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Factors influencing Stress, Anxiety, and Depression in Students regarding The Thesis Process

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Abstract

Purpose: To investigate the factors contributing to stress, anxiety, and depression among Vietnamese students before and during their thesis process.

Methodology: A Cross-sectional online survey was conducted with questionnaire comprised three parts: (1) demographics, (2) thesis status, expectation, and potential factors influencing stress, anxiety, and depression, and (3) The Depression, Anxiety, and Stress Scale (DASS-21) assessment. The collected data was analyzed using Mann-Whitney U test, Fisher's Exact test, and Path analysis to explore relationships among the surveyed variables to stress/anxiety/depression condition.

Results: Among participants, 180 were pre-thesis students, 83 were peri-thesis students, and 212 had completed the thesis. Six factors were identified as significantly influencing stress, anxiety, and depression among pre-thesis students. They included "Pressure from discrimination", "Pressure from unexpected incidents", "Good pedagogical skills of thesis advisor", "Stopping grade-improvement courses when doing thesis", "Dealing with illnesses that are being treated", and "Student's expectations for their future thesis". Perceived discrimination would directly increase stress score ($\beta=0.16$, $p\text{-value}<0.001$), and was directly influenced by factors such as (1) "Pressure from unexpected incidents", (2) "Good pedagogical skills of thesis advisor", and (3) "Stopping grade-improvement courses when doing thesis". Anxiety scores were increased by "Current illnesses" and "Stopping grade-improvement courses when doing thesis" ($\beta=0.13$, $p\text{-value}=0.002$ and $\beta=0.15$, $p\text{-value}<0.001$, respectively). Only "Student's expectations for their future thesis" increased the severity of depression. For the peri-thesis group, strong "Academic supports from thesis-conducting institute" and a "Good attitude of thesis advisor" enhanced the likelihood of receiving administrative supports, thereby decreasing stress, anxiety, and depression scores ($\beta=-0.31$, $p\text{-value}=0.008$; $\beta=-0.39$, $p\text{-value}<0.001$; and $\beta=-0.42$, $p\text{-value}=0.008$, respectively).

Conclusions: Thesis-conducting environment, students' expectations of future advisors and schedules might directly and indirectly impact stress, anxiety, and depression levels among students in pre-thesis and peri-thesis stages.

Introduction

Completing a thesis or dissertation has been known as an important milestone in a student's academic career^{1,12}. Nevertheless, this undertaking could also come with many difficulties that have the potential to significantly affect the students' overall well-beings and academic achievements^{3,38}. Extensive research has explored the psychological experiences of postgraduate and doctoral students

during thesis completion. However, the challenges faced by undergraduate thesis writers remain underexplored. Doctoral students often struggle with maintaining work-life balance, managing long-term research commitments, and navigating the complexities of supervisory feedback in postgraduate research supervision^{6,26}. However, these findings cannot be directly applied to undergraduates, who approach research with fundamentally different preparation and face difficulties in independent inquiry and research conceptualization⁴⁶. The psychological impact also manifests differently and severely among undergraduates due to their limited methodological exposure³³. Furthermore, undergraduate thesis writers might require different support structures focused on research autonomy within compressed timelines rather than the long-term persistence strategies typically offered to doctoral students²⁰. Thus, understanding the factors contributing to depression and anxiety among a wide range of students, and their consequences on thesis outcomes is critical to offer students with appropriate assistance and solutions.

Moreover, students from different cultural backgrounds experience stress differently during thesis work. Asian students, in particular, face unique stressors before thesis writing compared to their Western counterparts^{42,43}. They have suggested that the cultural emphasis on academic achievement and family expectations in many Asian societies may intensify students' pressure and sense of responsibility, leading to heightened stress levels. Besides, language barriers and challenges in approaching Western research methodologies were reported to lead to uncertainty and stress before starting a thesis⁵⁰. International students from East and Southeast Asian countries such as China and Vietnam often experience specific challenges when conducting research in Western academic contexts, including adapting to Western citation practices and research writing conventions^{29,32}, and between local educational traditions and imported research methodologies³⁴. On the other hand, the impact of stress on academic performance and thesis outcomes has been a growing concern in Asian academic settings, especially in Vietnam^{2,27,35,38}.

This study examines factors contributing to stress, anxiety, and depression among both undergraduate and graduate students before and during the thesis writing process, while also exploring their relationship with academic outcomes. By investigating culturally specific stressors, coping strategies, and the role of the advisor-student relationship, it provides valuable insights into creating a supportive and nurturing environment for Vietnamese thesis students.

Methodology

Study Design

This cross-sectional study was conducted between November 10th, 2022, and December 12th, 2022, through an anonymous Google form online survey written in Vietnamese. The survey was distributed across social media platforms, and participation was voluntary. Eligibility was limited to Vietnamese citizens with at least an undergraduate education level. To protect privacy, only email addresses were collected for the distribution of promotional gifts, ensuring adherence to Declaration of Helsinki¹⁸. The survey was designed with mandatory response fields for all questions, requiring completion of each item before proceeding to subsequent sections, thereby eliminating missing data concerns. The technical design prevented multiple submissions from the same individual, and students were explicitly instructed to complete the survey only once. By submitting completed questionnaires, participants provided consent for their anonymized responses to be used in the research. In our form, we clearly stated in the beginning that by voluntarily participating in this survey, respondents provide explicit consent for the research team to utilize the information shared solely for research purposes. The utmost confidentiality will be maintained, ensuring that all data provided remains exclusively within the purview of the research team and unrelated to any commercial interests. Participation remained strictly voluntary and anonymous throughout the process. The research team ensured that all participants received thorough explanations regarding the study's background and objectives via the introduction of the survey, and engagement was solicited without applying any form of pressure or coercion.

