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Perceived Stress and Internalizing Symptoms among University Students: Self-Compassion as a Moderator

Estrés percibido e internalización de síntomas en estudiantes universitarios: la autocompasión como moderador

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Abstract
This study examined the moderating role of self-compassion in the relationship between perceived stress and internalizing symptoms among Vietnamese university students. Using convenience sampling, the cross-sectional study included 408 participants who completed the Self-Compassion Scale, Perceived Stress Scale, and Depression, Anxiety, and Stress Scales 21. The results indicated that self-compassion moderated the relationship between perceived stress and anxiety (B = -0.063; SE = 0.016; 95% CI = [-0.095, -0.031]), as well as the relationship between perceived stress and depression (B = -0.084; SE = 0.017; 95% CI = [-0.117, -0.050]). Theoretically, this study contributes to understanding the protective role of self-compassion in mitigating the association between perceived stress and internalizing symptoms. Practically, the findings suggest that interventions aimed at enhancing self-compassion could be beneficial in reducing internalizing symptoms among university students.

Keywords: Anxiety; depression; perceived stress; self-compassion; Vietnam.

Resumen
Este estudio examinó el rol moderador de la autocompasión en la relación entre el estrés percibido y la internalización de síntomas en estudiantes universitarios vietnamitas. Utilizando un muestreo por conveniencia, el estudio transversal incluyó

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a 408 participantes que completaron la Escala de Autocompasión, la Escala de Estrés Percibido y las Escalas de Depresión, Ansiedad y Estrés 21. Los resultados indicaron que la autocompasión moderó la relación entre el estrés percibido y la ansiedad (B = -0,063; SE = 0,016; IC del 95% = [-0,095, -0,031]), así como la relación entre el estrés percibido y la depresión (B = -0,084; SE = 0,017; IC del 95% = [-0,117, -0,050]). Teóricamente, este estudio contribuye a comprender el papel protector de la autocompasión en la mitigación de la asociación entre el estrés percibido y la internalización de síntomas. Prácticamente, los hallazgos sugieren que las intervenciones orientadas a mejorar la autocompasión podrían ser beneficiosas para reducir la internalización de síntomas en estudiantes universitarios.

Palabras clave: Ansiedad; depresión; estrés percibido; autocompasión; Vietnam

1. INTRODUCTION

University life can be an exceptionally stressful period for many individuals. From the outset, students encounter numerous challenges, including adapting to new environments and forming new social connections. The transition is further complicated by the distinct methodologies and subject matter of university education compared to traditional schooling. Consequently, this heightened stress can increase the likelihood of mental health issues (Limone & Toto, 2022). An increasing number of university students are reporting mental health concerns (Lee *et al.*, 2021), which often manifest as perceived stress and depression and anxiety symptoms.

Perceived stress refers to an individual's subjective assessment of their stress levels at a given time (Phillips, 2013). Globally, the prevalence of stress among university students varies widely: 12.7% in Saudi Arabia (Alsaleem *et al.*, 2021), 30.7% in Bangladesh (Rois *et al.*, 2021), 37.7% in Malaysia (Jia & Loo, 2018), 21.5% in Germany (Karing, 2021), 63.5% in Ethiopia (Worku *et al.*, 2020)stress and depression are the central problems observed among university students due to the transitional nature. Consequently, the problem has an adverse effect on the wellbeing and academic performance of students. Objective. To assess perceived stress, depression, and associated factors among undergraduate health science students at Arsi University in 2019 in Oromia, Ethiopia. Methods. An institutional-based cross-sectional study design on undergraduate health science students was employed for the study from February 25 to April 15, 2019. Data were collected by using a self-administered questionnaire of the perceived stress scale (PSS-14, and between 16.3% and 80% in Vietnam (Thang *et al.*, 2022, Thai *et al.*, 2021).

