

# Academic Motivation and Stress of Senior High School Students in a Rural Post-Quarantine Face-to-Face Learning Context

## ABSTRACT

This study examines the relationship between academic motivation and stress levels among Senior High School students. With the increasing demands and challenges of the educational system, understanding the factors that influence students' motivation and stress is crucial for their academic success and overall well-being. The research employed a quantitative approach, utilizing a structured questionnaire administered to a sample of 267 Senior High School students. The questionnaire included measures of academic motivation, such as intrinsic motivation, extrinsic motivation, and amotivation, as well as perceived stress levels. Data analysis involved descriptive statistics, tests of significant difference, and correlation analysis. Findings indicate differences in perceived academic stress and academic motivation across demographic groupings. In particular, there is a gendered difference in perceived academic stress and amotivation. Further, differences were noted in the introjected regulation and amotivation subscales of academic motivation across grade levels and strands. However, the correlation analysis yielded insignificant results between perceived academic stress and the subscales of academic motivation. Key recommendations are for policies and programs to target female students when it comes to stress management, and for careful attention to be given to grade 11 students regarding their significantly higher level of amotivation than those in grade 12. Recommendations for future research are also included.

**Keywords:** *Perceived Academic Stress, Academic Motivation, Affect, Senior High School, Post-Quarantine Education*

## INTRODUCTION

Inquiry on the affective factors of learning is one of the major strands of educational research. Indeed, studying is not only a matter of cognition and skills development; it has its emotional and psychological side. Two factors within the sphere of emotions are stress and motivation, both of which are important correlates of academic success (Amrai et al., 2011; Bonneville-Roussy et al., 2017; Shankar & Park, 2016).

Scholars have attempted to associate academic motivation to stress in its various forms such as academic stress (Dong, 2014; Liu, 2015; Ramaprabou & Dash, 2018; Shahid and Farhan, 2022; Squincaha et al., 2021; Tus, 2020; Yang et al., 2022), stress from assessment (Bonneville-Roussy et al., 2017), career stress (Çetinkaya, 2019), or, more recently, stress during and in relation to the COVID-19 pandemic (Buenvinida et al., 2022; Calhoun, 2022; Rahe & Jansen, 2022; Usher, 2021). However, to date, no study on the relationship between academic motivation and stress has yet been done in the context of a rural senior high school post-quarantine face-to-face learning modality in the Philippines, the majority of the country's schools having just recently opened in August 2022, gradually transitioning into five days in-person classes in November 2022 in compliance with a national directive (DepEd Order No. 34, s. 2022). As Cahapay (2020) has pointed out, there is a need to further examine different dimensions of schooling in this "new period of human history" (p. 4). The present study recognizes such urgency and hopes to open a

dialogue among researchers and practitioners regarding the adjustment of senior high school students in the present context.

## Literature Review

### *Academic Stress*

Academic stress refers to the psychological and emotional pressure experienced by students in response to the demands and expectations associated with their academic pursuits. It is said that academic concerns greatly contribute to chronic and sporadic stress regardless of cultural orientation, being significantly associated with mental health problems that are as concerning as depression, anxiety, and suicidal ideation (Jayanthi et al., 2015; Park et al., 2012; Zhang et al., 2022). Jayanthi et al. (2015) found that academically stressed high school adolescents are twice as much at risk as those without academic stress when it comes to depression. Likewise, Zhang et al. (2022), in a study that had a wider age scope, noted that high school students manifested the highest levels of perceived academic stress, depressive symptoms, and sleep disturbance compared to middle school and college students. Their study, which included more than 5,000 students from several schools in China, confirmed that perceived academic stress significantly predicts depression among students, as mediated by mobile phone addiction and sleep quality (Zhang et al., 2022). On the other hand, one study suggested the contribution of academic stress on academic failure (Rucker, 2012).

