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## Why Am I Stressed Out?

Neglecting the Internal Stressors among Undergraduate Students in Malaysia

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# Why Am I Stressed Out? Neglecting the Internal Stressors among Undergraduate Students in Malaysia

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*Abstract: Stress among undergraduate students in Malaysia is a growing concern. However, policy makers mostly account for external stressors in decision making. For instance, most of the stress-coping mechanisms in private universities focus predominantly on external stressors. Internal stressors, like differences in personality traits of students, are overlooked when determining preventive measures adopted by private universities to cope with students' mental health. This study investigates whether internal stressors make some students more susceptible to stress than others. The relationships between personality traits and stress among undergraduate students in Malaysia and the concept of brooding are of particular interest. Data from 131 respondents were analyzed using SPSS and Smart-PLS software reveal that the model in this study has large predictive power ( $R^2 = 0.487$ ) with Neuroticism (large effect size) and Agreeableness (small effect size) as predictors of student stress. Furthermore, brooding (low Extraversion, high Neuroticism, and high Consciousness) is statistically the strongest predictor. Finally, female students are found to be more susceptible to stress. The findings support the claim that policy makers should reconsider internal stressors in treatment-matching of high-risk category of undergraduate students in Malaysia.*

*Keywords: Internal Stressors, Personality, Neuroticism, Agreeableness, Brooding, Mental Health*

## Introduction

Stress represents an unavoidable natural life phenomenon that may result in effects ranging from temporary uneasiness to prolonged negative consequences. It can contribute to certain body changes, including homeostasis adjustments, life-threatening effects, and even death (Yaribeygi et al. 2017). Job performance is impaired when working under stressful conditions (LeBlanc 2009). People with different personality traits perceive stress differently (Akse et al. 2007) and respond with different coping styles driven by their personality (Karimzade and Besharat 2011). Similarly, this can be observed among students as well. Students' experience of stress can have a negative impact on their studies. Common negative consequences of student stress include impaired academic performance, academic malpractices, substance abuse, cynicism, and even suicide (Andrews and Wilding 2004; Dyrbye, Thomas, and Shanafelt 2005; Dyrbye et al. 2006). This is accentuated amidst the COVID-19 pandemic (Husky, Kovess-Masfety, and Swendsen 2020). Factors contributing to stress include financial burden, family problems, peer pressure, and academic load (Kelvin et al. 2013; Ramachandiran and Dhanapal 2018). These stressors can be generic in nature and not particular to any specific programs whether in the social sciences, medical sciences, humanities, or engineering. Studies have shown that students in medical and humanities programs suffer from equal prevalence of anxiety and depression symptoms (e.g., Bunevicius, Katkute, and Bunevicius 2008).

There is a prevalence of stress among university students in Malaysia (Nordin et al. 2010). For example, in one study 34.4 percent of undergraduate students out of 1,467 respondents said they have signs of potential mental health problems. In another study (Islam et al. 2018), as high as 30 percent out of 1,023 students said they experienced stress while 4.4 percent of these said

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they suffered from severe depression. Given that there are some studies on depression among medical students in Malaysia (Gan and Yuen Ling 2019; Kelvin et al. 2013; Salam et al. 2013; Saravanan and Wilks 2014), it is understandable that there are more researchers from medical backgrounds interested in conducting research among medical students because studying for a degree can be challenging and stressful (Gan and Yuen Ling 2019). However, there are still gaps in the study of stress among Malaysian university students as a whole. We have limited understanding of the stress experienced by non-medical university students in Malaysia.

Besides addressing this gap, the impetus for this research is due to the mounting concern of the Malaysian government about the mental health of undergraduate students in Malaysia (Kelvin et al. 2013). The student suicide rate is a serious issue among Malaysian private education institutions (The NST 2019b). A survey has shown that 9.7 percent of university students in Malaysia had severe depression, 29 percent had extremely severe anxiety, and 5.1 percent had extremely severe stress (Sani 2018). Furthermore, the Deputy Prime Minister of Malaysia (The NST 2019a) and Malaysia's director-general of national health (Cheah 2019) have indicated the need to identify suicide tendency even among teen school students in Malaysia.