Internalizing symptoms encompass experiences such as sadness, anxiety, loneliness, and depression (Peterson *et al.*, 2021, Ehrenreich & Underwood, 2016). This study specifically examines anxiety and depressive symptoms as components of internalizing symptoms. In recent years, there has been a notable increase in the prevalence of internalizing symptoms,

particularly anxiety and depression, among university students (Peterson *et al.*, 2021). Data reveals that 16.7% of university students report experiencing anxiety within the past 12 months, while 18.5% report depression symptoms in the same timeframe (Auerbach et al., 2018). In Vietnam, 25.9% of university students experience anxiety symptoms, and 42.3% experience depression symptoms (Thai Quynh-Chi *et al.*, 2021). This data underscores a higher prevalence of internalizing symptoms among Vietnamese university students compared to their peers in other countries.

1.1. Perceived stress and internalizing symptoms

Perceived stress is commonly observed among high school and university students, with notable associations to internalizing symptoms. Studies have found that adolescents under significant stress frequently report higher levels of depression and anxiety (Lathren *et al.*, 2019, Simpson *et al.*, 2020, Y. Luo *et al.*, 2019, Z. Luo *et al.*, 2021, Pereira-Morales *et al.*, 2019). Various theoretical perspectives provide insights into this connection. For instance, elevated perceived stress might influence resilience, which in turn could be related to increased anxiety and depressive symptoms (Z. Luo *et al.*, 2021). Additionally, perceived stress is linked to challenges such as lower academic performance, diminished happiness, and general health issues (Sribanditmongkol *et al.*, 2015, Urquijo *et al.*, 2016), which are associated with heightened anxiety and depression (Afsar & Kulsoom, 2015, Y. Luo *et al.*, 2019). Moreover, high levels of perceived stress among students are often connected to sleep disturbances, which can be associated with a greater likelihood of depression (Liu *et al.*, 2021).

1.2. Self-compassion as a moderator

Self-compassion encompasses behaviors related to self-acceptance, self-understanding, and self-kindness during challenging times (Braehler & Neff, 2020, Muris, 2016). Research indicates that self-compassion is associated with reduced negative emotions, including anxiety and depression (Muris *et al.*, 2016, Lathren *et al.*, 2019), and lower levels of perceived stress among teenagers (Bluth *et al.*, 2017). Interventional studies suggest that self-compassion-based therapies can be effective in addressing internalizing symptoms in adolescents (Bluth & Eisenlohr-Moul, 2017, Bluth *et al.*, 2016). Additionally, self-compassion has been found to correlate positively with resilience (Neff & McGehee, 2010), a quality that is linked with better management of depression and anxiety symptoms (Hjemdal *et al.*, 2011, Lau, 2022). Engaging in self-compassion helps individuals cope with difficult emotions such as sadness, despair, shame, anger, anxiety, and depression (Braehler & Neff, 2020). Those who practice self-compassion are often more able to find meaning in life and experience reduced boredom (O'Dea *et al.*, 2022), while a sense of meaninglessness is often associated

with depression (Lovibond & Lovibond, 1995). Conversely, a lack of self-compassion is related to negative self-perceptions, which may be linked with higher levels of depression and anxiety (Neff & McGehee, 2010; Montesano *et al.*, 2017). Thus, self-compassion serves as an important protective factor in the context of mental health (Muris, 2016).

1.3. Gaps and Objectives of the Study

The literature on the relationship between perceived stress, self-compassion, and internalizing symptoms is limited (Y. Luo *et al.*, 2019, Lathren *et al.*, 2019). Luo *et al.*, (2019) found that among Chinese students, higher levels of self-compassion were associated with reduced internalizing symptoms, partly through its connection with perceived stress. Similarly, Lathren, Bluth and Park (2019) observed that self-compassion was related to changes in the association between perceived stress and internalizing symptoms among adolescents in the U.S. However, there is a lack of research examining these relationships in Vietnamese populations. Additionally, the role of self-compassion in the context of perceived stress and internalizing symptoms within undergraduate students remains underexplored. This study seeks to address this gap by examining the connections between perceived stress and internalizing symptoms in Vietnamese undergraduates and assessing how self-compassion might relate to these associations. We propose the following hypotheses:

Hypothesis 1: Perceived stress is positively associated with internalizing symptoms.