Stress/Anxiety/Depression Assessment Questionnaire

The DASS-21 (Depression, Anxiety, and Stress Scale) in the Vietnamese-translated version authorized by the Vietnam Ministry of Health (Decision number: 1856/QĐ-BYT) was used to assess stress, anxiety, and depression levels³⁰. It consists of 21 items divided into three 7-item scales for each category (stress, anxiety, and depression). Scores are calculated according to instructions from the Vietnam Ministry of Health, with severity categorized as normal, mild, moderate, severe, or extremely severe, based on specific score ranges assigned to each category. In this research, we used two types of data from the DASS-21 scale. First, the stress/anxiety/depression scores were directly calculated from this scale. Second, the condition of the participant was assessed, with participants' whose stress/anxiety/depression symptoms above the light level

would be considered as being stress/depression/anxiety. To identify the internal reliability of the DASS-21 scale used in this study, Cronbach's alpha was calculated, with the cut-off value greater than 0.7⁴⁴. The Cronbach alpha for each subscale for each sub-groupst of participants were reported thoroughly in the result session.

Possible factors influencing stress/anxiety/depression analyzed in the questionnaire

Based on literature considering Vietnam's specific condition^{15,35}, several factors were identified as having potential influence on stress/anxiety/depression levels of individuals who have not yet conducted their thesis (pre-thesis), those in their thesis stage (peri-thesis), and those completed their thesis (post-thesis). Two types of factors were included in this research. The first type is demographic factors, which mostly are all categorical data. These include gender, year of birth (considered as ordinal data), current level of education, current marital status, major during thesis work (field of study), form of thesis, current grade point average (GPA), and current health condition. Additionally, for the pre-thesis group, we inquired about participants' expectation for their upcoming thesis and their plans to address undesired situations during thesis period. For the peri-thesis group, we investigated their intention to terminate the current thesis and the expected duration to complete it. The second type of factors includes self-evaluation questions. Of note, the post-thesis group was used as a control group for unidirectional relationship inference. The details of these questions were provided in the supplementary file (Table S1.1).

Statistical Analysis

The original survey data was organized and refined using Microsoft Excel 365 (Microsoft Corporation, 2018) to remove inappropriate responses. All statistical analyses were conducted using STATA18 (StataCorp, 2023). A p-value <0.05 was considered as statistically significant.

Factors associated with stress/anxiety/depression:

The study employed Fisher's exact test to explore the relationship between demographic variables (categorical) and the mental health status (stress, depression, anxiety) of participants across different thesis stages (pre-, peri-, post-thesis). The association's strength was quantified using odds ratios and 95% confidence intervals, calculated through exact logistic regression, which accommodates categories with multiple subsets. For ordinal self-evaluation variables, the Mann-Whitney U test identified associations by highlighting distribution differences between normal and affected participants, with Cliff's delta measuring the effect size. This

non-parametric approach, suitable for small sample sizes and non-assumption of data distribution, ranges Cliff's delta from -1 to +1, indicating the effect size's magnitude. Cliff's delta values are categorized into negligible (<0.147), small (0.147-0.329), medium (0.330-0.473), and large (≥ 0.474) effect sizes that reflect the impact's significance⁴⁸. The study manually calculated Cliff's delta and its 95% confidence intervals using bootstrap methods with 10,000 resamples. The Cliff's delta formula⁸ is as follows:

$$d = \frac{2U}{mn} - 1$$

Where: U is the Mann-Whitney statistic; m and n are group sample size.

Inference of a unidirectional relationship: The study used the post-thesis group as a control group to understand the impact of stress, anxiety, and depression on decision-making and behavior^{4,22}. The significance of the post-thesis group lies in their current psychological state reflecting on their responses to survey questions about past behaviors and decisions. If factors like stress, anxiety, or depression significantly affect the post-thesis group, it suggests that these psychological conditions influence their perception and evaluation of past decisions which represents a unidirectional relationship where stress, anxiety, and depression impact the recollection and assessment of past actions, rather than the reverse. Thus, analyzing the post-thesis group provides insights into how current mental health states could affect decision-making processes.

Path analysis: To further examine the relationships, path analysis was adopted. Correlation matrices were established to identify possible covariance in the path analysis model. Pearson correlation assessed relationships among stress, anxiety, and depression scores, while Kendall tau correlation was used for the other variables. In the correlation matrix, a p-value <0.05 indicated significant covariance. All related variables were input into a path model using Satorra-Bentler scaling-corrected (SCALED) adjustment, suitable for non-normality of observed variables and small sample size²³. After the initial path model, mediation analysis was conducted on STATA18, and models were adjusted based on p-values and theory. Results were reported as standardized β , showing magnitude and direction of the effect, and p-value, providing evidence for existence of the effect. Goodness of fit was evaluated using Root mean squared error of approximation (RMSEA), Comparative fit index (CFI), Tucker-Lewis index (TLI), Standardized root mean squared residuals (SRMR), and Coefficient of Determination (CD), with cut-off threshold summarized in the supplementary file (Table S1.2).