### *Academic Motivation*

Elliot and Zahn (2008) defined motivation as the “energization and direction of behavior” (p. 687) and noted it as important in educational psychology due to its potential to explaining students’, teachers’, and administrators’ behaviors in academic contexts. It is thought to be influenced by factors such as context, temper, goal, and instruments in achieving the goal (Amrai et al., 2011).

Seminal authors Ryan and Deci (2000) made a distinction between two general types of motivation, the intrinsic and extrinsic types, as major concepts in their Self-Determination Theory. Contemporary scholars such as Sennet (2021, as cited in Nickerson, 2023), backed with data from previous researches, contend that these traditional types of motivation are not necessarily in negative correlation with each other. In other words, it is possible for an individual to have high levels of both types of motivation.

Another distinction is that between autonomous and controlled types of motivation, which overlaps with the traditional *intrinsic-extrinsic* typology, with some specific types (or levels) under extrinsic motivation being more autonomous than others in the same category. Shahar et al. (2003, as cited in Ratelle et al., 2007) identifies this *autonomous-controlled* distinction to be more important than the former when it comes to evaluating the quality of motivational orientations. This distinction is seen in the divergent trajectories of the two types of motivation along a student’s academic career, where, for instance, autonomous motivation begins high and gradually decreases while controlled motivation begins low and gradually increases (Corpus et al., 2020.)

Various studies have dealt with the association of motivation with other aspects of student life. Calhoun (2022), for example, found a causal influence of motivation on academic performance. Likewise, Ratelle et al. (2007) reported that high school students who have high levels of both autonomous and controlled motivation have relatively better academic adjustment than those who have other motivational configurations. They also found out that, among college students, those belonging to the high autonomous motivation group are more persistent than those belonging to other groups.

On the aspect of achievement, previous authors have already hinted on the relationship between students' motivation to learn and their success or failure at school (Amrai et al., 2011; Corpus et al., 2020; Karabulut, 2021; Rucker, 2012), although some studies such as that of Alipio et al., (2020a) weren't able to find significant evidence to categorically accept this hypothesis as a rule. Nonetheless, the incorporation of this concept in the common lingua of teachers, coupled with the long line of research on this aspect of student life, establishes it to be among the most important concepts in education as a whole.

### *Academic Stress and Academic Motivation*

Several scholars have recently touched on the connection between academic stress and academic motivation, suggesting that such a link is currently of practical interest in educational research. For one, Rucker (2012) found that amotivation, which is by nature negatively associated with both intrinsic and extrinsic motivation, is positively associated with stress among college students. This is slightly similar to the study of Squinca et al. (2021) who found stress to be positively correlated with two subscales of extrinsic motivation (EM-introjected regulation and EM-identified regulation) in addition to its inherently positive association with amotivation and inherently negative relationship with intrinsic motivation. Further, the association between academic stress and achievement motivation is evident even in a study that had quite different sets of measures as motivation indicators. Dong (2014), who used causal attributions and subjective task value to indicate motivation, was able to find correlations between stress and almost every subscale under these indicators of motivation.

Conversely, not all studies associating academic motivation with stress see the latter as a purely negative construct. Ramaprabou and Dash (2018), after observing that students who reported a moderate level of stress also reported high achievement motivation, suggested that there is an optimum level of stress that would lead to high achievement motivation, namely a "moderate level" compared to "high or slight" levels of academic stress (p. 34). In another study, it was likewise pointed out that it is through stress appraisal and coping that motivation predicts academic outcomes (Bonneville-Roussy et al., 2017). Still another study reported that higher levels of general stress are associated with higher academic motivation (Rahe & Jansen, 2022), and another one hinted that increased levels of stress and motivation positively affect student success (Karabulut et al., 2021). These findings have implications for educational practice, suggesting that stress at school may not necessarily be a bad thing, but, along with other constructs such as motivation, may be a vital component of success.

