 2: Approach coping strategies would moderate the association between CV and DE in Vietnamese college students.</DQ>

Methods

Sample

Participants including 606 students (462 female students, 144 male students) from three universities in central Vietnam volunteered to join our study. The ages fluctuated from 18 to 25 with the mean age of 21.03 ± 0.899 . The sample included 185 first-year student; 214 second-year students and 207 third-year students. The majority (71.8%) are rural students. Data were collected at the end of second Semester – Academic year 2018–2019. This study has been approved by university leaders and academic advisers. It has also received voluntary consent from all students participating in the study.

Procedure

After calling for help from academic advisers and students, 859 students (606 victims of cyberbullying and 253 non-victims of cyberbullying) volunteered to respond to the questionnaire. To ensure the quality of the data and meticulous instructions for the participants, we divided the participants into 12 small groups. In small groups, students completed a packet of questionnaire that evaluated their SE,³¹ their DE symptoms,⁵⁴ the level of experiencing six different forms of cyberbullying⁵⁵ and the assessed the use of approach strategies to deal with cyberbullying.⁵⁶ After completing the scales, the participants received a gift from the researcher (a notebook and a pen with the value of 10,000 VND). For research purposes, we only used data from 606 students who were victims of cyberbullying.

Measures

Rosenberg self-esteem scale (1965) – RSES

This is a self-reporting scale, consisting of 10 statements (e.g. “I wish I could have more respect for myself”) showing common feelings about self-acceptance or self-worth, using a 4-point Likert scale from 0 to 3 (strongly agree–strongly disagree). Five of the statements will be scored in reversed directions. The scores fluctuate between 0 (lowest SE) and 30 (highest SE). The Cronbach’s α coefficients for the English version was 0.78 [57] and for the Vietnamese version was 0.77.³¹ In this study, the Cronbach’s α coefficients for the sample of Vietnamese college students is 0.79.

The self-report coping scale (SRCS)

We used the SRCS of Kochenderfer-Ladd and Skinner⁵⁶ to evaluate strategies for coping with cyberbullying. The original version of SRCS includes 22 items. The Vietnamese version only has 21 items. In particular, approach coping strategies include two subscales: problem solving (five items, e.g. “Different ways have been considered to solve problem”); looking for social support (five items, e.g. “Friend or family member was told about what happened”); avoidance coping strategies include three subscales: cognitive distance (four items, e.g. “I made believe nothing happened”); internalization (four items, e.g. “, I worried about it”) and externalization (three items, e.g. “I swore out loud”). Items are calculated on a five-point Likert scale varying from never (score 0) to always (score 4). The scores for each subscale range from 0 to 4, with higher scores reflecting more regular use of the particular coping strategy. However, in this study we used only 10 items of the approach coping strategies. For the English version, the Cronbach’s alpha reliability coefficient for dealing with problem, looking for communal support were 0.80 and 0.87, respectively.⁹ For this study, the Cronbach’s alpha for looking for social support and problem solving are 0.859 and 0.857, respectively. The structural regression model fit is acceptable $X^2/df = 3.615 (\leq 5)$, $CFI = 0.910$, $GFI = 0.903 (> 0.90)$, and the $RMSEA = 0.066 (\leq 0.08)$.

The cyberbullying victimization scale (CVS)

This is a self-reporting scale, consisting of nine items showing nine forms of cyberbullying.⁵⁸ After being reformed by Pham and Tran,⁵⁵ the Vietnamese version of CVS has only six items to measure the degree to which victims have experienced 6 different types of cyberbullying in the previous 30 days (e.g. “rumors about me have been spread online or by phone”). The CVS are measured according to Likert scale ranging from 1 to 5 (with an increase frequency). The theoretical values fluctuate between 6 and 30. For specific groups of cyberbullying sufferers, the higher the score, the more frequent of experience. The Cronbach’s alpha for English version ranges from 0.74 to 0.93.⁵⁸ It is acceptable in term of Cronbach’s alpha in Vietnam high school students sample.⁵⁵ The Cronbach’s alpha for the sample of Vietnamese college students in this study is 0.60; Model fit indices is acceptable $X^2/df = 3.606 (\leq 5)$, $CFI = 0.939$, $NFI = 0.919$, $GFI = 0.982 (> 0.90)$, $RMSEA = 0.066 (\leq 0.08)$.