Table 1: Descriptive statistics of participants

Factors	Number of Participants (%)			
	Pre-thesis (n=180)	Peri-thesis (n=83)	Post-thesis (n=212)	Total (n=475)
Gender				
Male	45 (25%)	21 (25.3%)	70 (33.02%)	136 (29%)
Female	135 (75%)	62 (74.7%)	142 (66.98%)	339 (71%)
Year of birth				
<1995	1 (0.56 %)	7 (8.43%)	12 (5.66%)	20 (4%)
1996-2000	35 (19.44 %)	58 (69.88%)	198 (93.4%)	291 (61%)
2001-2002	144 (80 %)	18 (21.69%)	2 (0.94%)	164 (35%)
Level of Education				
Graduate	7 (3.89 %)	14 (16.87%)	22 (10.38%)	43 (9%)
Undergraduate	173 (96.11 %)	69 (83.13%)	190 (89.62%)	432 (91%)
Marital status			Marital status when doing thesis	
Single – living with parents	88 (48.89%)	31 (37.35%)	102 (48.11%)	221 (46.53%)
Single – living by themselves	49 (27.22%)	27 (32.53%)	48 (22.64%)	124 (26.1%)
In a relationship	42 (23.33%)	23 (27.71%)	58 (27.36%)	123 (25.89%)
Married	1 (0.56%)	2 (2.41%)	1 (0.47%)	4 (0.84%)
Having child (children)	0 (0%)	1 (1.2%)	3 (1.41%)	4 (0.84%)
Current Stress level				
Normal	54 (30 %)	18 (21.69%)	87 (41.04%)	159 (33%)
Stress	126 (70 %)	65 (78,31%)	125 (58,96%)	316 (66%)
Current Anxiety level				
Normal	42 (23.33 %)	14 (16.87%)	65 (30.66%)	121 (25%)
Anxiety	138 (76,67 %)	69 (83,13%)	147 (69,34%)	354 (74%)
Current Depression level				
Normal	55 (30.56 %)	18 (21.69%)	90 (42.45%)	163 (34%)
Depression	125 (69,44%)	65 (78,31%)	122 (57,55)	312 (66%)
Majors (Fields of study)				
Natural science*	110 (61,1%)	44 (53,02%)	139 (65,57%)	293 (62%)
Social science**	70 (38,9%)	39 (46,98%)	73 (34,43%)	182 (38%)
Forms of thesis				
Wetlab***	64 (35.56 %)	25 (30.12%)	84 (39.62%)	173 (36%)
Drylab****	116 (64.44%)	58 (69,88%)	128 (60,38%)	302 (64%)
GPA				
<70 (<2.0 / 4.0)	14 (7.82%)	1 (1.2%)	20 (9.8%)	35 (7%)
70-80 (2.0-2.9 / 4.0)	76 (42.46%)	36 (43.37%)	69 (33.82%)	181 (38%)
80-89 (3.0-3.9 / 4.0)	87 (48.6%)	45 (54.22%)	104 (50.98%)	236 (50%)
90-100 (4.0/ 4.0)	2 (1.12%)	1 (1.2%)	11 (5.39%)	14 (3%)
Current health status			Health status while working on thesis	
Dealing with illnesses that are being treated	29 (16.11%)	14 (16.87%)	29 (13.68%)	72 (15%)
Currently free of any health issues	151 (83.89%)	69 (83.13%)	183 (86.32%)	403 (85%)
*Natural science: Life Sciences, Earth Sciences, Physics and Chemistry, Engineering, Agriculture - Forestry - Fishery - Veterinary, Medicine and Health Sciences, Mathematics, Data Science, Information Technology, Risk Management				
** Social science: Journalism and Media, Economics and Business Administrations, Education studies, Arts, Language studies, Humanities and Social Sciences, Laws				
*** Wetlab: Empirical research, Fieldwork, etc.				
**** Drylab: Project presentation, Survey or Analysis of existing data, Theoretical research, Simulation/ Programming/ Computation, Literature review, Systematic review, Meta-analysis, etc.				

Results

Characteristics of the participants

Between November 10th, 2022, and December 12th, 2022, a total of 492 participants were surveyed with 475 meeting the eligibility criteria. All participants were Vietnamese nationals, and over 18 years old. Of 475 participants, 180 students were pre-thesis, 83 peri-thesis, and 212 post-thesis. The gender distribution was 29% male and 71% females. The majority were undergraduates (90.95%) and born after 1996 (95.79%). There were 20 participants who were born before 1995, of whom four were undergraduates, and the remaining were graduate students. Details of all participants were provided in Table 1 and the supplementary file (Table S2).

To assess the internal consistency/ reliability of DASS-21 scale in evaluating stress, anxiety, and depression levels, Cronbach alpha for each subscale for pre-/peri-/post thesis participants were analyzed. With a cut-off value of 0.7 for Cronbach alpha, the DASS-21 scale in this study demonstrated excellent internal consistency, ranging from 0.8205 to 0.9575 (Figure 1, Table S3.1 - S3.4).