In the high school context, a longitudinal relationship between academic stress and motivation has been documented in China where students' academic stress at grade 10 turned out

to be a predictor of both intrinsic motivation and amotivation at grade 12 (Liu, 2015). The study by Yang et al. (2022), which also had Chinese secondary students as participants, confirms the divergent influence of academic stress on motivation and its types or levels in the continuum, that is, it negatively predicted autonomous motivation and positively predicted controlled motivation. One factor under stress, worry about grades, negatively predicted amotivation in the next three months (Yang et al., 2022).

The majority of foreign studies reviewed above support a clear link between academic stress and academic motivation. On the other hand, a study that happened to have both variables, although their link was not the focus, yielded a contradictory result. Calhoun (2022) examined psychological variables among graduate students during the COVID-19 pandemic and found that the pandemic impacted their mental health, depression, and anxiety. Yet, an appended table that reported correlations among all study variables, including that between academic motivation and stress, indicated a coefficient that did not reach an acceptable level of significance. This calls for confirmatory studies on the association between the variables in the present time.

### *Linking Academic Stress and Academic Motivation*

Few scholars have attempted to document the relationship between stress and motivation in the Philippine school context. David (2010) found significant associations between academic motivation and academic burnout, a syndrome of emotional exhaustion caused by chronic stress. In particular, both intrinsic motivation and amotivation yielded significant correlations with the subscales of burnout, while extrinsic motivation correlated with cynicism but not with efficacy and exhaustion (David, 2010). This is echoed in Alipio (2020b) who reported perceived stress to be negatively correlated with expectancy value beliefs, which are another measure of motivation.

A different observation on the nature of such a relationship was made by Buenvenida et al. (2022) who studied student stress in the context of the COVID-19 pandemic. They reported that all indicators of motivation are positively correlated with the stress indicators. On the other hand, Tus (2020) found no significant association between the two constructs.

Scholars are only starting to explore the link between academic stress and academic motivation in the local context. Although academic stress and academic motivation are widely researched areas in the field of education, there is a dearth of local studies linking the two variables.

The foregoing review provided the researchers with a nuanced grasp of the variables under study and how they relate with each other and with other affective constructs in student learning. Based on the review, it is safe to assume that there is a paucity in the local literature linking academic stress and academic motivation, especially in the context of a rural post-quarantine face-to-face learning modality in the Philippine south. The present study is an attempt to address this gap and to contribute to the scientific knowledge in this vital area of student learning.

### **Research Framework**

This study anchors on Deci and Ryan's Self-Determination Theory (SDT), which has its focus on the effects of social-contextual factors on people's attitudes, values, motivations,

behaviors, and personality (Deci & Ryan, 2012). The motivational aspect of SDT is illustrated in a continuum and structures motivation for behavior from unwillingness to passive compliance to active personal commitment, with increasing internalization, integration, and autonomy as it approaches the right end of the continuum (Ryan and Deci, 2000). The present study treats the construct of academic motivation on the basis of this continuum.

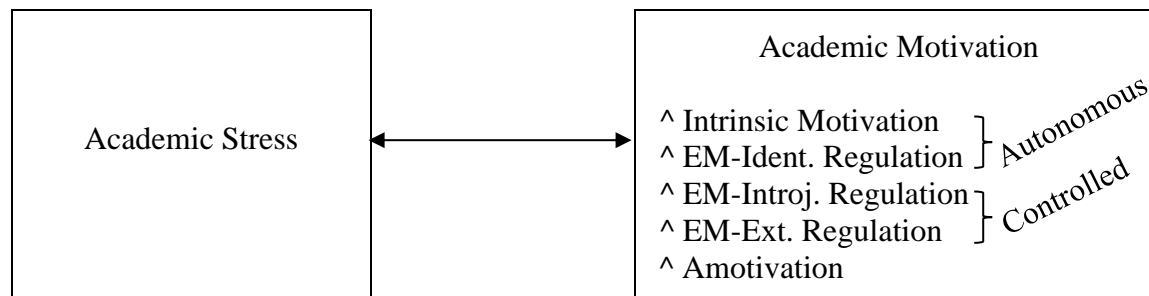


Figure 1. The schematic model of the study

Figure 1 shows the hypothesized relationship between academic stress and academic motivation. Academic stress is presented as a unidimensional factor. On the other hand, academic motivation has its types as indicators. The caret symbol (^) is used instead of bullets to signify the leveling of these types in the continuum from unwillingness (amotivation) to active personal commitment (intrinsic motivation).