Hypothesis 2: The relationship between perceived stress and internalizing symptoms among Vietnamese undergraduates is moderated by self-compassion.

2. METHODS

2.1. Sample and procedure

In this cross-sectional study, a convenience sampling method was used to select the research sample. The process involved several steps: First, the study population was identified as undergraduate students enrolled at a university in central Vietnam. Next, students were notified about the study through their instructors and study groups, with detailed information provided about the study's objectives, participation procedures, and data confidentiality. Interested students then received comprehensive information about the study and their rights, and informed consent was obtained from all participants. The survey was conducted online at the classrooms, with participants completing it within a 20-minute timeframe. Finally, the collected data were processed and analyzed to ensure accuracy and completeness.

The sample for this study comprised 408 undergraduate students, including 341 women and 67 men, representing various academic years: 203 freshmen, 85 sophomores, 54 juniors, and 66 seniors. The mean age of participants was 19.95 years (SD = 1.636). This diverse sample accurately reflects the undergraduate population at the university in central Vietnam, allowing for a comprehensive analysis of the study's objectives.

2.2. Instruments

We employed the following instruments to assess internalization symptoms, self-compassion, and perceived stress:

2.2.1. Perceived stress

Perceived stress was measured using the Perceived Stress Scale (Cohen *et al.*, 1983). This 10-item self-report questionnaire employs a 5-point response scale (from 0 = 'never' to 4 = 'very often') and includes questions such as, "In the last month, how often have you felt that you were unable to control the important things in your life?" The total score ranges from 0 to 40, with higher scores reflecting greater levels of perceived stress. This scale is widely used in studies involving Vietnamese samples (Dao-Tran *et al.*, 2017; Giao & Ngọc Lân, 2022; Nguyen & Nguyen, 2020)tuổi trung bình 42,5 (±15,3. In this study, the reliability coefficient was α = 0.742.

2.2.2. Self-compassion

The short-form Self-Compassion Scale (Raes *et al.*, 2011) was used to assess self-compassion. This scale includes twelve self-report items (e.g., 'When something painful happens, I try to take a balanced view of the situation'), which respondents rate on a 5-point scale, where 1 indicates 'almost never' and 5 indicates 'almost always.' The total score ranges from 12 (lowest self-compassion) to 60 (highest self-compassion). The scale has shown high reliability and validity in samples of Vietnamese adolescents (Nguyen & Nguyen, 2020). In this study, the reliability coefficient was strong (α = 0.864).

2.2.3. Internalizing symptoms

Internalizing symptoms were assessed using the anxiety and depression subscales of the Depression, Anxiety, and Stress Scales 21 (DASS 21) (Lovibond & Lovibond, 1995). Participants rated each of the seven items on the anxiety and depression subscales using a 4-point scale, where 0 represents "never" and 3 represents "almost always". Example items for the anxiety subscale include "I was conscious of the dryness in my mouth",

while the depression subscale includes items such as "I felt that life had no purpose". The total score for each subscale ranges from 0 to 42, with higher scores indicating more severe symptoms of anxiety or depression. The DASS 21 has been widely used in research involving Vietnamese samples (Ho, 2023; Le *et al*., 2017)"type":"article-journal" ,"volume":"42"},"uris":["http://www.mendeley.com/documents/?uuid=ef099420-ee63-4d86-8512-a23ee6e6d05a"]},{"id":"ITEM-2","itemData":{"DOI":"10.1371/journal.pone.0180557","ISSN":"1932-6203","PMID":"28723909","abstract":"Objectives To assess the internal consistency, latent structure and convergent validity of the Depression, Anxiety and Stress Scale-21 (DASS-21, demonstrating its applicability and reliability in this context. In this study, the reliability coefficients were $\alpha = 0.768$ for the depression subscale and $\alpha = 0.886$ for the anxiety subscale.

2.2.4. Demographic information

The demographic variables in this study included age, grade level, and gender. Grade levels were coded as follows: 1 for freshmen, 2 for sophomores, 3 for juniors, and 4 for seniors. Gender was coded as 1 for male and 2 for female.