Inference of a unidirectional relationship using the post-thesis group

For demographic factors, the Fisher exact test revealed that “Health condition when doing thesis” was associated with stress, while “Final cGPA” associated with depression, and no factors associated with anxiety (Table S4.1 - S4.3). Additionally, Mann-Whitney U test indicated that, out of 32 self-evaluated factors, the number of factors associated

with stress, anxiety and depression conditions were nine, nine and eight, respectively (Table S5.1 - S5.5, Table S6.1 - S6.5, Table S7.1 - S7.5). These results suggested that stress, anxiety, and depression conditions unidirectionally influenced these factors, which were excluded for subsequent analysis on pre-thesis and peri-thesis groups.

Factors influencing stress/anxiety/depression in pre-thesis group

The Fisher exact test for demographic factors and Mann-Whitney U test for self-evaluated factors indicated 13 factors which might influence stress/anxiety/depression of pre-thesis participants.

Initially, a primary path model was constructed. While four of 13 paths were statistically significant ($p < 0.05$), the overall model fit was poor. This suggests the need to include mediator variables (Table S8.1 - S8.3, Figure S1). Subsequently, an intermediate model was introduced (Table S8.4), which incorporated the mediator variables generated via mediation analysis (Table S9). More importantly, the final path model was proposed after considering the significant path in the intermediate model and the theory. The final path model showed an excellent fit with the data (Figure 2, Table S8.5). In detail, the SCALED-adjusted chi-square p-value was 0.237 (>0.05), RMSE was 0.029 (<0.05), CFI was 0.988 (>0.95), TLI was 0.981 (>0.95). Moreover, the model exhibited $R^2=0.571$, meaning that the model explains 57.1% of the differences among observations, indicating a strong influence model.

According to the path analysis, only six factors influenced stress/anxiety/depression conditions in pre-thesis students (Figure 2). They included “Pressure from discrimination”, “Pressure from unexpected incidents”, “Good pedagogical skills of thesis advisor”, “Stopping grade-improvement courses when doing thesis”, “Dealing with illnesses that are being treated”, and “Student’s expectations for their future thesis”.

Regarding stress, only “Pressure from discrimination”, including gender and ethnicity, might directly affect the stress score of DASS-21 scale. Specifically, every increase in 1 unit of standard deviation (SD) from the mean of “Pressure from discrimination” would increase 0.16 SD of from the mean of the stress scale (Standardized $\beta=0.16$, $p\text{-value}<0.001$) (Figure 2, Table S8.5). Students experiencing stress highly agreed that this factor would cause stress during their future thesis process (50.4%) (Table S5.2). In line with this observation, the Mann-Whitney test revealed that students in the stress group reported significantly higher ratings, indicating a stronger

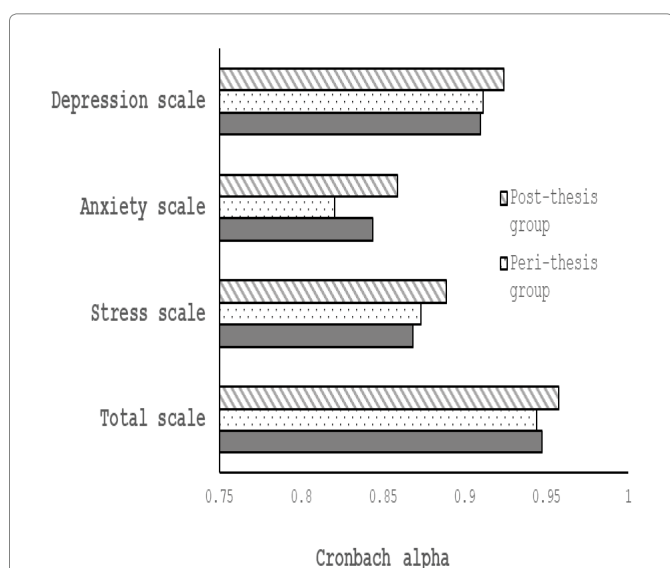
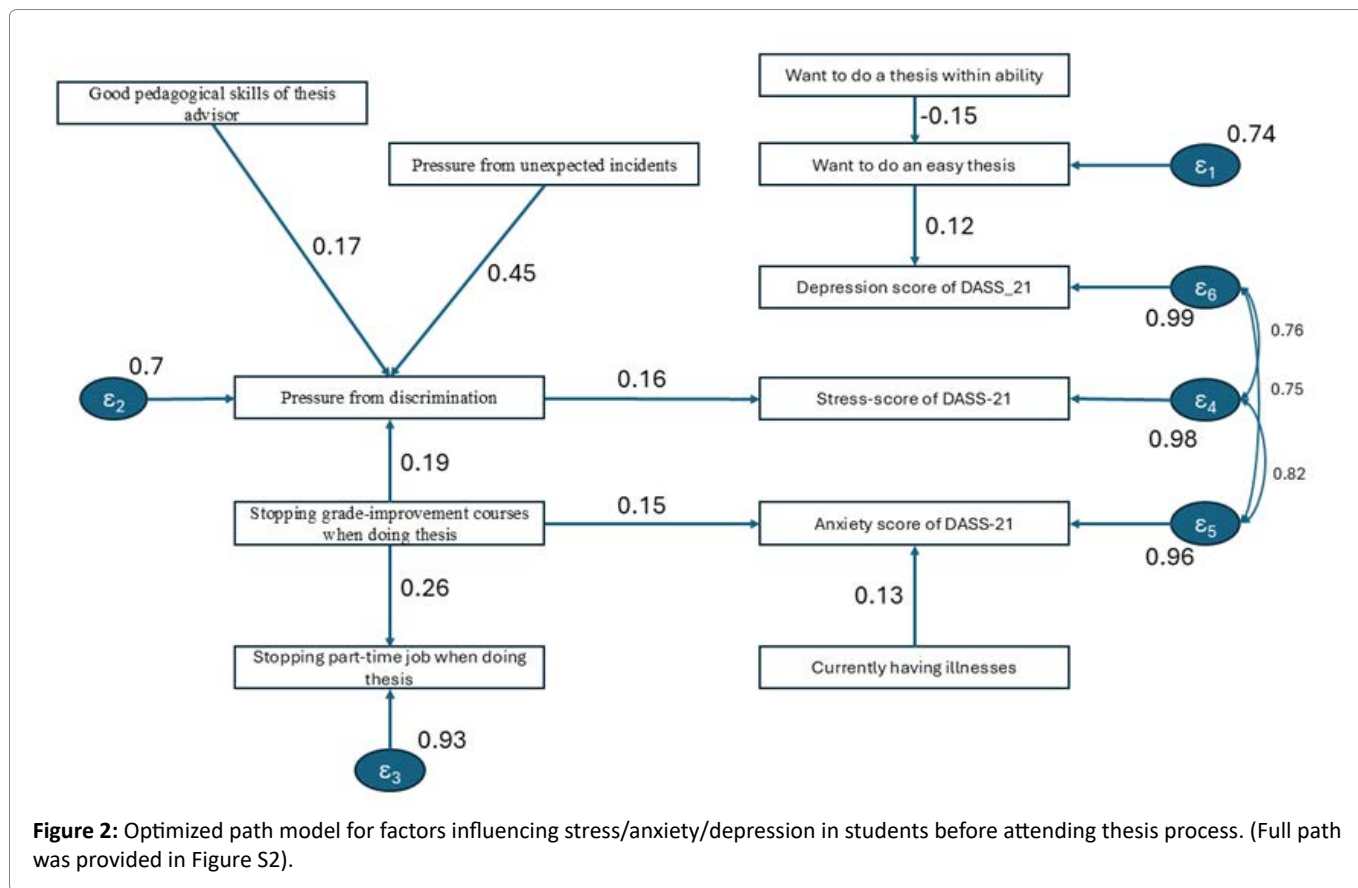