Depression, anxiety and stress scales 21

DASS 21 is a set of three self-report scales used to measure DE, anxiety as well as stress with each scale consisting of seven items. DASS 21 uses a four-point Likert scale from 0 (did not apply to me at all) to 3 (applied to me very much), depending on the level of application with the statements over the past week. However, in this study, we used only seven items (e.g. “I found it is difficult to do things actively”) of the DE scale to measure the depressive symptoms of Vietnamese college students. DE score is the total score of seven items then multiplied by 2. DE scores vary from 0 to 42, with scores 21 and above indicating severe DE. The

Table 1. Descriptive statistics and correlations between variables.

	Mean	SD	1	2	3	4
1	3.32	2.82	1			
2	1.469	0.782	0.307**	1		
3	17.724	3.955	-0.091**	0.038	1	
4	8.670	6.635	0.162**	0.014	-0.308**	1

Note: 1, Cyberbullying victimization; 2, Approach coping strategies; 3, Self-esteem; 4, Depression. *Correlation is significant at the 0.05 level (two-tailed). **Correlation is significant at the 0.01 level (two-tailed). M, Mean; SD, Standard deviation.

Table 2. Model fit statistics.

	χ^2/df	GFI	NFI	CFI	AGFI	RMSEA
Reference standard	<5	>0.85	>0.80	>0.80	>0.80	<0.08
Mediation model	3.253	0.900	0.849	0.889	0.876	0.061

Cronbach's alpha coefficient for the sample of Vietnamese medical students was 0.81.⁵⁴ In our study, the Cronbach's alpha value for the sample of Vietnamese college students is 0.797.

Statistics

SPSS version 20 is used to conduct statistics. Specifically, Pearson's correlation is used to analyze the correlation between variables. The mediation analysis (model 4) and moderation analysis (model 1) through PROCESS procedures for SPSS Version 3.3.⁵⁹ For mediation analysis, the CV is the independent variable (X), DE is the dependent variable (Y), SE is the mediator variable (M), gender and age are control variables. For moderation analysis, the CV is the independent variable (X), DE is the dependent variable (Y), approach coping is the moderator variable (W), gender, school and age are control variables.

Results

Descriptive and correlational analyses

Table 1 indicates the means, standard deviations and correlations between CV, SE, DE and approach coping strategies of Vietnamese college students. As expected CV was positively correlated with DE ($r = 0.162$, $p < 0.01$) and approach coping strategies ($r = 0.307$, $p < 0.01$), but negatively correlated with SE ($r = -0.091$, $p < 0.05$). SE was negatively correlated with DE ($r = -0.308$, $p < 0.01$). Approach coping strategies was not significantly correlated with SE ($r = 0.038$, $p > 0.05$) and DE ($r = 0.014$, $p > 0.05$).

Mediation analyses

According to Table 2, the mediation model showed acceptable fit statistics: $\chi^2/df = 3.253$, $GFI = 0.900$, $NFI = 0.849$, $CFI = 0.889$, $AGFI = 0.876$ and $RMSEA = 0.061$.

According to regression results in Table 3, CV negatively predicted SE $\beta = -0.127$, $se = 0.057$, $p < 0.05$ as well as SE negatively predicted DE $\beta = -0.496$, $se = 0.065$, $p < 0.001$. CV positively predicted DE $\beta = 0.317$, $se = 0.091$, $p < 0.001$, $CI = [0.140, 0.495]$. The indirect effect was significant,

Table 3. The direct and indirect effects cyberbullying victimization on depression and 95% confidence intervals.

Model 1	Direct effect	β (se)	95% CI
	CV-SE	-0.127* (0.057)	[-0.238, -0.015]
	SE-DE	-0.496*** (0.065)	[-0.622, -0.369]
	CV-DE	0.317*** (0.091)	[0.140, 0.495]
	Indirect effect	β (se)	95% CI
	CV-SE-DE	0.063 (0.033)	[0.005, 0.136]

Note: CV: Cyberbullying victimization; SE, self-esteem; DE, Depression. *Correlation is significant at the 0.05 level (two-tailed). ***Correlation is significant at the 0.001 level (two-tailed).

