Academic stress and depression among vietnamese adolescents: a moderated mediation model of life satisfaction and resilience

Thi Truc Quynh Ho[1] · Be Thi Ngoc Nguyen[1] · Ngoc Phuong Hong Nguyen[2]

Abstract

Academic stress is rising among high school students, especially in light of the Covid-19 pandemic, such as social distancing, long-term online learning, and lack of social support. Many studies have also shown that students with high levels of academic stress have a higher risk of depression. However, very few researchers are interested in studying life satisfaction as a moderate factor for the indirect relationship between academic stress and depression. This study investigated whether life satisfaction factors moderate the indirect effect of academic stress on the depressive disorder in Vietnam adolescents. Participants include 1336 Vietnamese adolescents. Participants completed the Educational Stress Scale for Adolescents, Connor–Davidson Resilience Scale, Satisfaction with Life Scale, and Beck Depression Inventory-II. Moderated mediation analyses were conducted using the PROCESS macro to investigate the relationship among variables. In the relationship between academic stress and depressive disorder in Vietnamese adolescents, resilience is partly mediated; life satisfaction significantly moderated the indirect effect of academic stress on depressive disorder. This study suggests that depressive disorders prevention and intervention practices for adolescents need to consider enhancing resilience and life satisfaction.

Keywords Academic stress · Adolescents · Depression · Life satisfaction · Resilience

Introduction

COVID-19 has created an international public health emergency, causing economies to halt, resulting in considerable loss of life, and posing unprecedented challenges to the global health systems economy (Alsalameh et al., 2019). COVID-19 is raising worries about the mental health of young people all around the world (Porter et al., 2021). COVID-19 has also exacerbated prior stresses and introduced new drivers of mental illness in teenagers, such as stress and anxiety caused by the pandemic's economic and health consequences, the lockdown of public places and schools, and a rise in children's online presence (Duan et al., 2020; Lavizzari et al., 2020; Orgilés et al., 2020; Ren et al., 2021; Sediri et al., 2020; Tang et al., 2021; Wang, Pan, Wan, Tan, Xu, McIntyre et al., 2020). Long durations of social distancing, fear of contagion, inadequate knowledge, stigmas, or financial losses, according to some researchers, are connected with a greater negative psychological impact (Le et al., 2020; B. X. Tran et al., 2020). These significant stresses can raise the risk of mental disorders like anxiety or depression (Huremović, 2019; Pfefferbaum & North, 2020).

Depression is one of the most common mood disorders, relating to genetic and environmental risk factors, especially exposure to stressful life events (Bouma et al., 2008; Maughan et al., 2013). When people are subjected to uncontrolled circumstances, they display helplessness and a lack of drive, which leads to depression (Seligman, 1972). In this sense, people with depression are less likely to seek help for physical or emotional symptoms. Therefore, and similar to anxiety, depression can become a barrier to reasonable medical and mental health interventions during a pandemic (Asmundson & Taylor, 2020; Lei et al., 2020;

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Wang, Pan, Wan, Tan, Xu, Ho, et al., 2020). Depression is a common mental disorder in adolescents. According to recent research, an estimated 14.19 to 26.5% of teenagers worldwide suffer from depression (Islam et al., 2021; Paul & Usha, 2021). In Vietnam, the prevalence of depression among adolescents was 31.7% (Q. A. Tran et al., 2020; B. X. Tran et al., 2020). Depression has been found to be associated with academic stress (Hoa et al., 2016; Jayanthi et al., 2015; Kang et al., 2013). Academic stress is referred to as an emotion that learners experience during their time at school. Academic stress not only affects the physical health but also affects the mental health of learners (Acevedo et al., 2021).