Figure 1: Internal Consistency of the DASS-21 Scale



belief that discrimination would negatively affect their thesis work ($p = 0.0001$, $\delta = -0.353$ -medium effect, 95% CI: -0.513 - -0.192) (Table S5.2). Three factors influenced the increase of discrimination rating, with “Pressure from unexpected incidents” contributing the most (Standardized $\beta=0.45$, p -value <0.001) (Figure 2, Table S8.5). Students in the stress group (77.95%) were more likely to believe that discrimination would affect their thesis work compared to students in the non-stressed group (66.66%). The Mann-Whitney test demonstrated similar results ($p = 0.0037$, $\delta = -0.185$ -small effect, 95% CI: -0.357 - -0.012) (Table S5.2). The other two factors were “Good pedagogical skills of thesis advisor” (Standardized $\beta=0.17$, p -value=0.008) and “Stopping grade-improvement courses when doing thesis” (Standardized $\beta=0.19$, p -value=0.002) (Figure 2, Table S8.5). Students in both the stress group (92.91%) and in the non-stressed group (90.74%) agreed that a future supervisor with high pedagogical skills would influence their stress condition. ($p = 0.0277$, $\delta = -0.155$ – small effect, 95% CI: -0.298 — 0.011 , respectively) (Table S5.1).

For factors influencing anxiety conditions, “Stopping grade-improvement courses when doing thesis” and “Dealing with illnesses that are being treated” currently might contribute similarly to the increase of DASS-21’s

anxiety score (Standardized $\beta=0.15$, p -value <0.001 , and Standardized $\beta= 0.13$, p -value=0.002, respectively) (Figure 2, Table S8.5). Regarding “Stopping grade-improvement courses when doing thesis”, the Mann-Whitney test identified significant differences in tendency between anxiety and non-anxiety group (44.2% agreement in anxiety group vs. 24.81% in non-anxiety group; $p = 0.0274$, $\delta = -0.22$ -small effect, 95% CI: -0.402 - -0.04) (Table S6.3). Fisher exact test showed a similar pattern for the factor currently coping with illness(es) (15% having illness in anxiety group vs. 1.11% in non-anxiety group; p -value=0.029, OR=4.834, 95% CI: 1.126-43.822) (Table S4.2).

In terms of depression, only “student’s expectations for their future thesis” was shown to affect the depression score (Figure 2). Our observations showed that 47.22% of students experienced depression. In non-depression group, 21.67% wished to do a thesis within ability. Significant association between expectations for future thesis and current depression state was observed (Fisher exact test, p -value=0.015) (Table S4.1).