## Internal Stressors

Although past research suggests that different personality characteristics of students will dispose them to perceive stress differently (e.g., Gadzella 2004), there is very limited research conducted among non-medical students at the undergraduate level in private universities in Malaysia (Ramachandiran and Dhanapal 2018). For instance, Gan and Yuen Ling (2019) and Kelvin et al. (2013) are researchers who are either medical doctors or psychiatrists interested in studying stress only among medical or psychiatric students. Furthermore, most private universities in Malaysia do not offer medical or psychiatric degrees. Due to this lack of understanding, there is a neglect of internal stressors regarding how to mitigate stress-related problems. Furthermore, most studies attribute external stressors as the main contributing factors to student stress (e.g., Dyrbye, Thomas, and Shanafelt 2005). Consequently, most of the stress-coping mechanisms in private universities focus predominantly on external stressors such as understanding the demands of an academic program, counseling of family and personal problems, and self-caring (Sani 2018). Internal stressors such as the difference in personality traits of students are not considered by private universities when determining preventive measures to cope with student mental health. Taking internal stress factors into account will help to better understand why some students are more stressed than others. This can provide greater precision in identifying or screening candidates for early intervention. Previous studies have shown that individual differences have an impact on students' coping ability. For instance, Nordin et al. (2010) found male students to be more mentally resilient than female students and suffered from fewer mental health problems. Similar findings were reported by Song et al. (2008) among Beijing and Hong Kong undergraduate students. This study focuses specifically on broad-level personality of the students using the five-factor model to determine whether individual differences in personality traits offers a substantial model to predict stress among non-medical undergraduate students in private universities in Malaysia.

## Personality

Personality plays an important part in how an individual experiences life (McCrae and Costa 2003). Cheerful thoughts, for example, are often associated with a positive personality. Conversely, negative emotions tend to be linked with negative personality (Hankin 2010). An individual's personality traits have significant impact on how stress is experienced and perceived (Vollrath 2001). In this study, the five-factor model is used to assess personality traits because studies suggest that certain personality traits and patterns put individuals at a greater

risk of experiencing stress and ineffectively processing it (McCrae and Costa 2003). Furthermore, the five-factor model is a suitable personality model in research related to maladaptive personality (Oltmanns and Widiger 2020).

### *Neuroticism and Stress*

Neuroticism is characterized as the tendency of people who regularly display negative mood and emotions, who are constantly worried about various things, and feel tension and self-pity. This trait is positively associated with depression and anxiety (Hankin 2010). Neuroticism and related trait characteristics are positive predictors of anxiety and stress (Eysenck and Eysenck 2013). Highly neurotic individuals can be self-critical (Clark and Watson 1991) and they tend to perceive common events as threatening or damaging (Gallagher 1990; Shewchuk et al. 1999). Neuroticism among students is associated with perceived school-related stress (Murberg and Bru 2007), with stress related to examination (Zunhammer et al. 2013), and with student acculturative stress (Mangold et al. 2007). Therefore, it is expected that students with high Neuroticism will tend to experience more stress, anxiety, and negative emotionality. This suggests that Neuroticism can contribute to higher perceived stress among students. Therefore, we hypothesized that:

**H1:** Neuroticism is positively related to stress among undergraduate students in Malaysia.

### *Openness to Experience and Stress*

Students with a high degree of Openness to experience are more creative and able to share their thoughts with other students (Bhatti et al. 2017). Openness to experience and stress are moderately and negatively related (Schneider et al. 2012). The two main aspects of Openness of experience are aesthetics and ideas (Soto and John 2009). The aesthetics facet describes the capability to evaluate and accept different forms of art and beauty and individuals will tend to be more creative. Griffin and McDermott (1998) suggest people with high Openness have cognitive flexibility and intelligence (Griffin and McDermott 1998). Besides, individuals with high idea facet are more willing to try new ideas and experiences (Nekljudova 2019). Zeidner and Matthews (2000) suggest that students with high Openness to experience have an advantage in learning and achieving better academic outcomes and may experience low stress. This may be due to the social nature of learning of students with high Openness that inclines them to be more adept at self-regulation. Furthermore, people with high Openness tend to use humor to cope with stress while individuals who have low Openness will tend to turn to religion to handle stressful events (Rai and Kumar 2012). Therefore, we concluded that:

**H2:** Openness to experience is negatively related to stress among undergraduate students in Malaysia.

### *Extraversion and Stress*

Characteristics of extraversion include talkativeness, assertiveness, action orientation, and energy (Wilt and Revelle 2009). Assertiveness and activity are two facets of Extraversion identified in scale development used in this study (Soto and John 2009). Highly assertive individuals are often viewed to possess higher self-esteem and self-confidence as they tend to be perceived by others to speak and express their mind easily (Larson and Jordan 2017). High active individuals tend to actively take part in events and socializing. They have higher activity levels than others, which leads them to have a busier lifestyle. Daily self-reporting by extraverts

reveals more positive emotional experiences (Yuan et al. 2007). Furthermore, extraverted people are more optimistic in their thinking and they tend to view problems from a positive perspective (Bakker et al. 2006). Thus, extraverts rarely engage in self-blame and they seek far more support from others than introverts (O'Brien and DeLongis 1996), and are better able to cope with stress (Schneider et al. 2012). This evidence suggests that extraverts tend to experience less stress. They seem to manage stress better because it is easier for them to share their thoughts and feelings with others. This also contributes to better coping mechanisms when they experience traumatic incidents. Therefore, we hypothesized that:

**H3:** Extraversion is negatively related to stress among undergraduate students in Malaysia.

### *Conscientiousness and Stress*

Highly conscientious people are generally organized, reliable, self-disciplined, focused, and hard-working (Wilt and Revelle 2009). They prefer being organized and methodical. The two main facets of Conscientiousness are order and self-discipline (Soto and John 2009). The order trait describes a person who likes to keep their surroundings and workplaces tidy and organized. A conscientious person is able to continue and stay on a task until completion without being overly influenced by other factors, such as interruption and boredom (Costa and McCrae 1991). Highly conscientious students tend to focus on limited goals and work hard to achieve them while low conscientious students are more likely to act impulsively, be persuaded by others and often inclined to switch their task and goals (Barakat and Othman 2015). Studies show that Conscientiousness is negatively related to a variety of emotion-related outcomes (LePine, LePine, and Jackson 2004). Therefore, we expect that:

**H4:** Conscientiousness is negatively related to stress among undergraduate students in Malaysia.

### *Agreeableness and Stress*

Agreeableness is found to be linked to physiological health in stress-related research (Chu et al. 2015). Student performance depends on social interactions with other students. Students with high Agreeableness may find more social support from friends and family when they encounter stress. Thus, help from these support groups enables them to better cope with stress. In addition, highly agreeable people appear to have a more positive outlook, look at life with a positive viewpoint, and remain confident while confronting difficult conditions or events. However, contrary findings in research show that when Agreeableness is a distal trait where other factors (like self-efficacy) intervene as a mediator, Agreeableness can become positively related to stress (Ebstrup et al. 2011). Nevertheless, based on majority consensus, we propose that:

**H5:** Agreeableness is negatively related to stress among undergraduate students in Malaysia.

## **Method**

This quantitative research drew respondents from the population of about 3,000 undergraduate students enrolled in the business school of a Malaysian private higher education institution. Convenience sampling was used with a Google form online questionnaire to solicit respondents. A total of 160 surveys were collected, out of which twenty-nine were incomplete and removed. As a result, 131 respondents successfully participated in this research. Student stress was

measured using the College Student Stress Scale (CSSS). This instrument was developed by Feldt (2008) to measure perceptual stress among college students. The scale included eleven items on which students were required to rate stress and anxiety over the past year. Responses were made on the 5-point scale ranging from 1: never to 5: very often with a reliability of 0.899. Items included questions regarding matters such as relationships, family, financial, academics, housing, being away from home, events not going as planned, ability to handle difficulties in life, ability to attain your goals, ability to control, and feeling overwhelmed. Personality traits were measured using the Big Five Inventory (BFI). This instrument was developed by Soto and John (2009), to measure the classical features of each Big Five domain. Its forty-four items are short, descriptive phrases that respondents rate the extent to which they agree with the statements on a 5-point scale ranging from 1: disagree strongly to 5: agree strongly. The reliability values are: Openness: 0.859; Conscientiousness: 0.888; Extraversion: 0.774; Agreeableness: 0.904; and Neuroticism: 0.736. Statistical analysis using SPSS and Smart-PLS software was conducted on the data derived from the online survey.