Before COVID-19 outbreak, many studies have examined the relationship between academic stress and depression. The conclusion from previous studies is that as academic stress levels increase, symptoms of anxiety and depression increase as well (Hoa et al., 2016; Jayanthi et al., 2015; Kang et al., 2013; Saxena et al., 2019) recently revealed that students with high levels of academic stress have a higher risk of depression and anxiety. In the context of the COVID-19 pandemic, Vietnam ordered the closure of all educational institutions, affecting over 25million Vietnamese students after the first COVID-19 infection was detected in early February 2020, forcing teaching and instruction to be performed online. Vietnam agreed in May 2020 to reopen schools with the required hygiene and medical measures (Chakraborty & Samuels, 2021). During the 3rd wave of outbreak in early May 2021, Vietnam continued social distancing in some provinces and cities with high COVID-19 contagious rates and continued maintaining distance learning and examinations. Online education and exams increase the risk of depression and anxiety symptoms (Qi et al., 2020; Zhou et al., 2020), which is the reason why many countries have chosen to cancel or postpone university entrance exams. Vietnam postponed the test, but it will be held in August 2020 for roughly 867,000 high school graduates. Although some students are pleased for the postponement due to issues with online learning, which many deem "ineffective," others argue that this form of study would raise stress (Truc et al., 2015). There is also a clear division among the online public opinion in Vietnam that raises questions about the inclusiveness of distance learning (Nguyen, 2020). Socioeconomically disadvantaged areas and rural areas have difficulty accessing and keeping up with online classes, while ethnic minority students cannot access many online learning materials because of the language barriers. As a result, the students reported increased anxiety and psychosocial disturbances (Chakraborty & Samuels, 2021).

In recent years, previous studies have investigated the role of perceived stress (Lee & Oh, 2017), gender and perceptions of school climate (Liu & Lu, 2012) in the relationship between academic stress and depression. However, in the world as well as in Vietnam, we have not found any research that simultaneously explores the role of resilience and life satisfaction in the relationship between academic stress and depression in adolescents. Therefore, our study aims to examine a complex theoretical model in which resilience was considered to be a mediator and life satisfaction was considered to be a moderator in the association between academic stress and depression.

The mediating effect of resilience on academic stress and depression

An individual's resilience refers to the individual's ability to adapt well to adversity, threats, tragedy, trauma, and even major stressors (Wu et al., 2020). The level of resilience plays an essential role in reducing or increasing academic stress in students. These tensions occur as a failure to adjust to the requirements of a given educational environment. For example, some students find it challenging to do homework or take exams (Hussain & Thakur, 2019). Resilience plays a vital role in overcoming learning-related stress (Hussain & Thakur, 2019). Students with high resilience are less affected by academic stress than students with low resilience (Hussain & Thakur, 2019). One study found a negative correlation between academic stress and resilience (Mathur & Sharma, 2015). Resilience protects a person from the effects of stress with characteristic anxiety and depressive symptoms (Gloria & Steinhardt, 2016). (Ríos-Risquez et al., 2016) investigated the association between resilience and academic burnout and the psychological well-being of nursing students. The results show a significant relationship between resilience and learning burnout and between resilience and psychological well-being. Besides the quality of school life, another aspect that can reduce academic stress in students is resilience, which is an individual's ability to overcome difficulties (Bukhori et al., 2017). An individual with a high rate of recovery has a positive resilience and adaptability to any negative situation and to cope with stress (Holaday & McPhearson, 1997).

Studies have concluded that resilience is closely related to mental health indicators (Poole et al., 2017; Shapero et al., 2019). Psychological resilience negatively impacts depression, anxiety, and stress (Hu et al., 2018; Min et al., 2013). Anyan and Hjemdal (2016) indicated that resilience partially mediates the relationship between stress, anxiety symptoms, and depression. In these studies, it was concluded that psychological resilience has a protective role against the adverse psychological conditions experienced by the individual and increases the individual's endurance. In addition, it has been suggested that psychological resilience plays a protective role against COVID-19 fear, which occurs in individuals as a mental consequence of COVID-19, and
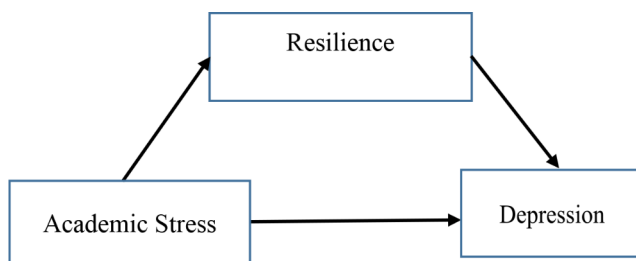
Fig. 1 Proposed model for hypothesis 1