It can be noted that integrated regulation, the most internalized type of extrinsic motivation, is left out in the framework. This is in keeping with the study’s instrument as well as with Ratelle et al. (2007) who pointed out that such a form of regulation is only manifest among people with “formed identities” (p. 735) and therefore not among adolescents which comprise the population of senior high school students.

As shown in the diagram, connecting the two variables is a bidirectional arrow. This is to signify that the conceptualized relationship is a mere association of the constructs and not a causal one. In other words, neither academic stress nor academic motivation is seen as a predictor of the other at this point, due to the presence, fluidity, and interplay of social, contextual, and personal factors that are outside the scope of this research.

### Research Objectives

The objective of the present study was to measure senior high school students' motivation and stress and account for whether these are significantly correlated. It specifically aimed to answer the following research questions.

1. What is the level of senior high school students' perceived academic stress?
2. What is the level of senior high school students' academic motivation?
3. Is there a significant relationship between senior high school students’ academic stress and academic motivation during the current face-to-face learning modality?

## METHOD

### Design

This study uses a descriptive-correlational design to find out if the two variables under consideration, namely perceived academic stress and academic motivation, are significantly associated. The primary focus was on measuring and describing the levels of academic stress and motivation in the population of senior high school students under study, after which a correlational analysis was made to provide statistical information about the strength and direction of the relationship between the variables. However, the descriptive-correlational design does not establish causality. According to Lappe (2000), the aim of descriptive-correlational research is limited to describing relationship rather than assuming a cause-and-effect pattern. Hence, none of the two variables is assigned as the independent or predictor variable.

### Setting and Participants

This study was done in February 2023 in one of the public high schools in Dumalinao, Zamboanga del Sur. The school was founded in 1992, while its senior high school unit started to operate in 2016, offering Accountancy, Business, and Management (ABM), Humanities and Social Sciences (HUMSS), Home Economics (HE), and Industrial Arts (IA) strands. The school has gradually transitioned into conducting full face-to-face classes in the first semester of 2022-2023 in compliance with DepEd's SY 2022-2023 calendar of activities.

There are currently 363 active registered senior high school students in the locale. Since this number is relatively small as well as accessible to the researchers, it was a natural first option to do complete enumeration and include every active senior high school student for a truer and more robust dataset (Australian Bureau of Statistics, n.d.) so as to include groupwise comparisons in the analysis. Nonetheless, due to factors such as late enrollment, absence in class on the day of the survey (due to immersion, etc.), unwillingness to participate, and cases such as taking their courses in the modular distance learning setup, only 267 were able to participate and successfully return the survey questionnaires. Even so, this is much more than the desired sample size of 84 for bivariate normal correlation determined through power analysis (*two-tailed*,  $\alpha=0.05$ ,  $power=0.80$ ) using the G\*Power software by Buchner et al. (2020).

Most of the 267 participants are in the age range of 16-18 years old. Of these, 109 are males and 158 are females. There were 148 grade 11 students and 119 grade 12 students. It can be assumed that all strands are well-represented since the number of participants from each strand (47 ABM learners, 108 HUMSS learners, 35 HE learners, and 77 IA learners) exceeds half of the strand's current population.

### Research Instruments

The instrument for this research is a survey questionnaire consisting of three parts, the first of which is a written consent/assent form with an additional five items on the students' profile

(name, age, gender, grade level, and strand). The next two parts are the scales on the respective variables under study.