Table 1 reveals that majority of respondents were Chinese Malaysians, studying business degrees, and in Year 3 of their studies. Furthermore, Table 2 reveals that there are significant differences in the level of stress experienced by female undergraduate students ( $n = 78$ ,  $\bar{x} = 3.43$ ) when compared to male undergraduate students ( $n = 53$ ,  $\bar{x} = 3.12$ ). And female students scored significantly higher in Neuroticism ( $n = 78$ ,  $\bar{x} = 3.40$ ) compared to their male counterparts ( $n = 53$ ,  $\bar{x} = 3.18$ ).

Table 1: Characteristics of Respondents

<i>Characteristics</i>		<i>Frequency</i>	<i>Percentage</i>
Gender	Female	78	59.5
	Male	53	40.5
Race	Chinese	108	82.4
	Indian	11	8.4
	Malay	7	5.3
	Others	5	3.8
Nationality	Malaysians	131	100
Program	Business	77	58.8
	Non-business	54	41.2
Years in program	1	20	15.3
	2	35	26.7
	3	76	58.0

Source: Toh

Table 2: Comparing Means

<i>Gender</i>	<i>N</i>	<i>C</i>	<i>E</i>	<i>O</i>	<i>A</i>	<i>Stress</i>
Female (78)	3.40*	2.40	2.98	3.76	3.70	3.43**
Male (53)	3.18	2.31	3.09	3.62	3.75	3.12
Total (131)	3.31	2.36	3.02	3.70	3.72	3.32

Notes: *N* = Neuroticism, *C* = Conscientiousness, *E* = Extraversion, *O* = Openness, *A* = Agreeableness.

\* $p < 0.1$  \*\* $p < 0.05$

Source: Toh

## Data Analysis

It is recommended that common method bias checks on self-reported questionnaires should be performed when the predictor variable data and the dependent variable data were collected simultaneously from a single respondent (Podsakoff et al. 2003). By looking at the inter-correlations of the key constructs using the method of correlation matrix, the inter-correlations were less than 0.90, which indicates common method bias is not problematic (Bagozzi, Yi, and Phillips 1991). In addition, as indicated by Kock (2015), the full collinearity assessment method was also used to evaluate the problem of common method variance. The test results revealed the variance inflation factor (VIF) values of all factors at less than 3.3. This indicates that the model has no problem of common method bias and the findings would be reliable to draw implications.

The reliability and validity of measures were tested using the measurement model. This was followed by assessing the structure model to test the hypotheses (Hair et al. 2017; Hair et al. 2019). A bootstrapping procedure of resampling a fixed dataset to generate many sample datasets was used to test the path coefficients' significance.

## Measurement Model

The measurement model considers both first-order constructs and second-order constructs. The three forms of reliability, including Cronbach's Alpha, composite reliability, and  $\rho_0$ , were tested for the first-order constructs when evaluating the measurement model. All loadings were above 0.7, indicating satisfactory reliability was also found (Hair et al. 2017). Discriminant validity and convergent validity were examined. Convergent validity was assessed based on loadings, composite reliability, and average variance extracted (Hair et al. 2019). Heterotrait–monotrait (HTMT) criterion was used to assess the discriminant validity (Henseler, Ringle, and Sarstedt 2015). Table 3 shows the values of these tests. The discriminant validity was confirmed with HTMT values less than 0.90 (Gold, Malhotra, and Segars 2001) and the confidence interval did not contain the value of 1 (Hair et al. 2017). For second-order constructs, the weights of the items and their VIF values were assessed. The significant values of all item weights for their respective second-order constructs were acceptable. VIF values were less than 3 for all items of second-order constructs, indicating no issue of multicollinearity.

