



Coping strategies and depression among cyberbullying victims in Vietnam: Self-esteem as a moderator

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ABSTRACT

Coping strategies were associated with depression symptoms among cyberbullying victims. However, little is known about the moderating role of self-esteem in the association between coping strategies and depression symptoms among cyberbullying victims. Our study sought to determine whether self-esteem moderated the association between coping strategies and depression symptoms of cyberbullying victims among Vietnamese undergraduate students. A sample of 606 Vietnamese undergraduate students completed a questionnaire about strategies for dealing with cyberbullying, self-esteem and depression. The results showed that self-esteem moderated the association between problem solving strategy and depression symptoms $B = -0.237$, $se = 0.067$, $CI = [-0.369, -0.105]$, between internalization strategy and depression symptoms of cyberbullying victims among Vietnamese undergraduate students $B = -0.176$, $se = 0.066$, $CI = [-0.305, -0.047]$. Our research has contributed to clarify the moderation mechanism of self-esteem in the association between coping strategies with cyberbullying and depression in victims.

1. Introduction

Depression is considered as a common type of mental disorder, depressed individuals often exhibit symptoms such as loss of interest or pleasure, depressed mood, decreased energy, guilt or low self-worth, disturbed sleep or appetite and poor concentration [1]. The proportion of undergraduate students with depression is significantly higher than the general population [2]. According to Saleem et al., [3]; nearly 90% of university students are cyberbullied. Martínez-Monteaugado et al. [4], reported that about 68.1% of cyberbullying victims (CBVs) among undergraduate students exhibited high levels of depression. In Vietnam, Ly and Vo reported that 96.2% of undergraduate students in the South of Vietnam experienced symptoms of depression, anxiety and stress [5]; meanwhile, another study reported that 52.3% of Vietnamese undergraduate students had mild to moderate depression and 24.2% of students had severe depression [6]. However, little is known about

depression symptoms of victims of cyberbullying (CB) among Vietnamese undergraduate students. Meanwhile, many studies have proven that victims of CB have a high risk of depression [7,8].

According to Folkman & Lazarus [9]; coping strategies are defined as specific behavioral and psychological efforts, which individuals use to manage, reduce, minimize or tolerate stressful events. Coping strategies can be divided into problem-focused coping and emotional-focused coping [9]. It can also be divided into approach coping and avoidance coping [10] or passive coping and aggressive coping [11]. For victims of CB, several coping strategies have been listed such as retaliation, seeking support, coping by avoidance/ignoring, technological coping, and confronting [12,13]. In our study, strategies for coping with CB have been identified as the psychological and behavioral effort that CBVs use to reduce CB and its negative consequences. Avoidance coping strategies are identified as victims' efforts to evade CB situations, including externalization, internalization and cognitive distance; while approach

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coping strategies are identified as victims' efforts to change CB situations, including seeking social support and problem-solving strategies. There are many studies on strategies for coping with CB that have been conducted among adolescents [12,14–17]; however, there are very few studies on strategies for coping with CB among undergraduate students. In Vietnam, only one study on coping with CB have been conducted on high school students [18] and none of research has been conducted on CBVs among undergraduate students. According to Ref. [18]; about 24% of Vietnamese high school students are victims of CB. In addition, to deal with CB, students often use avoidance strategies [18].

In the literature, there are many studies exploring the link between coping strategies and depression as well as between self-esteem and depression. Previous studies have shown that coping strategies were associated with depression symptoms of CBVs [15,19–23]. Approach coping strategies are attempt to solve the problem, so the individual will feel better, thereby reducing negative self-evaluation [24]. Approach coping strategies are considered to be one of the effective solutions to stop CB and reduce negative emotions [12]. Conversely, avoidance coping strategies may increase an individual's risk of depression [14, 25]. Holahan et al. [26], explained that avoidance coping strategies produce stress factors, and stress factors produce depression symptoms in students. On the other hand, some people believe that individuals who use avoidance coping strategies tend to have internalized symptoms, which in turn increases the risk of depression [27]. However, Na et al. [22], indicated that both approach and avoidance coping strategies were significantly positively correlated with depression symptoms of CBVs. This results demonstrated that for CBVs, coping strategies seem to be ineffective in reducing the risk of depression [12].