who are susceptible people with high psychological resilience experience this fearlessness (Albott et al., 2020). Several studies suggest that high psychological resilience is less prone to stress, depression and anxiety related to COVID-19 (Barzilay et al., 2020; Oducado et al., 2021). Psychological resilience is a negative predictor of COVID-19 burnout (Yıldırım & Solmaz, 2020) and COVID-19 anxiety (Gundogan, 2021; Labrague & de los Santos, 2020). Therefore, in this study, we expect that academic stress will be negatively correlated with resilience and resilience will be negatively correlated with depression. In other words, resilience mediates the link between academic stress and depression among Vietnamese adolescents (hypothesis 1) (Fig. 1).

The moderating effect of life satisfaction in the indirect relationship from academic stress to depression through resilience

According to earlier studies, people with low resilience are more likely to experience depression (Miller & Chandler, 2002; Nrugham et al., 2010; Wells et al., 2012; Poole et al., 2017). Individuals with low resilience may feel overwhelmed or helpless and use unhealthy coping strategies in the face of stressful situations (Thompson et al., 2018). On the other hand, previous studies reported that low positive or high negative emotions are factors that contribute to
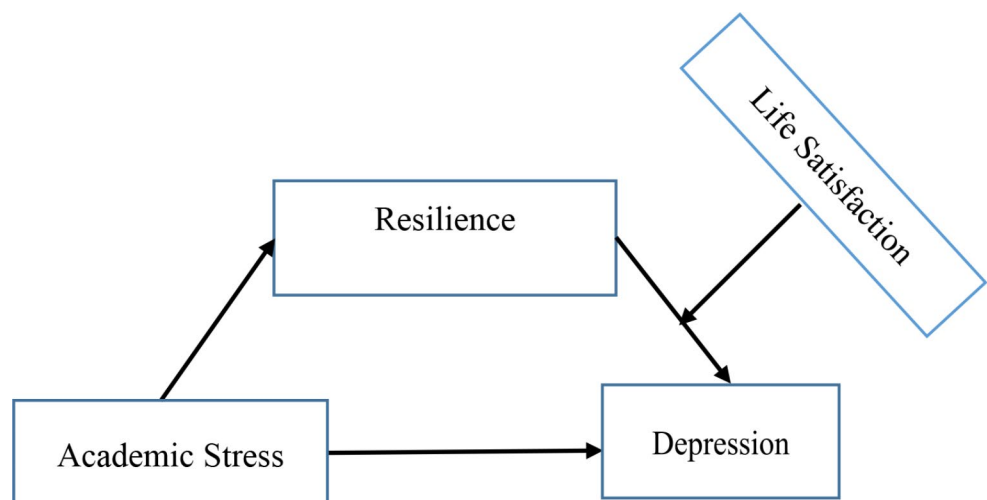
the development and maintenance of depression (Van Beveren et al., 2018). As a positive emotion, life satisfaction was found to be significantly associated with the development of depressive symptoms (Seo et al., 2018; Wang & Peng, 2017; Çivitci, 2010). Life satisfaction is a person's subjective assessment of their level of happiness based on their own standards (Zhou & Lin, 2016). Adolescents' life satisfaction is correlated with a number of significant factors relevant to their adaptive functioning (Huebner et al., 2004). During the COVID-19 pandemic, concerns about illness and infection were linked to lower life satisfaction among adolescents (Soest et al., 2020). According to previous studies, people with higher levels of life satisfaction have fewer symptoms of depression (Çivitci, 2010; Wang & Peng, 2017; Seo et al., 2018). In addition, positive mental health indicators such as life satisfaction was found to be positively correlated with resilience (Aboalshamat et al., 2018; Zheng et al., 2020), subjective well – being (Liu et al., 2014). Similar to resilience, life satisfaction serves as an individual barrier against the danger of depression (Tamarit et al., 2022). The above analyses suggest that high life satisfaction can increase resilience and reduce the risk of depression. Therefore, we expect that life satisfaction will moderate the indirect relationship between academic stress and depression through resilience (hypothesis 2) (Fig. 2).