2.3. Data analysis

In this study, all analyses were conducted using SPSS 20. Descriptive statistics, such as means, standard deviations, and Pearson correlation coefficients, were calculated for each variable. To explore the relationships between variables, bivariate correlations were assessed. Moderation analysis was performed using Model 1 of the Process Macro 4.2 for SPSS (Hayes, 2018). In these moderation models, self-compassion was designated as the moderator variable (W), perceived stress as the predictor variable (X), and anxiety (or depression) as the outcome variable (Y). Age was included as a control variable in the moderation models, specifically for the outcome variable Y (anxiety).

3. FINDINGS

3.1. Preliminary analysis

Table 1 displayed the means, standard deviations, and Pearson correlation coefficients for each variable. The data in Table 1 revealed that perceived stress had a significant positive relation with internalizing symptoms, with anxiety ($r = 0.344$, $p < 0.001$) and depression ($r = 0.301$, $p < 0.001$). Conversely, self-compassion had a significant negative relation with these internalizing symptoms, with anxiety ($r = -0.365$, $p < 0.001$) and depression (r =

-0.413, p < 0.001). Additionally, anxiety symptoms had a significant positive correlation with depression symptoms (r = 0.750, p < 0.001). Age differences were also observed in anxiety symptoms.

Table 1. Preliminary analysis

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**M±SD**
(1) Perceived stress	____				20.765±4.767
(2) Self-compassion	-0.053	____			38.480±5.165
(3) Anxiety symptoms	0.344**	-0.365**	____		11.804±7.900
(4) Depression symptoms	0.301**	-0.413**	0.750**	____	9.275±8.450
Age	-0.054	0.049	-0.128**	-0.057	19.95±1.636

*Notes: **: p <0.01*

3.2. Moderation model of self-compassion

According to Table 2, the interactions between perceived stress and self-compassion significantly predicted anxiety symptoms (B = -0.063; SE = 0.016; 95% CI = [-0.095, -0.031]). Similarly, these interactions also significantly predicted depression symptoms (B = -0.084; SE = 0.017; 95% CI = [-0.117, -0.050]). These findings indicate that self-compassion moderates the relationship between perceived stress and internalizing symptoms.

Table 2. Regressions testing self-compassion as a moderator in the association between perceived stress and internalizing symptoms

Outcome: Anxiety		***B***	***SE***	**95% *CI***
Perceived stress		2.838***	0.598	[1.662, 4.014]
Self-compassion		0.753*	0.336	[0.093, 1.413]
Perceived stress * Self-compassion		-0.063***	0.016	[-0.095, -0.031]
Age		-0.399	0.206	[-0.803, 0.006]
Conditional effects	Self-compassion value	Effect	*SE*	*95% CI*
	Low Self- compassion	0.749***	0.090	[0.572, 0.925]
	Moderate Self-compassion	0.425***	0.076	[0.276, 0.574]
	High Self- compassion	0.101	0.132	[-0.158, 0.360]

Outcome: Depression	***B***	***SE***	**95% *CI***
Perceived stress	3.570***	0.631	[2.331, 4.810]
Self-compassion	1.055**	0.354	[0.359, 1.751]
Perceived stress * Self-compassion	-0.084***	0.017	[-0.117, -0.050]

Conditional effects	Self-compassion value	Effect	*SE*	*95% CI*
	Low self- compassion	0.784***	0.095	[0.598, 0.970]
	Moderate self- compassion	0.352***	0.080	[0.195, 0.509]
	High self- compassion	-0.080	0.139	[-0.353, 0.194]

*Notes: *: p <0.05, **: p <0.01, ***: p <0.001*

Simple slope analysis (see Fig 1 and Fig 2) revealed that the positive relationship between perceived stress and anxiety was significant and strong when students had low levels of self-compassion (B = 0.749, 95% CI = [0.572, 0.925]). In contrast, this relationship weakened and became non-significant when students had high levels of self-compassion (B = 0.101, 95% CI = [-0.158, 0.360]). Similarly, the positive relationship between perceived stress and depression was significant and strong for students with low levels of self-compassion (B = 0.784, 95% CI = [0.598, 0.970]), but weakened and became non-significant for those with high levels of self-compassion (B = 0.080, 95% CI = [-0.353, 0.194]). These results suggest that self-compassion has the potential to buffer the risk of experiencing internalizing symptoms among students with high levels of perceived stress.