Table 3: Measurement Model

<i>Constructs</i>	<i>Items</i>	<i>Loadings</i>	<i>Cronbach's Alpha</i>	<i><math>\rho_0</math></i>	<i>Composite Reliability</i>	<i>Average Variance Extracted (AVE)</i>
Activity	AC1	0.880	0.683	0.685	0.863	0.759
	AC2	0.863				
Aesthetics	AES1	0.920	0.640	0.738	0.841	0.726
	AES3	0.778				
Altruism	ALT1	0.787	0.627	0.633	0.801	0.573
	ALT2	0.706				
	ALT4	0.775				
Anxiety	ANX1	0.654	0.674	0.705	0.820	0.606
	ANX2	0.831				
	ANX4	0.836				



<i>Constructs</i>	<i>Items</i>	<i>Loadings</i>	<i>Cronbach's Alpha</i>	<i>rho_A</i>	<i>Composite Reliability</i>	<i>Average Variance Extracted (AVE)</i>
Assertiveness	AS1	0.718	0.734	0.747	0.835	0.561
	AS2	0.717				
	AS3	0.870				
	AS5	0.676				
Depression	DEP1	0.838	0.513	0.516	0.804	0.672
	DEP2	0.802				
Ideas	ID1	0.788	0.616	0.619	0.796	0.566
	ID2	0.734				
	ID5	0.733				
Order	OR1	0.784	0.363	0.363	0.758	0.611
	OR2	0.779				
Self-Discipline	SD2	0.824	0.560	0.560	0.819	0.694
	SD5	0.842				
Stress	STR1	0.753	0.899	0.904	0.917	0.525
	STR2	0.755				
	STR3	0.681				
	STR4	0.696				
	STR5	0.643				
	STR7	0.765				
	STR8	0.766				
	STR9	0.666				
	STR10	0.720				
	STR11	0.786				

Source: Toh

## Structural Model

For the structure model, Hair et al. (2019) recommended the analysis of  $R^2$ ,  $\beta$ , and respective  $t$ -values by using the procedure of bootstrapping. Furthermore,  $Q^2$  was used to determine predictive relevance and  $f^2$  was calculated to determine effect sizes. By looking first at the predictor of Stress, we found a positive and significant impact of Neuroticism on Stress ( $\beta = 0.652$ ,  $t$ -value = 7.822), thus H1 was supported. H2 and H3 were not supported due to non-significant  $t$ -values, i.e. Openness  $\rightarrow$  Stress ( $\beta = 0.047$ ,  $t$ -value = 0.586) and Extraversion  $\rightarrow$  Stress ( $\beta = -0.038$ ,  $t$ -value = 0.498). Likewise, H4 was also not supported because of non-significant  $t$ -value for the relationship of Conscientiousness on Stress ( $\beta = 0.004$ ,  $t$ -value = 0.051) (see Figure 1). However, the impact of Agreeableness on Stress was positive as well as significant ( $\beta = 0.135$ ,  $t$ -value = 1.840). Since a negative relationship was hypothesized, the H5 is not supported. The results of all five hypotheses are shown in Table 4. This table also shows the effect sizes determined by  $f^2$  values. Based on Cohen's (1988) guideline,  $f^2$  effect sizes with 0.02, 0.15, and 0.35 are considered as small, medium, and large respectively and the same rule applies for  $R^2$  as well. Thus, the  $f^2$  effect sizes of Neuroticism (0.535) and Agreeableness (0.026) on Stress are considered as large and small respectively. There is no effect of other predictors on Stress due to low values of  $f^2$  effect sizes. Moreover,  $R^2$  was found to be 0.487,

which shows a large predictive power of the model. This means that all five predictors accounted for 48.7 percent variance in Stress, whereas the remaining 51.3 percent variance was explained by other factors that were not analyzed in this study.