Academic motivation was measured using a reduced version of the Academic Motivation Scale (Ratelle et al., 2007; Vallerand et al., 1992), consisting of 20 items. Each item in this scale is basically an answer to the prompt *Why do you go to school?*, which the respondents rated on a scale of one to seven where 1 means “not at all” and 7 means “exactly”. The scale contains five subscales, namely intrinsic motivation (items 2, 7, 12, and 17), identified regulation (items 3, 8, 13, and 18), introjected regulation (items 5, 10, 15, and 20), external regulation (items 1, 6, 11, and 16), and amotivation (items 4, 9, 14, and 19), each having four items that have been systematically ordered across the questionnaire. Ratelle et al. (2007), in three studies involving different sets of participants, reported the subscales’ reliability coefficients as ranging from 0.64 to 0.95, which can be assumed as “acceptable” and “very good” values (Ursachi et al., 2013).

On the other hand, academic stress was measured using the Perceived Academic Stress Scale, a version of Cohen et al.’s (1983) popular five-point unidimensional Likert scale on general stress that has been adapted to the school setting by Dong (2014). Consisting of six items, the scale has a reliability coefficient of 0.74 (Dong, 2014).

#### Data Gathering and Ethical Considerations

The cross-sectional survey was conducted during the first and second week of the second semester, S.Y. 2022-2023, when experiences from the last semester are still fresh in the students’ memory. Prior to this, a letter requesting permission for data collection was sent to and approved by the school principal before the semestral break.

In administering the survey, two 20-minute sessions were allotted for every class or section in the population. The first of these (Day 1) was allotted for a brief introduction on the study and an overview of the questionnaire, after which those in the age of majority who consented completed Part I, while those under 18 were given the questionnaire for their parents’ consent. The participants were given the assurance of the confidentiality of their personal identity.

Parts II and III were completed the following day. This was done so all participants from the same class respond to each item at the same time with guidance from the researchers to prevent careless responses and misunderstanding. Individual survey responses were then encoded onto a spreadsheet in preparation for data analysis.

#### Data Analysis

Data analysis was done using IBM’s SPSS Statistics version 25. Since Likert-type data are more categorical than numeric (i.e., interval or ratio), preliminary analysis of normality is not applicable. Descriptive statistical measurements such as means and standard deviations, as well as charts whenever applicable, were generated for each variable or demographic grouping for a clearer picture of the results.

Following Cohen (1983), scores for the students' perceived stress were obtained by recoding or reversing the scores on the positive items before summing across all items. In this case, there is only one positive item in the modified six-item Perceived Academic Stress Scale by Dong (2014) which this study adopts, namely item 5. High scores on the scale represent high levels of perceived academic stress (Dong, 2014), and vice versa. Individual scores can range from 6 to 30. The following ranges and descriptors were used in interpreting students' academic stress: 6-13 = *low stress*, 14-22 = *moderate stress*, and 23-30 = *high stress*.

For academic motivation, a similar scoring procedure was applied out of the responses to the Academic Motivation Scale, although unlike in the Perceived Academic Stress Scale, there is no need for reverse coding. This is because each of the five subscales was treated as a separate construct as Vallerand et al. (1992), the original developers of the scale, have apparently done. The following ranges were applied in all five subscales: 4-11 = *low*, 12-20 = *moderate*, 21-28 = *high*.

Tests of significant differences on academic stress and academic motivation scores across groups were done using independent samples t test, one-way ANOVA, and Welch's ANOVA, the latter specifically applied for multiple comparisons of groups with unequal variances, as suggested by Frost (2018). Further, multiple comparisons using the Games-Howell post hoc test was used to identify which groups significantly differ from which in the event of statistically significant F results. Finally, Pearson correlation was used in testing whether associations exist among academic stress and the subscales of motivation.