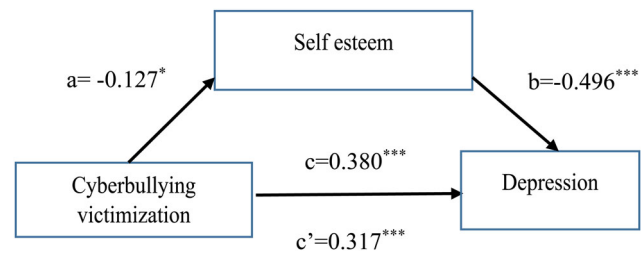


Figure 2. Mediation model of the indirect effect of cyberbullying victimization on the depression through self-esteem. For the cyberbullying victimization – depression pathway, the c values represent the total effect and the c' values represent the direct effect.

$b = 0.063$, $se = 0.033$, $CI = [0.005, 0.136]$. These results indicated that SE partially mediated the association between CV and DE (Figure 2).

Moderation analyses

Table 4 indicated that approach coping strategies significantly moderated the relationship between CV and DE $\beta = -0.337$, $se = 0.108$, $p < 0.01$, $CI = [-0.548, -0.126]$. As shown in Figure 3, Vietnamese college students with higher levels of CV reported higher levels of DE. This relation is more powerful when college students use low approach coping strategies $\beta = 0.836$, $se = 0.164$, $t = 5.076$, $p < 0.001$, $CI = [0.513, 1.160]$ and this association is weaker when college students use high approach coping strategies $\beta = 0.309$, $se = 0.106$, $t = 2.905$, $p < 0.01$, $CI = [0.100, 0.519]$. These results suggest that higher levels of approach coping strategies buffer the effects of CV on DE among Vietnamese college students.

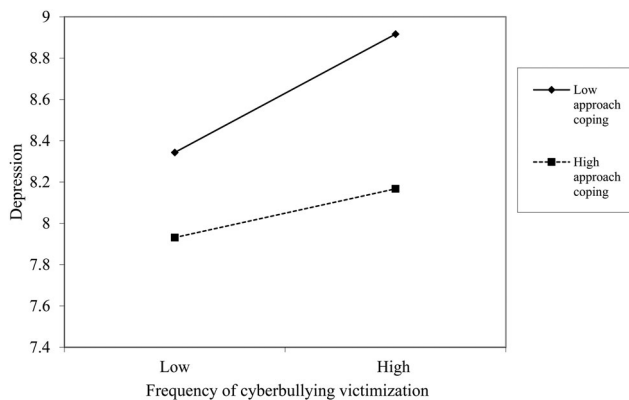
Discussion

This study investigated the mediating role of self-esteem on the association between CV and DE among Vietnamese college students. As expected, the higher the frequency of cyberbullying, the lower the SE of cyberbullied Vietnamese college students. This result is consistent with the previous findings.^{60–62} According to Patchin and Hinduja⁵⁸, non-victim has higher SE compare to cyberbullied ones. At the same time, as SE decreased, the level of DE increased among Vietnamese college students who were cyberbullied. This result is consistent with previous findings.^{9,45,63,64} CV often feel insecure, which has increased their risk of DE.⁴⁷ In line with the Hypothesis 1, we have found that SE partially

Table 4. Regressions testing approach coping strategies as a moderator in the relationship between cyberbullying victimization and depression in Vietnamese students.

Regression models	β	se	T value	95% CI	R ²	F value
CV	0.573	0.110	5.194***	[0.356, 0.789]	0.050	5.295***
AC	-0.412	0.359	-1.150	[-1.117, 0.292]		
CV* AC	-0.337	0.108	-3.131**	[-0.548, -0.126]		
Gender	1.139	0.631	1.807	[-0.099, 2.378]		
School	-0.247	0.279	-0.884	[-0.795, 0.302]		
Age	-0.045	0.296	-0.153	[-0.626, 0.5355]		
Conditional effects	AC value	Effect	se	p	LLCI	ULCI
	Low AC	0.836	0.164	0.000	0.513	1.160
	High AC	0.309	0.106	0.003	0.100	0.519

Note: AC, Approach coping strategies; CV, Cyberbullying victimization. *Correlation is significant at the 0.05 level (two-tailed). ***Correlation is significant at the 0.001 level (two-tailed). LL, lower limit; CI, confidence interval; UL, upper limit.