PLS prediction analysis was executed to determine predictive performance. Predictive validity, which is out-of-sample prediction, was evaluated by using cross-validation as recommended by following Shmueli et al. (2016) with holdout samples. The summary statistics of k-fold cross-validated prediction errors as well as prediction error were obtained. Similarly, the root mean squared error (RMSE), the mean absolute percentage error (MAPE), and the mean absolute error (MAE) were reported to determine the predictive performance of PLS path model. Likewise, the corresponding Q2 values of predictors were found more than 0, suggesting the sufficient predictive relevance. The RMSE, MAPE, and MAE were all lower than related values in LM. Inner and outer VIF values were less than 3 which also provide the evidence of a lack of multicollinearity issues.

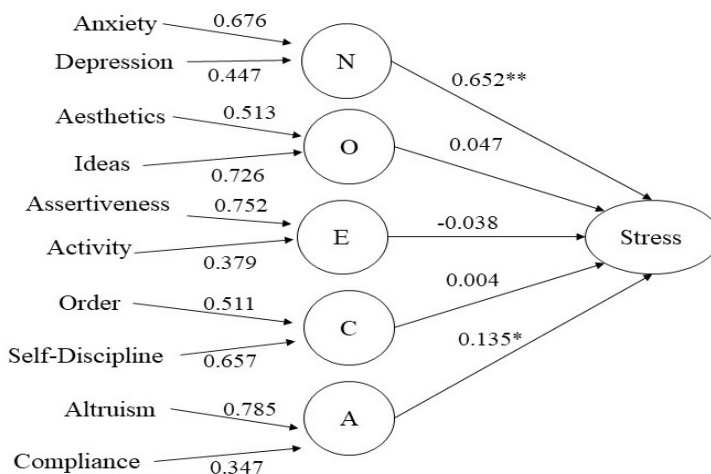


Figure 1: PLS Algorithm  
 Notes: N = Neuroticism, O = Openness, E = Extraversion, C = Conscientiousness, A = Agreeableness. \*  $p < 0.05$ , \*\*  $p < 0.01$   
 Source: Toh

### Analysis for Brooding

Brooding is the tendency to ruminate on negative emotions and replay unfavorable events in one’s mind frequently over an extended period of time (Roelofs et al. 2008). Brooding is associated with depression (Olatunji, Naragon-Gainey, and Wolitzky-Taylor 2013). There are studies that suggest a positive association between brooding and stress (e.g., Bastin et al. 2015; Cole et al. 2015; Cox et al. 2012). Therefore, a composite factor was estimated as a proxy for brooding as an additional analysis to this study. Brooders have high Neuroticism and Conscientiousness and low Extraversion (Vollrath and Torgersen 2000). Mean values for the proxy variable were calculated based on the mean values of reverse coding for Extraversion, and the mean values of Neuroticism and Conscientiousness. Regression analysis was performed with brooding as a predictor and student stress level as an independent variable using SPSS software. Brooding significantly predicted student stress scores,  $\beta = 0.73$ ,  $t(131) = 5.16$ ,  $p < .001$ . Brooding also explained a significant proportion of variance in student stress scores,  $R^2 = 0.17$ ,  $F(1,131) = 26.64$ ,  $p < .001$ .

Table 4: Hypothesis Testing

Hypothesis	Relationship	Std $\beta$	SE	t-value	p-value	LL	UL	Decision	$f^2$
H1	N $\rightarrow$ Stress	0.652	0.083	7.822	0.000	0.498	0.767	Supported	0.535
H2	O $\rightarrow$ Stress	0.047	0.080	0.586	0.279	-0.087	0.180	Not Supported	0.003
H3	E $\rightarrow$ Stress	-0.038	0.076	0.498	0.309	-0.151	0.095	Not Supported	0.002
H4	C $\rightarrow$ Stress	0.004	0.078	0.051	0.480	-0.126	0.126	Not Supported	0.000
H5	A $\rightarrow$ Stress	0.135	0.073	1.840	0.033	0.024	0.256	Supported	0.026

Notes: N = Neuroticism, O = Openness, E = Extraversion, C = Conscientiousness, A = Agreeableness