Methods

Participants

1351 middle and high school students from a province in central Vietnam agreed to participate in the study. According to Slovin's formula, with an error rate of 5% and a total number of students of about 33,000, the sample size needed for our study is 395 and more. Our research has

Fig. 2 Proposed model for hypothesis 2

Table 1 An overview of survey participants

	n	%
Gender		
Male	613	45.9
Female	718	53.7
LGBT	5	0.4
School type		
Gifted school	177	13.2
Public school	1159	86.8
School level		
Secondary school	712	53.3
High school	624	46.7
Grades		
7th grade	244	18.3
8th grade	201	15.0
9th grade	267	20.0
10th grade	201	15.0
11th grade	210	15.7
12th grade	213	15.9
Family structure		
Two-parent family	1182	88.5
Divorced or separated parents	80	6.0
Deceased father/mother	50	3.7
Another situation	24	1.8
Academic performance (Grade point average, GPA)		
Poor	3	0.2
Below average	30	2.2
Average	277	20.7
Good	565	42.3
Excellent	461	34.5

Note: n: Number of participants; %: Percentage

been approved by middle and high school principals and the ethical permission of the Department of Psychology and Education, University of Education, Hue University. This study also received the consent of the homeroom teacher, student and the student's parents. Through the administrators and homeroom teachers, we meet students in the class for a survey (during the time of no social distancing). Right in the classroom, we introduce the purpose of the study and guide students on how to answer the survey questionnaire. Before completing the questionnaire, we assured students that their personal information would be anonymously encrypted, kept completely confidential, and only for scientific research. Finally, there are 1336 valid questionnaires with an efficiency rate of 89.0%. In our sample, the age group of the adolescents ranged between 13 and 18 (Mean = 15.43, SD = 1.707); 46.3% are male, 53.7% are female and 0.4% are LGBT (see Table 1). For students' academic performance, we classify them into five categories on a 10-point scale: Excellent (GPA ≥ 8.0), Good (GPD from 6.5 to 7.9), Average (GPD from 5.0 to 6.4), Below average (GPD from 3.5 to 4.9), and Poor (GPD < 3.5). After completing the questionnaire, each participant received a gift worth 15,000 VND.

Instruments

The Beck Depression Inventory-II (BDI-II) is a self-report measure of depression symptoms. BDI-II consists of 21 groups of statements that measure characteristic attitudes and symptoms of depression. Response options range from 0 (Not at all) to 3 (Severely – I could barely stand it). Depression scores ranged from 0 to 63, with higher scores being associated with increased levels of depression. In this study, Cronbach's α = 0.876.

Educational Stress Scale for Adolescents (ESSA): Educational stress was measured through the ESSA. This self-report scale evaluates five dimensions of educational stress for adolescents. The scale includes 16 items such as "I feel that there are too many tests/ exams in the school". Items are rated on a 5 point Likert Scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Educational stress scores ranged from 16 to 80, with a total score of 80 indicating the highest. The Vietnamese version of ESSA has good reliability (Thai et al., 2012). In our study, Cronbach's α = 0.823.

The Connor–Davidson Resilience Scale *(CD- RISC – 10)* (Campbell-Sills & Stein, 2007): For the assessment of resilience, the 10-item CD- RISC – 10 (example: "I am not easily discouraged by failure") was used. Participants respond to the statements using a five point Likert scale ranging from 0 (not true at all) to 4 (true nearly all the time). Resilience scores ranged from 10 to 40, with a total score of 40 indicating the highest resilience. In the sample of Vietnamese adolescents, the scale showed good reliability (Minh-Uyen & Im, 2020). In this sample, Cronbach's α = 0.854.

Satisfaction with Life Scale (SWLS): This variable was measured using the SWLS (Diener et al., 1985). It contains 5 statements (example: "I am satisfied with my life"). Adolescents rated their response to each statement item on a 7-point Likert-type scale from 1 (strongly disagree) to 7 (strongly agree). Life satisfaction scores ranged from 5 to 25, with a total score of 25 indicating the highest life satisfaction. In Vietnam, this scale showed good reliability (Tran & Van Vu, 2018). In this study, Cronbach's α = 0.795.