Factors influencing stress/ anxiety/ depression in peri-thesis group

With the similar approach to pre-thesis student group,

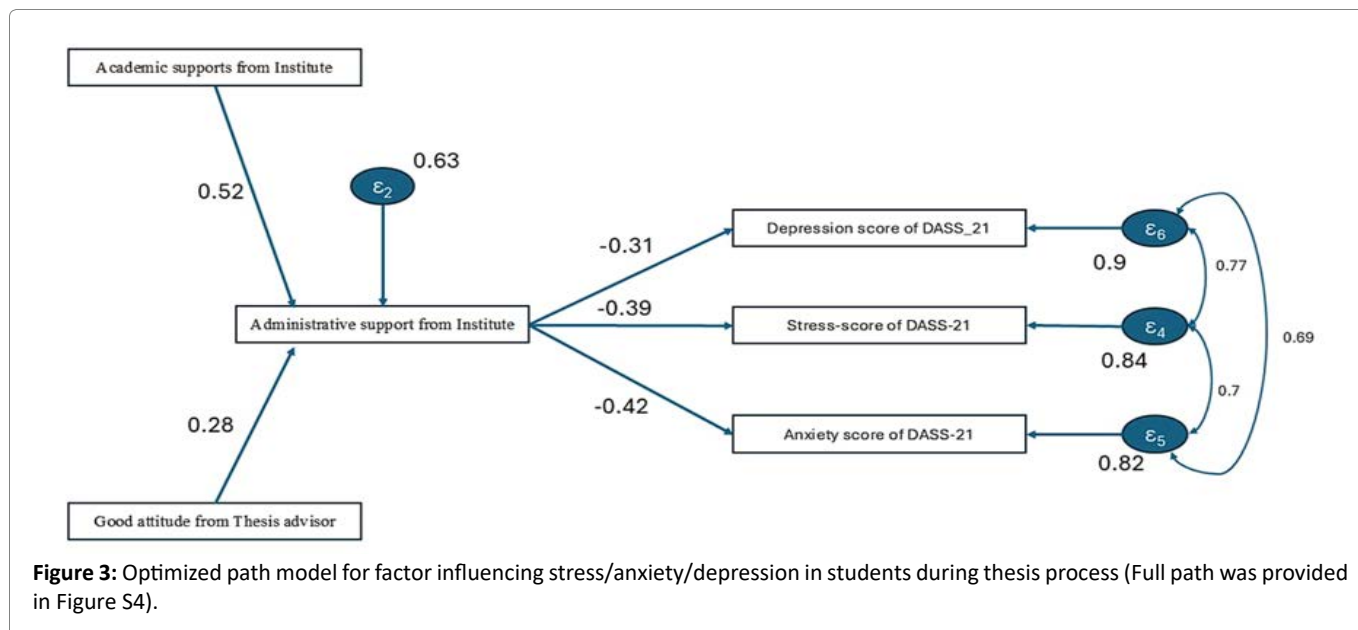


Figure 3: Optimized path model for factor influencing stress/anxiety/depression in students during thesis process (Full path was provided in Figure S4).

the final model was proposed with an extremely good fit (Figure 3, Table S10.1 – S10.4, Figure S3, Table S11). In detail, the SCALED-adjusted chi square p-value was 0.7647 (>0.05), RMSE was 0 (<0.05), CFI was 1 (>0.95), TLI was 1.027 (>0.95). The effect size R^2 for this model was 0.358, indicating an adequately strong model.

In this model, three factors affected the stress/anxiety/depression score of DASS-21 scale in peri-thesis students, with only “Administrative support” from the institute directly decreasing the stress/anxiety/depression score of DASS-21 scale (Standardized β =-0.31, p-value=0.008 for stress, Standardized β =-0.39, p-value<0.001 for anxiety, and Standardized β =-0.42, p-value=0.008 for depression) (Figure 3, Table S10.4). Regarding factor “Administrative support”, Mann-Whitney tests confirmed significant differences among different groups: stress vs. non-stress (p = 0.003, δ = 0.44-medium effect, 95% CI: 0.18-0.7) (Table S5.4), anxiety vs. non-anxiety (p = 0.003, δ = 0.675-large effect, 95% CI: 0.479-0.871) (Table S6.4), depression vs. non-depression (p = 0.0005, δ = 0.511-large effect, 95% CI: 0.277-0.744) (Table S7.4). Moreover, this factor was influenced by two other factors, namely “Academic support” from the institute (Standardized β =0.52, p-value<0.001) and “Good attitude of thesis advisor” (Standardized β =0.28, p-value=0.001) (Figure 3, Table S10.4).

Mann-Whitney tests revealed a significant influence of “Academic support” from the institute on anxiety (p = 0.0093, δ = 0.423-medium effect, 95% CI: 0.123- 0.724) (Table S6.4) and depression (p = 0.0084, δ = 0.39-medium effect, 95% CI: 0.131- 0.659) (Table S7.4) scores. Conversely, “Good attitude of thesis advisor” only affect

the depression (p = 0.0323, δ = 0.314-small effect, 95% CI: 0.041- 0.588) (Table S7.1). It is noted that these two factors only indirectly influence the stress/anxiety/depression score through the intermediate factor of administrative support from the institute.

Discussion

The mental health of Vietnamese students during their thesis process was examined in the study. Key factors identified include perceptions of the thesis and supervisors, current illnesses, unexpected incidents, discrimination, institutional supports, and academic pressures. A path model was developed to illustrate the influence of these factors on stress, anxiety, and depression on pre-thesis students, with discrimination and future thesis expectations emerging as significant contributors. Notably, stress and mental health in the peri-thesis group were closely correlated with the level of administrative and academic support provided by the institute. A refined model highlighted the direct impact of administrative support and the roles of academic support and supervisor attitudes. These findings are discussed in the context of broader student mental health research.