Fig 1. Self-compassion as a moderator in the association between perceived stress and anxiety symptoms

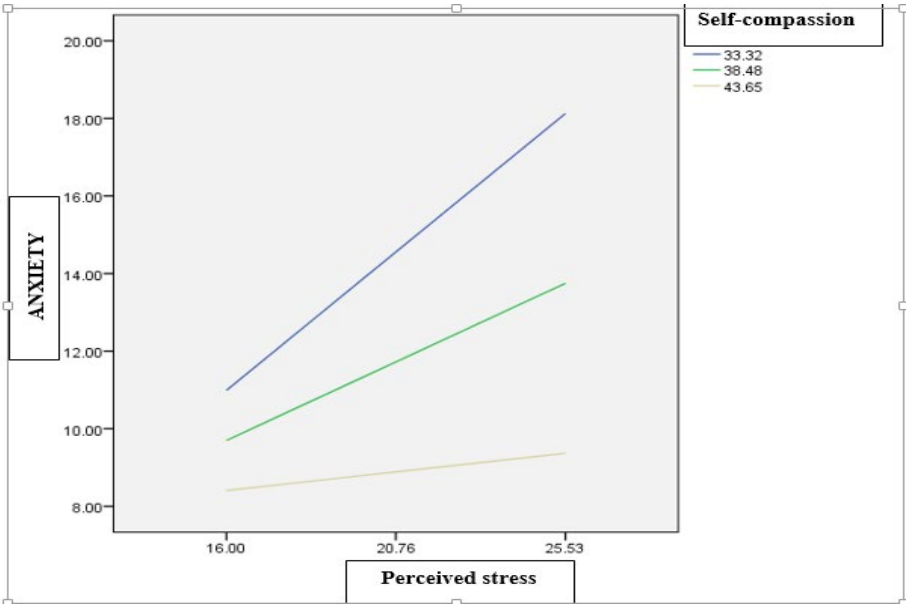
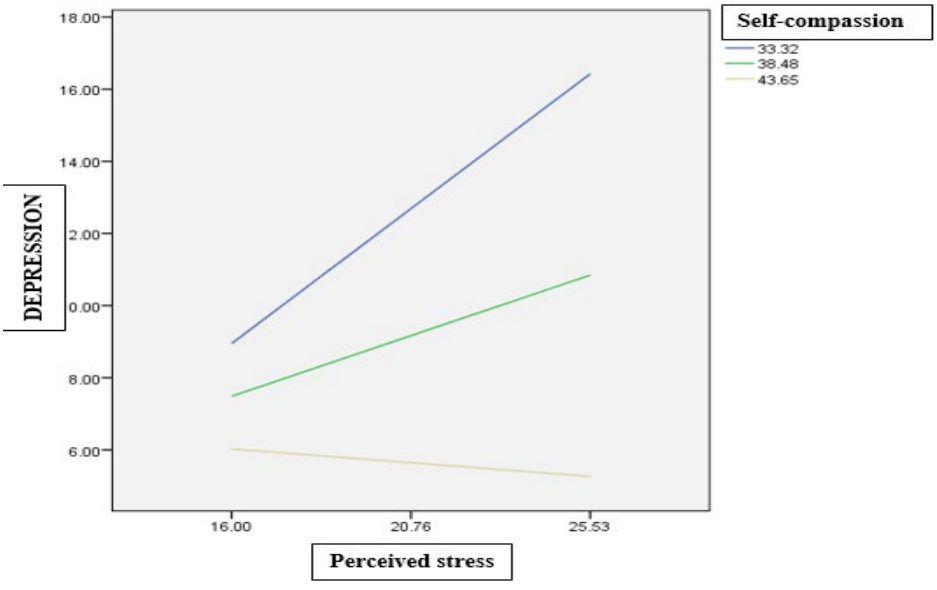