Data Analysis

In this study, SPSS software version 25.0 was selected to perform descriptive statistics and Pearson's correlations among variables. The Process macro for SPSS (Model 4) was selected to analyze the mediating role of resilience in the association between academic stress and depression. The Process macro for SPSS (Model 14) was selected to determine whether the indirect path is moderated by life

Table 2 Pearson correlations, mean, and standard deviations among study variables

	M	SD	Depression	Academic Stress	Resilience	Life Satisfaction
Depression	15.13	9.512				
Academic Stress	54.48	9.453	0.478**			
Resilience	31.62	7.551	-0.220**	-0.134**		
Life Satisfaction	20.38	6.390	-0.362**	-0.162**	0.357**	
Grade	3.43	1.707	0.071**	0.081**	-0.009	-0.073**

Note: **. Correlation is significant at the 0.01 level (2-tailed), Grade (coded: 1 = 7th grade, 2 = 8th grade, 3 = 9th grade, 4 = 10th grade, 5 = 11th grade, 6 = 12th grade)

Table 3 Bias-corrected bootstrap test on mediating effects

Paths	β	SE	95%CI	
			Low	High
Academic stress – depression	0.4567***	0.0241	0.4094	0.5040
Academic stress – Resilience	-0.1071***	0.0218	-0.1498	-0.0644
Resilience – Depression	-0.2008***	0.0301	-0.2598	-0.1418
Academic stress – Resilience - Depression	0.0215	0.0067	0.0098	0.0360
Grade – Resilience	0.0095	0.1204	-0.2267	0.2458
Grade – Depression	0.1847	0.1323	-0.0748	0.4441

Note: * p < 0.05, *** p < 0.001

satisfaction. In model 14, academic stress was the independent variable, resilience was the mediator variable, depression was the predictor variable. In addition, there are grade differences in depression, academic stress and life satisfaction among Vietnamese adolescents (see Table 2). Therefore, grade variable can become a control variable in the analytical models of this study.
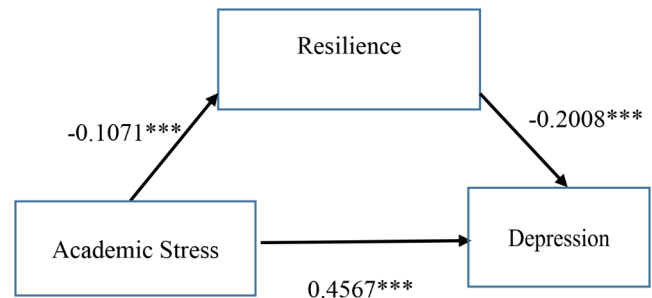
Results

Correlations among study variables

This study indicated that academic stress was positively correlated with depression (r = 0.478, p < 0.001) and negatively correlated with resilience (r = -0.134, p < 0.001) and life satisfaction (r = -0.162, p < 0.001) (Table 2). Resilience was positively correlated with life satisfaction (r = 0.357, p < 0.001) and negatively correlated with depression (r = -0.220, p < 0.001). Life satisfaction was negatively correlated with depression (r = -0.362, p < 0.001). Grade level is positively correlated with academic stress (r = 0.071, p = 0.009) and depression (r = 0.081, p = 0.003) and negatively correlated with life satisfaction (r = 0.071, p = 0.008).

Mediation analyses

For hypothesis 1, we expected resilience to mediate the relationship between academic stress and depression level. Table 3 indicated that the unstandardized regression coefficients of the indirect effect were B = 0.0215, SE = 0.0067, 95% CI = [0.0098, 0.0360]. The unstandardized regression

Fig. 3 Mediation model of the indirect effect of Aacademic stress on the depression

coefficients of the direct effect were B = 0.4567, SE = 0.0241, p < 0.001, 95% CI = [0.4094, 0.5040]. These results indicated that resilience partially mediated the relationship between academic stress and depression (see Fig. 3), supporting the hypothesis 1.