Self-esteem is defined as individual's negative or positive attitude about themselves [28]. Individuals with high self-esteem often experience positive feelings, believe in themselves and others view them positively; on the contrary, individuals with low self-esteem often experience negative feelings, believe that they are inadequate and less worthy than others. In Vietnam, a study of self-esteem of secondary school students was conducted by Dat Tan Nguyen, E. Pamela Wright, Christine Dedding & Bunders [29]; there is no research on self-esteem in CBVs in university students. In the literature, previous studies have found a negative correlation between self-esteem and depression [30, 31]. In the context of CB, victims with high self-esteem tend to have low depression, while victims with low self-esteem tend to have high depression [22,32]. Low self-esteem can increase stress [33], *negative self-evaluations* [34,35]. People with higher self-esteem feel more satisfied with life, achieve at a higher and more consistent level, have fewer interpersonal problems, and are lower risk of anxiety and depression than people with lower self-esteem [36]. Therefore, high self-esteem may be a protective factor against the risk of depression.

The above analysis showed that coping strategies and self-esteem were associated with depression among CBVs. Because CB is a new research field, there is little research on coping strategies, self-esteem, depression symptoms of CBVs as well as studies on the relationship between coping strategies, self-esteem and depression of CBVs among undergraduate students. Simultaneously, previous studies clearly lacked interest in the mechanisms that link coping strategies with depression symptoms of CBVs. In Vietnam, studies on the relationship between coping strategies, self-esteem and depression in undergraduate students still have not been found. Therefore, our study aims to fill this gap.

1.1. This study

This study aimed to explore the moderating effect of self-esteem in the relationship between coping strategies and depression of CBVs among Vietnamese undergraduate students. In this study, we expected that self-esteem would moderate the association between coping strategies and depression symptoms of CBVs among Vietnamese undergraduate students.

2. Method

2.1. Sample and procedure

Data was collected from May to June 2019. A total of 859 students enrolled in the study. Through the Cyberbullying victimization scale [37], we identified an initial sample consisting of 606 students who were victims and 259 students who were not victims of CB. All participants are from universities in central region of Vietnam. In this study, we used data from 606 victims of CB. Respondents' ages ranged from eighteen to twenty-five, average age = 21.03 (SD = 0.899). Male student made up 23.8% of the sample; first-year students, second-year students, and of third-year students account for 30.5%, 35.3% and 34.2% of the sample, respectively. Victims of CB were invited to complete a 15-min questionnaire. All participants volunteered to participate and gave their informed consent.

2.2. Measures

2.2.1. Rosenberg self-esteem scale - RSES [38]

The RSES has been used to evaluate the global self-esteem of the victims. RSES possesses 10 items. Sample items included "On the whole, I am satisfied with myself" and "At times I think I am no good at all". Participants respond to statements on a 4-point Likert scale ranging from 0 (strongly agree) to 3 (strongly disagree). The total score is from 0 to 30, the total score less than 15 is considered as low self-esteem, the total score greater than 25 is considered as high self-esteem [36]. In Vietnam, D. T. Nguyen et al. [6], reported reliability indices for RSES as $\alpha = 0.77$. In our study, Cronbach's Alpha was 0.79.