Fig 2. Self-compassion as a moderator in the association between perceived stress and depression symptoms



4. DISCUSSION

The findings of this study are consistent with previous research indicating that higher levels of perceived stress are associated with increased internalizing symptoms among adolescents and university students in the U.S. (Lathren *et al.*, 2019, Simpson *et al.*, 2020), China (Y. Luo *et al.*, 2019), and Colombia (Pereira-Morales *et al.*, 2019). This study extends these observations to Vietnamese undergraduates, further supporting the existing literature. Additionally, building on earlier studies, it is suggested that perceived stress levels may be linked to reduced resilience (Z. Luo *et al.*, 2021), lower happiness, decreased academic performance, and poorer general health (Sribanditmongkol *et al.*, 2015, Urquijo *et al.*, 2016), as well as impaired sleep quality, which could contribute to worsening depression symptoms among university students (Liu *et al.*, 2021).

More importantly, this study found that self-compassion significantly moderated the relationship between perceived stress and internalizing symptoms (anxiety and depression) among university students in Vietnam. This finding supports hypothesis H2 and aligns with previous research on adolescent samples in the U.S. (Lathren *et al.*, 2019). The results of the simple slope analysis revealed that students who experienced both high levels of perceived stress and low levels of self-compassion had the highest levels of internalizing symptoms. In contrast, those with both low levels of perceived stress and high levels of self-compassion exhibited the lowest levels of internalizing symptoms. This implies that high self-compassion may serve as a protective factor for university students facing high levels of perceived stress, potentially shielding them from developing internalizing symptoms. Based on previous studies, we interpret these results as follows:

First, individuals with high levels of perceived stress report more anxiety and depression symptoms (Lathren *et al.*, 2019; Y. Luo *et al.*, 2019; Pereira-Morales *et al.*, 2019; Simpson *et al.*, 2020). This relationship has been documented across various cultural contexts, including studies in the U.S. (Lathren *et al.*, 2019, Simpson *et al.*, 2020), China (Y. Luo *et al.*, 2019), and Colombia (Pereira-Morales *et al.*, 2019), suggesting that the link between perceived stress and internalizing symptoms is a universal phenomenon, transcending cultural and geographical boundaries. Understanding this relationship is crucial for developing effective interventions aimed at reducing perceived stress and, consequently, mitigating the risk of internalizing symptoms in vulnerable populations.

Second, individuals with low levels of self-compassion are more likely to experience higher symptoms of anxiety and depression (Muris *et al.*, 2016, Lathren *et al.*, 2019, Y. Luo *et al.*, 2019). These individuals often struggle with negative self-perceptions (Neff & McGehee, 2010), self-blame, and self-criticism (Abdollahi *et al.*, 2021), which may increase their risk of experiencing symptoms of depression and anxiety. In contrast, those with high levels of self-compassion tend to recover more effectively from stressful events (Neff & McGehee, 2010), manage and respond to difficult situations with greater resilience

(Abdollahi *et al.*, 2020, Abdollahi *et al.*, 2021), and find meaning in life (O'Dea *et al.*, 2022). Consequently, they are less prone to internalizing symptoms.

Finally, low self-compassion is not only associated with increased symptoms of anxiety and depression but also linked to higher levels of perceived stress, as demonstrated in both cross-sectional (Bluth *et al.*, 2017) and longitudinal studies (Ewert *et al.*, 2024). Self-compassion may facilitate more effective stress responses by reducing perceived stress and promoting positive coping strategies (Ewert *et al.*, 2024). Self-compassion seems to provide a framework that helps individuals perceive situations as less threatening and/or reinforces their belief in their ability to cope with situational demands (Lazarus, 1966). This suggests that having a more self-compassionate attitude can particularly help in reducing feelings of harm and stress (Ewert *et al.*, 2024).