Moderated mediation analyses

According to hypothesis 2 we expected that life satisfaction would moderate the indirect relationship between academic stress and depression through resilience. A model of moderated mediation was used to investigate whether resilience mediated the association between academic stress and depressive symptoms, while simultaneously investigating whether this mediation was moderated by life satisfaction. According to Table 4, academic stress significantly positively predicts depression level (B = 0.4321, SE = 0.0233, p < 0.001, 95% CI = [0.3865, 0.4778]) and resilience significantly negatively predict depression level (B = -0.2905, SE = 0.0806, p < 0.001, 95% CI = [-0.4486, -0.1324]).

Table 4 Moderated mediation analysis

Paths	β	SE	95%CI	
			Low	High
Academic stress– Resilience	-0.1071***	0.0218	-0.1498	-0.0644
Academic stress – Depression	0.4321***	0.0233	0.3865	0.4778
Resilience – Depression	-0.2905***	0.0806	-0.4486	-0.1324
Life Satisfaction - Depression	-0.7222**	0.1226	-0.9628	-0.4817
Resilience * Life Satisfaction	0.0103**	0.0037	0.0030	0.0176
Grade- Resilience	0.0095	0.1204	-0.2267	0.2458
Grade - Depression	0.1230	0.1271	-0.1263	0.3724
Conditional effects of the focal predictor at values of the moderator				
− 1 SD below mean Life Satisfaction	-0.1569***	0.0402	-0.2357	-0.0780
+ 1 SD below mean Life Satisfaction	-0.0129	0.0403	-0.0920	0.0661
Conditional indirect effect at different values of life satisfaction				
− 1 SD below mean Life Satisfaction	0.0168**	0.0076	0.0045	0.0339
+ 1 SD below mean Life Satisfaction	0.0014***	0.0014	-0.0089	0.0107
Index of moderated mediation				
	-0.0011	0.0006	-0.0026	-0.0001

Note: * p < 0.05 ** p < 0.01 *** p < 0.001

Academic stress significantly positively predicts resilience (B = -0.1071, SE = 0.0218, p < 0.001, 95% CI = [-0.1498, -0.0644].

Table 4 also indicated that the interaction between resilience and life satisfaction was significant B = 0.0103, SE = 0.0037, p = 0.003, 95% CI = [0.0030, 0.0176], suggesting life satisfaction moderated the indirect relationship between academic stress and depression through resilience. The simple slopes indicated that at low life satisfaction, the negative correlation between resilience and depression

was stronger B = -0.1569, SE = 0.0402, p < 0.001, 95% CI = [-0.2357, -0.0780] and at high life satisfaction, the negative correlation between resilience and depression was *non-significant* B = -0.0129, SE = 0.0403, p > 0.699, 95% CI = [-0.0920, 0.0661] (see Fig. 4).

Conditional indirect effect analysis indicated that the overall indirect effect was stronger for adolescents who have low life satisfaction B = 0.0168, SE = 0.0076, 95% CI = [0.0045, 0.0339] than for those who have high life satisfaction B = 0.0014, SE = 0.0014, 95% CI = [-0.0089, 0.0107]. The index of moderated mediation was significant B= -0.0011, SE = 0.0006, 95% CI = [-0.0026, -0.0001], indicating that life satisfaction significantly moderated the indirect effect of academic stress on depression level (see Fig. 5).

Discussion

In this study, we analyze the impacts of academic stress, resilience, and life satisfaction on the development of depression symptoms among Vietnamese adolescents. Specifically, this study examined a moderated mediation model in which resilience was considered to be a mediator and life satisfaction was hypothesized as a moderator in the path from academic stress to depression.

First, we have found that academic stress positively predicts depression symptoms. This finding is consistent with previous findings (Hoa et al., 2016; Jayanthi et al., 2015; Kang et al., 2013; Saxena et al., 2019). Earlier literature has explained that academic stress increases perceived stress, then perceived stress increases symptoms of depression (Lee & Oh, 2017). On the other hand, academic stress is negatively associated with an individual's self-esteem (Nikitha et al., 2014), while low self-esteem increases an individual's risk of depression (Aboalshamat et al., 2017). Therefore, adolescents with high academic stress levels tend