2.2.2. The self-report coping scale (SRCS)

Coping strategies of CBVs were measured with the SRCS [39]. The original version of SRCS possesses 22 items including five subscales: seeking social support (5 items); problem solving (5 items); cognitive distance (5 items); externalization (3 items) and internalization (4 items). After we adapted and modified version to suit Vietnamese culture, the **Vietnamese version of SRSC includes** only 21 items left including five subscales: Seeking social support (5 items); Problem solving (5 items); Cognitive distance (4 items); Externalization (3 items) and Internalization (4 items). Sample items included "I told a friend or family member what happened", "I tried to think of different ways to solve it", "I made believe nothing happened", "I yelled to let off steam" and "I worried about it" [40]. Participants respond to items on a 5-point Likert scale ranging from 0 (never) to 4 (always). The mean of items for each subscale is from 0 to 4 with higher scores indicates a greater level of usage. In this study, the Cronbach's alpha for five subscales (seeking social support, problem solving, cognitive distance, internalization and externalization) were 0.86, 0.86, 0.78, 0.80 and 0.66, respectively. Confirmatory factor analysis showed that the goodness of fit was acceptable ($X^2/df = 3.615 (\leq 5)$, $CFI = 0.910$ and $GFI = 0.903 (>0.90)$, $RMSEA = 0.066 (\leq 0.08)$).

2.2.3. Depression, Anxiety and stress scales 21 (DASS 21)

Depression symptoms were measured with the depression subscale of the DASS 21. The depression subscale includes 7 items that are answered with a Likert-type scale wherein the range is between 0 and 3. Sample items included "I felt that life was meaningless" and "I felt I wasn't worth much as a person". Depression scores range from 0 to 42, with higher scores indicating more severe depression. DASS 21 is a scale which commonly used in Vietnam to measure symptoms of stress, depression and anxiety among adolescents and undergraduate students. In our study, the Cronbach's alpha for depression subscale was 0.80.

2.3. Data analysis

SPSS 20.0 was used for data entry and analysis. *Pearson's correlation*

was used to analyze the correlation between coping strategies, self-esteem and depression symptoms of CBVs. Hayes Process macro v3.3 (Model 1 [41], was used to investigate the moderating effect of self-esteem in the association between coping strategies and depression symptoms. We used the bootstrapping technique with 5000 bootstrap samples proposed by Preacher & Hayes [42] to examine the moderating role of self-esteem in the association between coping strategies and depression symptoms. The moderation effect is significant when the 95% confidence interval (CI) of the interaction term does not contain 0 and $p < 0.05$. In moderation model, age was applied as the control variable, coping strategies were applied as independent variables and depression were applied as the dependent variable.

3. Results

3.1. Descriptive and correlational analyses

It can be seen from Table 1 that the scores of problem solving, seeking social support, cognitive distance, externalization and internalization are 1.504, 1.435, 1.320, 0.751 and 1.287, respectively. The score of self-esteem and depression symptoms are 17.724 and 8.670, respectively. With the exception of the internalization strategy, all other coping strategies were not significantly correlated with self-esteem. With the exception of the internalization and externalization strategies, all other coping strategies were not significantly correlated with depression. **Self-esteem is negatively correlated with depression symptoms.**

3.2. Moderation analyses

It can be seen from Table 2 that self-esteem cannot moderate the association between cognitive distance strategy and depression symptoms, between seeking social support strategy and depression symptoms; but self-esteem can moderate the association between problem solving strategy and depression symptoms, between internalization strategy and depression symptoms.

3.3. Moderating role of self-esteem on the association between problem solving strategy and depression symptoms

It can be seen from Table 2 that self-esteem moderated the association between problem solving strategy of CBVs among Vietnamese undergraduate students and depression symptoms ($B = -0.237$, $se = 0.067$, $CI = [-0.369, -0.105]$). In order to determine the specific moderating effect of self-esteem, a simple slope test was performed according to Aiken and West's recommendations [43]. Using the average score of depression symptoms as the dependent variable, calculate the effect of problem solving strategy on depression symptoms at high self esteem and low self esteem. Simple slopes analysis indicates that: The higher the score of problem-solving strategy, the higher the symptoms of depression. The effect of problem solving strategy on depression was stronger in victims with low self-esteem ($B = 1.501$, $se = 0.396$, $95\% CI =$

Table 1
Descriptive statistics and correlations between variables.