Overall, several limitations should be considered when interpreting the results of the current study. Firstly, the sample was not balanced by gender, which may affect the representativeness and bias of the results. Future studies should aim for approximately equal sample sizes for both genders to enable such analyses. Secondly, the cross-sectional design limits the ability to establish causality between the analyzed variables. Considering that the relationship between perceived stress and internalizing symptoms may grow over time, it would be beneficial to incorporate a longitudinal design in future studies to observe the influence of self-compassion over time. This would provide a deeper understanding of how these effects unfold in students' mental health. Thirdly, convenience sampling can bias the sample toward a particular group and make it difficult to generalize the results. Furthermore, convenience sampling can make the sample less representative of the entire population, leading to possible bias in the research results, making it difficult to apply to other population groups or broader contexts. Fourthly, collecting data using self-report methods can make the data likely to bias due to subjective emotions and recall bias; participants may respond according to social expectations; information is inaccurate, reducing the reliability and objectivity of the research results. Future research should consider combining self-reports with other data collection methods, such as interviews and observations.

Finally, the Vietnamese cultural context may influence the association between perceived stress and internalizing symptoms among Vietnamese students as well as the role of self-compassion in this relationship; however, our study did not explore. Vietnam is an East Asian country where collectivist and community-oriented values are prioritized over individualistic values. Social expectations of high academic achievement, combined with pressure from family and friends, may cause Vietnamese university students to experience higher levels of stress than those in other cultures. In Vietnam, academic success is often viewed as a key measure of achievement and filial piety, leading to significant psychological pressure if students fail to meet these expectations. These pressures may increase internalizing symptoms such as anxiety and depression. In addition, the "face-saving" culture that is

characteristic of Vietnam may make individuals reluctant to show vulnerability or seek psychological support. This may make it difficult for them to accept or practice self-compassion when faced with stress. In such contexts, self-compassion can help reduce stress by creating self-acceptance and reducing harsh self-criticism. However, encouraging self-compassion can be challenging due to social stereotypes that self-compassion can be misinterpreted as a sign of weakness or lack of motivation. Therefore, future studies in Vietnam that follow the same research direction as ours should assess the impact of the cultural context on these relationships.

This study has several drawbacks, but it still makes a significant contribution. The findings reveal a positive association between perceived stress and internalizing symptoms among university students, with self-compassion serving as a moderating factor in this relationship. This insight deepens our understanding of how psychological factors interact and influence each other within the context of mental health. Specifically, the study provides crucial theoretical groundwork on the role of self-compassion in mitigating the negative impact of perceived stress on internalizing symptoms. These findings not only enrich the conceptual framework of how psychological factors affect mental health but also pave the way for the development and refinement of theoretical models in mental health research. The study offers vital insights for counselors and health educators in designing intervention programs and providing support to students. The results highlight the importance of enhancing self-compassion as a strategy to reduce internalizing symptoms and manage stress more effectively. Consequently, health educators can develop activities and educational programs aimed at improving self-compassion among students, including approaches such as mindfulness-based cognitive therapy, compassion-focused therapy, yoga, and related interventions. Furthermore, incorporating self-compassion-enhancing strategies into student support programs can help improve mental health and reduce the risk of internalizing symptoms within the student community.

To further enhance the effectiveness of education and support students in developing self-compassion and managing stress, several specific measures can be implemented. These include organizing training programs and workshops on stress, self-compassion, and coping strategies, helping students understand the connection between these factors and mental health. Additionally, offering expert support through individual or group counseling sessions can assist students in identifying and addressing issues related to stress and internalizing symptoms. Moreover, providing self-learning resources, such as books, instructional videos, or mobile apps on self-compassion and stress management, will enable students to independently develop the necessary skills for daily life. Finally, integrating these topics into the curriculum will help students apply this knowledge in their academic environment. Implementing these measures will reduce the risk of internalizing symptoms and improve overall mental health among students.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee.

Declaration of conflicts of interest

Long Dau Minh has declared no conflicts of interest.

Dung Van Ho has declared no conflicts of interest.

Thi Truc Quynh Ho has declared no conflicts of interest.

Informed consent

Informed consent was obtained from all individual participants included in the study

Data Availability Statement

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

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