The optimized path model developed for pre-thesis group offers the complex relationship of factors influencing stress/anxiety/depression in students before attending thesis process

The impact of discrimination on students before thesis project: The path model reveals several important relationships between discrimination and mental health outcomes in pre-thesis students. Notably, pressure from

discrimination shows the link to stress (Standardized $\beta=0.16$) scores on DASS-21. This moderate but significant coefficients suggest discrimination experiences are associated with poorer mental health outcomes across multiple dimensions. Discrimination, whether based on race, ethnicity, gender, or other factors has been correlated with poorer mental health outcomes, including feelings of isolation and marginalization, which are associated with increased stress levels⁴¹. For pre-thesis students already managing the pressures of selecting a topic, finding a supervisor, and starting their research, experiences of discrimination correlate with higher stress levels, which may be related to academic performance and overall mental health challenges^{25,37}. Additionally, the path model shows multiple factors influencing mental health outcomes simultaneously. For instance, stopping grade-improvement courses when doing thesis work (Standardized $\beta=0.19$) shows associations with anxiety, and linked to pressure from discrimination. This result suggests complex interactions between academic, financial, and discrimination pressures. Students from disadvantaged backgrounds might face both higher discrimination and greater financial stressors, creating compound effects on mental health.

Previous research has identified strong correlations between discrimination and mental health concerns. Studies have observed associations between COVID-stress, discrimination, and psychological distress particularly among minority student groups, with higher stress levels reported among women of color³⁷. Discrimination has also been associated with poorer mental health outcomes through increased ruminative thinking, especially in socioeconomically disadvantaged individuals, suggesting that resilience-building interventions might be related to better outcomes⁴⁹. Research indicates that everyday experiences of discrimination correlate with poorer mental health indicators, including greater anger, and loneliness²⁵. Additionally, acculturative stress has been observed to statistically mediate the relationship between perceived discrimination and depression and anxiety symptoms among Muslim college students, highlighting the complex relationships between discrimination, cultural stressors, and support systems⁴⁵.

Researchers are increasingly examining the relationships between discrimination and both psychological and physiological responses that correlate with stress and adverse health outcomes. For instance, the Multi-Ethnic Study of Atherosclerosis found associations between perceived discrimination and higher cardiovascular disease risk factors¹⁵. This highlights the potential connections

between discrimination experiences and long-term health outcomes. Similarly, perceived discrimination correlates with higher stress and depressive symptoms¹⁴, and interpersonal discrimination is linked with greater anger, anxiety, and loneliness²⁵. Our findings on the relationship between discrimination and mental health status align with emerging research on structural inequalities and health outcomes. Clark and colleagues demonstrated that increased discrimination exposure was associated with higher amygdala activity, indicating a biological stress response⁷. Furthermore, prejudice-related stressful events show unique associations with poorer health outcomes beyond general stressors¹⁷. Recent literature, such as Neupane & Ruel (2023), provides evidence of how structural barriers shape health disparities, particularly in the context of COVID-19 mortality among racial minorities. Their study of 8,670,781 individuals across 1,488 U.S. counties demonstrated that increased racial residential segregation was directly associated with higher COVID-19 mortality rates, with Black and Asian populations showing greater risk of mortality compared to White populations when controlling for segregation²⁷. This research reinforces our argument that discrimination functions not merely as an interpersonal stressor but as a social structural factor that systematically influences mental health outcomes. The structural inequalities documented by Neupane & Ruel in healthcare access and outcomes parallel the systemic barriers our participants face in academic environments. By integrating this perspective, we can better understand how systemic inequalities contribute to both academic and health-related stressors, creating compounding effects on mental wellbeing among marginalized populations. Thus, supportive academic environments might mitigate discrimination's negative effects, while environments that tolerate or ignore discrimination could exacerbate stress and mental health issues.

The impact of unexpected incidents during thesis work on students before thesis project: Unexpected incidents during thesis work, such as personal crises, health issues, or global events like COVID-19, add significant stress that can impact student mental health. Specifically, these disruptions may delay thesis completion, hinder research, and affect focus and motivation. Furthermore, the uncertainty and lack of control associated with such incidents can increase stress and feelings of helplessness³⁹. For instance, the COVID-19 pandemic significantly heightened stress, anxiety, and depressive thoughts among students (71%), primarily due to health concerns, academic pressures, and reduced social interactions³⁹. Moreover, physical distancing and the shift to online learning further

exacerbated academic stressors, worsening mental health¹⁷.

The impact of retaking courses before thesis project: This study reveals a correlation between intention to stop retaking courses, and heightened anxiety levels among students before their thesis defense, underscoring the delicate balance between academic demands and personal life challenges. Indeed, students often navigate a complex web of academic responsibilities, employment, and personal commitments, which can significantly impact both mental health and academic performance. While financially motivated part-time work may be necessary, it inevitably consumes time and energy, potentially detracting from academic focus and increasing career-related stress⁴⁰. However, our study contradicted with this finding as intention to stop doing part-time jobs do not relate with stress, anxiety, or depression. Furthermore, retaking courses due to prior underperformance introduces additional stress and anxiety, as students grapple with the pressure to improve and potentially fear repeating past mistakes. Such circumstances can extend academic timelines and increase financial burdens. Overall, our path model illustrates how the interplay between academic and personal stressors can create a cyclical pattern of compounded stress and anxiety, where challenges in one domain exacerbate issues in another, ultimately affecting students' mental health and academic performance.