Fig. 4 Life Satisfaction as moderator of the indirect relationship between academic stress and depression through resilience
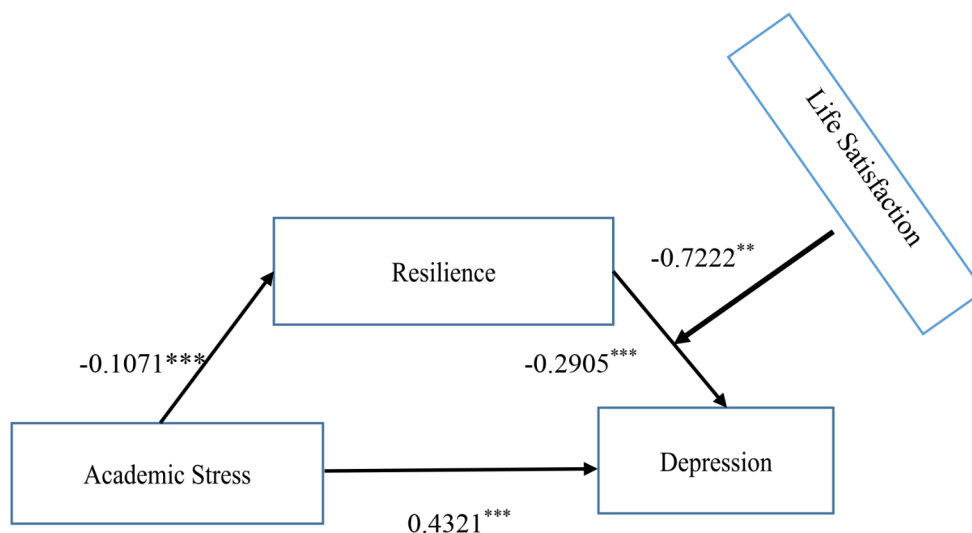
Fig. 5 The final moderated mediation model
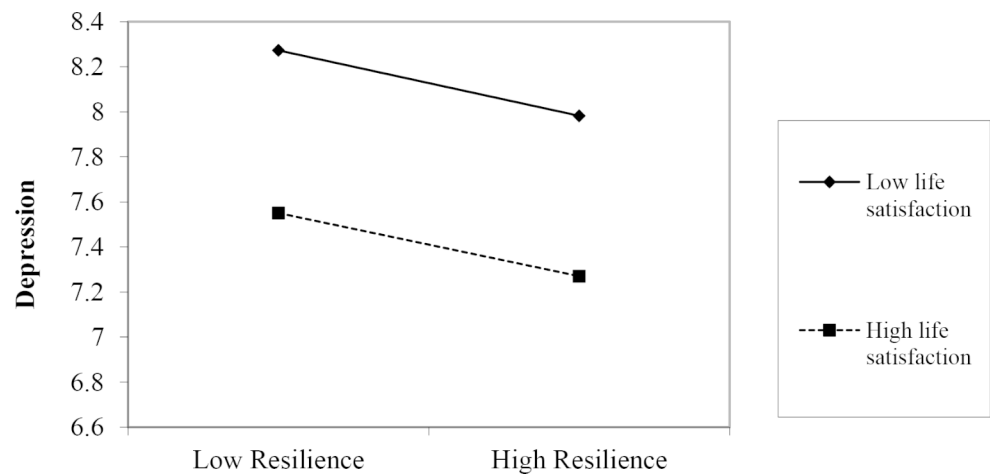
to report higher levels of depression than adolescents with low academic stress levels.