	Mean	SD	1	2	3	4	5	6
1	1.504	0.884						
2	1.435	0.965	0.429**					
3	1.320	0.918	0.106**	0.140**				
4	0.751	0.836	0.327**	0.300**	0.121**			
5	1.287	0.957	0.512**	0.361**	0.073	0.519**		
6	17.724	3.955	0.001	0.061	0.017	-0.075	-0.130**	
7	8.670	6.635	0.074	-0.046	-0.020	0.187**	0.207**	-0.308**

Note: 1: Problem solving; 2: Seeking social support; 3: Cognitive distance; 4: Externalization; 5: internalization; 6: Self-esteem; 7: Depression symptoms; *: Correlation is significant at the 0.05 level (2-tailed), **: Correlation is significant at the 0.01 level (2-tailed); M: Mean; SD: Standard deviation.

Table 2

Regressions testing self-esteem as a moderator in the relationship between strategies for coping with cyberbullying and depression symptoms.

Model 1: Problem solving strategy	B	se	95% CI	
PS	4.759***	1.232	[2.339; 7.179]	
SE	-0.184	0.117	[-0.413; 0.046]	
PS* SE	-0.237***	0.067	[-0.369; -0.105]	
Age	-0.382	0.286	[-0.943; 0.179]	
Conditional effect	Low SE	1.501***	0.396	[0.724; 2.278]
	High SE	-0.371	0.388	[-1.132; 0.391]
Model 2: Seeking social support strategy				
SSS	-0.599	1.201	[-2.959; 1.761]	
SE	-0.553***	0.109	[-0.767; -0.339]	
SSS* SE	0.021	0.065	[-0.107; 0.150]	
Age	-0.368	0.291	[-0.939; 0.203]	
Model 3: Cognitive distance strategy				
CD	-1.051	1.312	[-3.628; 1.525]	
SE	-0.595***	0.113	[-0.816; -0.374]	
CD*SE	0.052	0.070	[-0.085; 0.189]	
Age	-0.348	0.288	[-0.914; 0.220]	
Model 4: Externalization strategy				
EX	4.024**	1.462	[1.152; 6.895]	
SE	-0.402***	0.084	[-0.567; -0.236]	
EX*SE	-0.157	0.082	[-0.319; 0.005]	
Age	-0.320	0.284	[-0.877; 0.237]	
Model 5: Internalization strategy				
IN	4.207***	1.174	[1.902; 6.512]	
SE	-0.266*	0.105	[-0.473; -0.060]	
IN*SE	-0.176**	0.066	[-0.305; -0.047]	
Age	-0.301	0.285	[-0.859; 0.258]	
Conditional effect	Low SE	1.790***	0.358	[1.088; 2.492]
	High SE	0.401	0.388	[-0.360; 1.163]

Note: PS: Problem solving; SSS: Seeking social support; CD: Cognitive distance; EX: Externalization; IN: Internalization; SE: Self-esteem; **:Correlation is significant at the 0.01 level (2-tailed), ***:Correlation is significant at the 0.001 level (2-tailed), CI = confidence interval.

[0.724; 2.278]). The association was weaker and not significant in victims with high self-esteem ($B = -0.371$, $se = 0.388$, $95\% CI = [-1.132; 0.391]$). In other words, low self-esteem may be associated with increased symptoms of depression in the CBVs who use problem solving strategy frequently (see Fig. 1).

3.4. Moderating role of self-esteem on the association between internalization strategy and depression symptoms

It can be seen from Table 2 that self-esteem moderated the association between internalization strategy of CBVs among Vietnamese undergraduate students and depression symptoms ($B = -0.176$, $se = 0.066$, $CI = [-0.305, -0.047]$). Simple slopes analysis indicates that the higher the score of internalization strategy, the higher the symptoms of depression. The association was stronger in victims with low self-esteem ($B = 1.790$, $se = 0.358$, $95\% CI = [1.088; 2.492]$) and weaker in victims with high self-esteem ($B = 0.401$, $se = 0.388$, $95\% CI = [-0.360; 1.163]$). In other words, low self-esteem may be associated with increased symptoms of depression in the CBVs who use internalization strategy frequently (see Fig. 2).