The peri-thesis path model emphasizes the critical role of administrative and academic support

The peri-thesis path model underscores the importance of administrative and academic support in mitigating stress, anxiety, and depression among students. Specifically, administrative support, including clear guidelines on thesis requirements and deadlines, as well as workshops on time management and stress reduction, helps provide a structured framework that reduces uncertainty. Moreover, flexibility in deadlines for mental health issues offers a critical safety net for students facing personal challenges. Similarly, academic support from thesis supervisors and faculty members is equally vital. For instance, a supportive supervisor who offers constructive feedback and maintains open communication can help alleviate feelings of isolation and self-doubt. Furthermore, creating a positive academic environment that encourages peer support can further reduce feelings of isolation among students. This emphasis on institutional support is further reinforced by research, as Waight and Giordano found that doctoral students often sought external mental health support due to gaps in institutional services, highlighting the need for improved

support mechanisms, including clear guidance and supervisor training⁴⁷. Additionally, Green and colleagues demonstrated that emotional support can moderate the relationship between academic stress and mental well-being¹⁹, suggesting that robust support structures significantly enhance both student mental health and academic success.

A need for students mental health support

Our findings underscore the need for a comprehensive approach to enhance student mental health and academic success in Vietnam's education system. Specifically, educational institutions should create inclusive environments that actively oppose discrimination and promote diversity, addressing gender-based discrimination, protecting ethnic and religious minorities, and safeguarding freedom of expression. Furthermore, to mitigate the impact of family pressures and unexpected incidents, universities should implement robust support systems, including stress management workshops, personalized academic advising, flexible scheduling, financial aid, and counseling resources. Moreover, promoting a culture that prioritizes mental health and encourages help-seeking is essential. This can be achieved by providing specialized mental health services, such as counseling, peer support groups, and stress-relief activities, and educating students on recognizing mental health issues and seeking assistance.

Limitations of the study

While this study offers valuable insights into the mental health challenges faced by Vietnamese students, it is important to acknowledge several methodological limitations that affect the interpretation of our findings.

First, our study used Google Form, like online surveys, which can introduce sampling bias, as participation is limited to individuals with internet access and a certain level of digital literacy. There is also a risk of self-selection bias, where only those already interested or motivated may choose to participate, affecting the representativeness of the data. In addition, lack of real-time clarification may lead to misunderstandings of questions, and response authenticity cannot be fully guaranteed even though we have tried to limit this with thorough introduction of the survey and careful checking within the research team for the clarity of the questions. Second, the sample's notable gender imbalance (71% female participants) could restrict generalizability and influence our findings, particularly regarding experiences of discrimination and stress factors, as gender can affect both the experience of and response to these stressors. Third, our cross-sectional

design captures only a snapshot of mental health issues rather than examining their development over time, a task better suited for longitudinal studies. This approach is particularly problematic for post-thesis participants who may experience recall bias when reporting on stressors experienced during their thesis period. Fourth, our reliance on self-reported data from the DASS-21 scale introduces potential reporting biases. The absence of objective measures or clinical interviews prevents a more comprehensive assessment of participants' mental health status. Additionally, we did not control for pre-existing mental health conditions, which represents a significant confounding factor that may have influenced our results. While we identified a high prevalence of students "coping with illness(es) and/or undergoing treatment" (85% overall), we did not collect specific information about the types of illnesses or how they might specifically affect thesis progress. This represents a missed opportunity to explore how physical health challenges interact with academic stressors to affect mental wellbeing.

Overall, while the study identifies several factors associating with stress/anxiety/depression, future research should explore a wider range of factors and employ more diverse methodological approaches to deepen our understanding of student mental health issues in academic settings.

Conclusion

This study reveals critical factors affecting Vietnamese students' mental health during thesis stages. Pre-thesis students experienced increased stress, anxiety, and depression related to perceived discrimination, unexpected incidents, expectations of advisor quality, expectation on the future thesis, current health status, and intentions to discontinue coursework. For peri-thesis students, strong institutional academic as well as administrative supports and positive supervisor attitude significantly reduce mental health symptoms. These findings contribute to theoretical understanding by demonstrating how academic stressors interact with social and institutional factors to influence student mental health outcomes. Our results extend existing stress-vulnerability models by highlighting the protective role of supportively administrative relationships within the specific context of thesis completion.

Based on our findings, we recommend three concrete policy interventions: (1) establishing dedicated thesis support services with mental health professionals trained in academic stress management; (2) implementing mandatory bias awareness training for faculty supervisors to reduce discriminatory practices; and (3) developing

early identification systems to connect struggling students with appropriate resources before mental health deteriorates. Universities should also create clear communication channels between students and advisors to manage expectations and reduce uncertainty during the thesis process. These targeted approaches address the specific stressors identified in our research while fostering a healthier academic environment for Vietnamese students during this crucial educational milestone.

Abbreviations

DASS-21: Depression, Anxiety, and Stress Scale - 21 items

GPA: current grade point average

cGPA: cumulative current grade point average

SCALED: Satorra-Bentler scaling-corrected adjustment

RMSEA: Root mean squared error of approximation

CFI: Comparative fit index

TLI: Tucker-Lewis index

SRMR: Standardized root mean squared residuals

CD: Coefficient of Determination

SD: Standard deviation

Please [download supplementary files here](#).

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