Second, we have found that resilience partially mediated the relationship between academic stress and depression, which supports hypothesis 1. These results mean that academic stress negatively predicted resilience and then resilience negatively predicted depression symptoms. Previous research has found that when resilience declines, academic stress rises. Resilience plays a vital role in overcoming learning-related stress (Hussain & Thakur, 2019). Students with high resilience are less affected by academic stress than students with low resilience (Hussain & Thakur, 2019). Previous studies found a negative correlation between academic stress and resilience (Mathur & Sharma, 2015). Resilience protects a person from the effects of stress with characteristic anxiety and depressive symptoms, people with low resilience tend to report higher levels of depression (Gloria & Steinhardt, 2016; Miller & Chandler, 2002; Nrugham et al., 2010; Poole et al., 2017; Wells et al., 2012). For instance, Cheng & Catling (2015) also suggest that university students are at increased risk of mental illness, which means low resilience in dealing with academic stress and change. Earlier literature has explained that exposure to stress reduces an individual's ability to adapt to adversity, trauma, and stress (Hu et al., 2015; Yang et al., 2018). It can be said that exposure to stress reduces resilience; meanwhile, resilience acts as protective factors that help individuals against the risk of depression (Goldstein et al., 2013). Resilience is the ability to spring back from psychological damage (Bernard, 2004). The above analysis has demonstrated that academic stress indirectly affects depressive symptoms through resilience. Therefore, enhancing resilience can prevent adolescents with high academic stress levels from being exposed to the risk of depression.

Finally, we have found that life satisfaction significantly moderated the indirect effect of academic stress on depression symptoms. The results indicated that the impact leading from academic stress and resilience to depression symptoms was increased in adolescents with low life satisfaction and decreased in adolescents with high life satisfaction. In other words, for adolescents with low life satisfaction, the negative effects of resilience on depression were stronger; meanwhile, for adolescents with high life satisfaction, the negative effects of resilience on depression were not significant. These findings can be explained as follows: Previous studies have highlighted that low resilience increases an individual's risk of depression (Miller & Chandler, 2002; Nrugham et al., 2010; Poole et al., 2017; Wells et al., 2012). On the other hand, life satisfaction was found to be negatively associated with the development of depressive symptoms (Çivitci, 2010; Seo et al., 2018; Wang & Peng, 2017). In line with previous findings, we have found that both low life satisfaction and low resilience increase the risk of experiencing depression. Earlier literature has explained that resilience and life satisfaction protect individuals from depression (Çivitci, 2010; Goldstein et al., 2013; Seo et al., 2018; Wang & Peng, 2017). Therefore, adolescents with low resilience and/or low life satisfaction tend to report higher levels of depression. From the above analysis, it is found that adolescents with high resilience and high life satisfaction have the lowest risk of depression; in contrast, adolescents with low resilience and low life satisfaction have the highest risk of depression (see Fig. 3).

This study has important practical implications. Consistent with previous findings, this study demonstrated that enhancing resilience and life satisfaction is important in preventing and managing depression (Edward, 2005; Konradt et al., 2018; Seo et al., 2018). Accordingly, depression prevention interventions should focus on measures to increase resilience (cognitive therapies, attention and interpretation therapy and mindfulness-based therapy) and life satisfaction (mindfulness, physical activity and resilience training program). In the context of the COVID-19 epidemic, many countries and cities have implemented social distancing, it

is difficult to implement traditional interventions to improve mental health problems of adolescents. Therefore, online psychotherapies may be essential for improving mental health issues in the context of COVID-19, such as cell phone interventions. In the literature, some online psychotherapies have been used such as mobile phone interventions (mHealth apps) (Tran et al., 2018), Internet-Based Cognitive Behavioral Therapy (Komariah et al., 2022); digital cognitive behavioural therapy (Soh et al., 2020). Online psychotherapies may be feasible and have great promise in reducing mental health problems in adolescents.

However, this study still possesses the limitations of a cross-sectional study. Therefore, longitudinal study design to determine the causal relationship between research variables is necessary. In addition, according to earlier studies, the COVID-19 pandemic was associated with an increase in the prevalence of depression and other mental health issues (Racine et al., 2021; Śniadach et al., 2021; Stephenson et al., 2022; Vindegaard & Benros, 2020). Data for this study were gathered in the context of the convoluted spread of the COVID-19 outbreak in Vietnam. The effect of the COVID-19 outbreak on the important study variables, however, was not examined. Future research should think about evaluating the effect of COVID-19 on the existing research model. Furthermore, the sample of the study included middle and high school students. Therefore, care should be taken when extrapolating the findings of this study to other demographics, such as children in elementary school or college students.

Declarations

Conflict of interest None.

Financial support None.

Ethics statement All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee. Our research has been approved by middle and high school principals and the ethical permission of the Department of Psychology and Education, University of Education, Hue University.

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