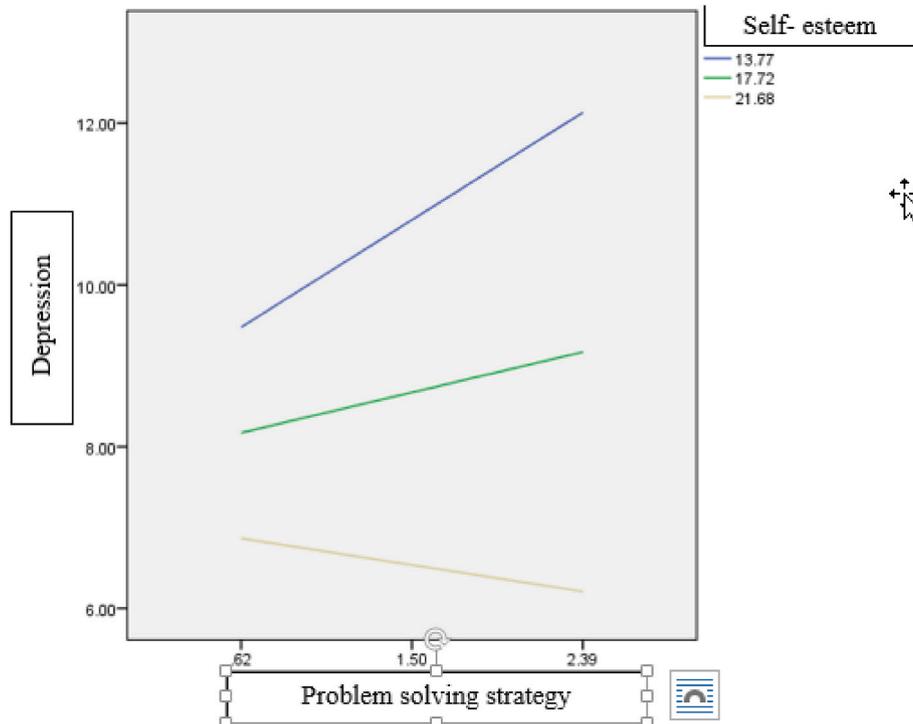


Fig. 1. Self esteem as moderator of the relationship between problem solving strategy of cyberbullying victims among Vietnamese university students and depression symptoms.