**Figure 3.** Approach coping with cyberbullying as moderator of the relation between cyberbullying victimization and depression.

mediated the association between CV and DE among Vietnamese college students. Some of the possible explanations for this result is that cyberbullying has negatively affected a victim's SE (negative self-assessments). Afterwards, victims with low SE often feel bad or incompetent and see the bad in things/people, which increases their risk of DE⁶⁵ or victims with low SE may develop inappropriate coping behaviors or high-risk behaviors that increase their risk of DE.³⁵

This study investigated the moderating effect of approach coping strategies on the association between CV and DE among Vietnamese college students. Consistent with hypothesis 2 and the finding of Machmutow et al.,¹⁷ we found that approach coping strategies moderated the association between CV and DE among Vietnamese college students. This finding shows that the positive association between CV and DE among Vietnamese college students depends on student's approach coping strategies. This association was stronger for students with low use of approach coping strategies and weaker for students with high use of approach coping strategies (Table 4). Prior studies have shown that cyberbullying victims were linked to high levels of DE.^{9,18,66} Consistent with previous findings, our study indicated that as frequency of CV increased, the level of DE of cyberbullying victims also increased. In addition, previous studies have reported that approach coping strategies/problem-focused coping can reduce the risk of DE in students, hence greater use of approach coping strategies was associated with decreased DE and lower use of approach coping strategies

was associated with increased DE in adolescents and students.^{40,41} Therefore, Vietnamese college students with high risk of cyberbullying and low use of approach coping strategies have the highest risk of DE; while students with low risk of cyberbullying and high use of approach coping strategies have the lowest risk of DE (see Figure 3). This finding confirms that approach coping strategies can reduce the risk of DE among Vietnamese college students who have high risk of cyberbullying. It can also be said that approach coping strategies as a factor protects cyberbullying victims from the risk of DE.

Previous studies reported that the mediating effect of hopelessness⁴⁵ and psychological insecurity,⁴⁷ social support¹⁰ and moderating effect of communal support and self-compassion;^{45,47} in the association between CV and DE. This study has revealed that SE partially mediated the relation between CV and DE and approach coping strategies significantly moderated the relation between CV and DE. Therefore, this study may contribute to previous theories in term of mediating and moderating measures related to developmental process of DE in adolescents and college students who were cyberbullied. The study also suggests the need to pay attention to the mechanism by which CV is involved in DE. These findings have important implications in developing DE prevention intervention strategies for victims of cyberbullying among college students. From the above findings, we recommend that intervention programs aiming at reducing the DE of cyberbullying victims among college students should focus on providing college students with skills to use approach coping strategies and increasing their SE. Specific interventions include: First, raising awareness and focusing on education about cyberbullying and coping strategy with cyberbullying. To implement this measure, researchers or educators can organize short seminars to analyze different coping strategies, identify strategies that can be effective in dealing with cyberbullying and how to use those effective coping strategies. Previous studies have determined that seeking social support and technology solutions are effective in preventing cyberbullying and reducing the negative consequences of cyberbullying. Thus, Internet safety training sessions can be conducted to know how college students use technology, the risks involved and how to protect them from becoming cyberbullying victims. At the same time, encouraging students to communicate, discuss and negotiate with others to improve their social and

communication skills and encouraging behaviors to seek help from others to solve problems. Second, improving and enhancing the SE of Vietnamese college students is essential. To improve and enhance the SE of Vietnamese students, we offer the following recommendations: (i) Students need to be proactive and active in the prevention of cyberbullying; (ii) When being cyberbullied, increase the use of positive coping strategies, bravely face and solve problems, and limit the use of negative coping strategies; (iii) improve the quality of support from family, friends and other special people such as teachers, relatives or lovers. Support, recognition, help and love from others help students appreciate their self-worth, and help improve and enhance their SE.

However, this is a cross-sectional study, it has limitations such as the use of intentional sampling techniques, the use of self-reporting methods, susceptible to biases (interviewer bias, recall bias and social acceptability bias) and unable to analyze behavior for a period of time etc. Therefore, a longitudinal study is needed to overcome these limitations. The sample of the study is mainly students from universities in central Vietnam so caution should be used when generalizing findings. Therefore, future studies are needed to investigate the association between CV, coping strategies and DE among college students from other areas of Vietnam. Finally, several studies have reported that those students who have experienced cyberbullying as both bully/victims and bullies were related to DE.^{18,67,68} Therefore, future studies need to investigate the mechanisms that students have experienced cyberbullying (as bullies and as bullies-victims) related to DE. Despite the limitations, this study may help psychological service providers identify the methods by which cyberbullying sufferers related to DE and provide interventions to reduce DE for cyberbullying victims.

Conflict of interest disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements of Vietnam and received approval from the Central China Normal University, China.

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