Source: Toh

## Discussion

The findings on Neuroticism are consistent with the extensive past research supporting the claim that individuals with high Neuroticism experience more stress (e.g., Gunthert, Cohen, and Armeli 1999). Female students tend to score higher in Neuroticism and therefore it is not surprising they experience more stress. Similar researchers have found that the degree of neurosis varied by gender, with females showing higher levels of neurosis than men (Costa, Terracciano, and McCrae 2001; Soto et al. 2011). This suggests that females are more aware than men of negative gender expectations and gender stereotypes. This is not surprising, as research has shown that more females feel more upset, frustrated, and anxious in response to stress than their male counterparts (Calvarese 2015). Furthermore, students who are the brooding type will suffer the most from stress and related symptoms during their undergraduate studies. Uniquely, students with high Agreeableness are found to also be affected by stress during their university life. Ironically, this may be due to social interactions because highly agreeable individuals tend to have higher concerns about social mistakes and negative social evaluation (Tops et al. 2009). In a university setting where a high percentage of coursework is group-based, the concern about social mistakes and negative social evaluation may render highly agreeable students susceptible to unnecessary stress.

The evidence points adamantly to the need to redirect focus back on internal stressors. Individual differences play an important part in contributing to the wellbeing of students in universities. Firstly, there is a pressing need to develop a classification for a category of students who are considered high risk (e.g., high Neuroticism and brooder type). More attention should be paid to train enrolment officers in detecting new students who may have higher susceptibility to stress. This can be done by conducting simple screening tests to assess a high-risk category of students. Counseling and guidance can then be provided accordingly. Secondly, lecturers and professors should be trained to discern, handle, and be sensitive to this category of students. Clearly, there is also a need to equip female lecturers and counselors to offer pastoral care to female students who are more prone to stress. The aim will be to identify the cause of the student's stress and help the student understand the role thought plays in increasing their stress levels. This will help students develop skills to cope with and overcome barriers to their well-being. Finally, better awareness about internal stressors should be raised for the entire university community, which should include stakeholders like school boards, student bodies, the academy, care givers, and parents.

## Conclusion

From the theoretical point of view, further research is necessary to investigate the relationship between student Agreeableness and student stress. We suspect social interactions play a key role in explaining why student Agreeableness is a predictor of stress. Constructs related to

social interactions, like fear of rejection, concern for social mistakes, negative social evaluation, and acculturation, should be investigated in such contexts. Similarly, intervening variables in the relationship between Neuroticism and student stress deserve closer attention since Neuroticism is the stronger predictor. Such factors can include brooding since the construct deserves further studies. Other mediating constructs, such as reflection (Lyon et al. 2020) and sense of coherence (Mullen, Smith, and Hill 1994), could offer germane insights as well.

In terms of practical implications, more can be offered in treatment-matching for specific internal stressors. Since the aim of this study was to demonstrate the importance of internal stressors due to individual personality differences and not on treatment-matching, future studies should focus on the efficacy of types of appropriate treatments like psychotherapy, mediation therapies, or other non-invasive treatments on stress. Counselors and mental health practitioners in the university should be mindful of the role of individual differences that can contribute to students' propensity toward mental health problems such as stress such as female students with high Neuroticism and Agreeableness or with a brooding tendency.

This study has limitations. First, since this study used broad personality measures, more in-depth measurements of the five-factor model of personality should contribute more instructive findings to offer greater insights into the predictors of student stress. Second, a more complex model with inclusion of external stressors may offer high predictive and explanatory capacity on student stress. Third, ad hoc analysis of brooding can be improved based on data assessed with valid measurement scale. Fourth, due to constrain of resources, the small sample size does not allow for making generalization across undergraduates in non-medical degree programs regarding internal stressors. However, post-hoc power analysis ( $R^2 = 0.487$ , 5 predictors, Type I error = 0.05, sample size = 180) reveals a statistical power of 1.00. This indicates the sample size is sufficient for hypothesis testing. Finally, this cross-sectional study does not offer information on causation. Future studies should consider the effects of internal stressors on mental health problems of undergraduate students, especially during the COVID-19 pandemic.

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