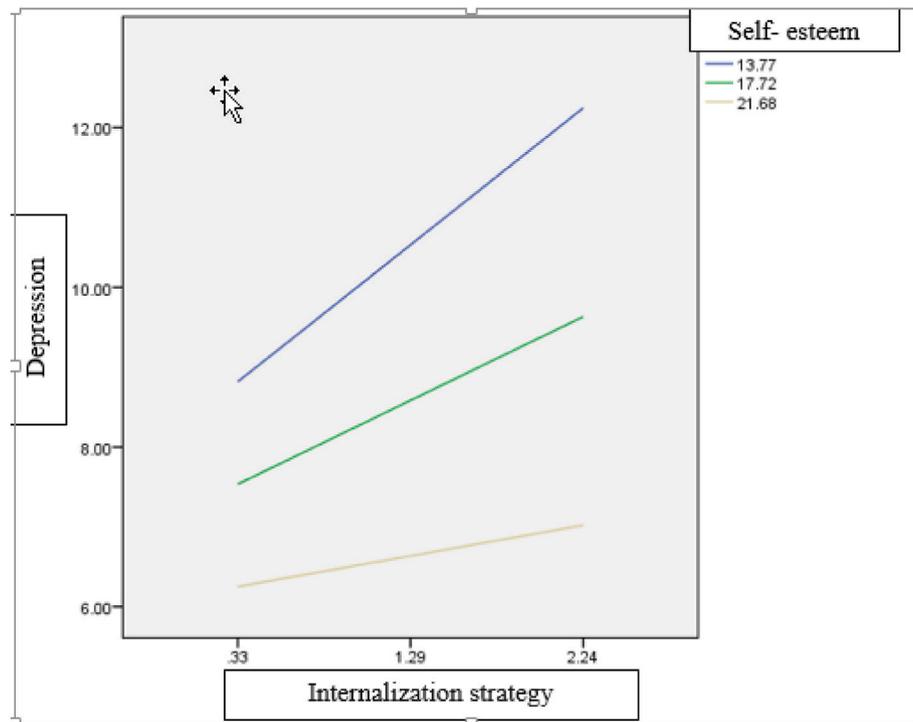


Fig. 2. Self esteem as moderator of the relationship between internalization strategy of cyberbullying victims among Vietnamese university students and depression symptoms.

4. Discussion

This study investigated the moderating effect of self-esteem on the association between coping strategies and depression symptoms of CBVs among Vietnamese undergraduate students. In this study, we found that self-esteem moderated the association between problem solving strategy

and depression, between internalization strategy and depression. Simple slope analyzes have shown that the effect of problem solving strategy or internalization strategy on depression was stronger in victims with low self-esteem. In contrast, the effect of problem solving strategy or internalization strategy on depression was weaker in victims with high self-esteem.

Not consistent with previous findings [19,44], our study revealed that problem solving strategy was positively correlated with depression. This may be because the CBVs used with high frequency of approach and avoidance coping strategies, as the frequency of using approach coping strategies increases, the frequency of using avoidance coping strategies also increases, which can reduce the effectiveness of the approach coping strategies (including problem-solving strategy). Furthermore, Machackova et al. [12], reported that in dealing with CB, all strategies proved ineffective. Therefore, in this sample, the higher the score of problem-solving strategy, the higher the symptoms of depression. On the other hand, in line with previous findings [22,45,46], we found that as self-esteem decreased, an individual's risk of depression increased. Carter and Garber [47] explained that low self-esteem can be associated with high stress. *Individuals* with high stress seem to have more sleep problems and feel worse than those without stress [48]. *Long-term stress can cause individuals to experience anxiety and depression* [49]. On the contrary, *individuals* with higher self-esteem may feel more satisfied with life and may have fewer interpersonal problems, and may have a lower risk of anxiety and depression than people with lower self-esteem [36]. In addition, the vulnerability model suggests that low self-esteem may be associated with the onset and maintenance of depression. Low self-esteem can contribute to depression through intrapersonal and interpersonal pathways [50]. As a result, victims with high problem solving strategy and low self-esteem may have the highest levels of depression.

In line with previous findings [21,22], we found that the internalization strategy was positively correlated with depression of CBVs. Previous studies have shown that using avoidance coping strategies can lead to stress [33], damage to self-esteem [51] and reduced social support [52]. Therefore, as a type of avoidance strategies, internalization may increase the depression levels of CBVs. On the other hand, many studies have demonstrated a negative correlation between self-esteem and depression [22,45,46]. As a result, victims with the high internalization strategy and low self-esteem may have the highest levels of depression.

This study has all the limitations of a cross-sectional study. Therefore, longitudinal studies are needed to examine the link between coping strategies, self-esteem and depression among CBVs. Despite its limitations, this study has important implications. The findings of this study may confirm that interventions to reduce depression for victims of CB should focus on improving the victim's self-esteem and coping strategies.

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Authorship statement

Thi Truc Quynh Ho: Conception and design of study, acquisition of data, analysis and/or interpretation of data, drafting the manuscript and revising the manuscript. *Chuanhua Gu*: Revising the manuscript critically for important intellectual content and contact the journal *Lixia Wang*: Editing English for the manuscript.

Declaration of Competing interest

The authors have no conflicts of interest to declare.

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