## RESULTS AND DISCUSSION

### Senior high school students' perceived academic stress

The first major concern of the study is on the level of senior high school students' perceived academic stress. For the results of the measurement, groupwise comparisons corresponding with the three demographic groupings (i.e., gender, grade level, and strand) are presented in Tables 1, 2, and 3. The level of senior high school students' perceived academic stress is reported for each group.

Table 1. Descriptive levels and test of significant difference (independent-samples t test) of senior high school students' perceived academic stress across genders

	n	M	SD	Interpretation	t	p
Male	109	18.32	2.78	<i>Moderate stress</i>	-3.007	0.003
Female	158	19.37	2.81	<i>Moderate stress</i>		

Table 1 describes the levels of perceived academic stress of male and female senior high school students. Although the levels of both genders can be said to have moderate stress, it can be inferred from the t test that a significant difference exists ( $t=-3.007$ ,  $p=0.003$ ) between the two in favor of the females. This means that females ( $M=19.37$ ,  $SD=2.81$ ) have a significantly higher level of stress than males ( $M=18.32$ ,  $SD=2.78$ ). This is in line with the findings of Banu et al. (2015) who reported female students as experiencing more academic stress compared to male students. The same difference in favor of females has been observed by Rahe and Jansen (2022)



and by Marco-Ahulló et al. (2022) in their study of academic stress derived from the COVID-19 pandemic. According to Garcia-Moya et al. (2021), girls may perceive greater social expectations to excel academically, which they may internalize. Additionally, it has been suggested that girls may be more concerned with pleasing adults, including teachers, and may exhibit heightened anxiety about their academic achievements (Låftman, Almquist & Östberg, 2013; Pomerantz et al., 2002, both cited in Garcia-Moya et al., 2021).

Table 2. Descriptive levels and test of significant difference (t test) of senior high school students' perceived academic stress across grade levels

	n	M	SD	Interpretation	t	p
Grade 11	148	19.16	2.90	<i>Moderate stress</i>	1.386	0.167
Grade 12	119	18.67	2.74	<i>Moderate stress</i>		

Table 2 shows the level of perceived academic stress distributed across the two grade levels of the senior high school. Based on the data, students from both grade levels experience moderate stress. Further, the slight difference in the means (0.49) is not statistically significant ( $t=1.386$ ,  $p=0.167$ ).

Table 3. Descriptive levels and test of significant difference (one-way ANOVA) of senior high school students' perceived academic stress across strands

	n	M	SD	Interpretation	F	p
ABM	47	19.21	2.65	<i>Moderate stress</i>	0.675	0.568
HUMSS	108	18.98	3.03	<i>Moderate stress</i>		
HE	35	19.23	3.13	<i>Moderate stress</i>		
IA	77	18.58	2.53	<i>Moderate stress</i>		

Table 3 enumerates the levels of senior high school students' perceived academic stress per strand. As in the groupings described in the preceding two tables, comparative data indicate moderate stress among students in all the four strands of the school. Results from the one-way ANOVA ( $F=0.675$ ,  $p=0.568$ ) point to the absence of statistically significant differences in the stress levels among the groups.

As reported in Tables 1, 2, and 3, a generally moderate level of perceived academic stress runs through the population and its subgroups. While some scholars point to the negative impact of this variable to other student-related issues such as depression (Zhang et al., 2022) and academic failure (Rucker, 2012), others contend that this may not necessarily be a bad thing. For one, Karabulut et al. (2021) hinted that increased levels of stress positively affect student success. More importantly, Ramaprabou and Dash (2018), suggested that a moderate level of stress is much more desirable than high or low levels in this construct since this is the stress level that generally leads to high achievement motivation. This is particularly true in the present study: the senior high school students generally have a moderate level of perceived academic stress and, as reported in the next section, they have high levels of academic motivation.

#### Senior high school students' academic motivation

The second major question that the study raised pertains to the level of senior high school students' academic motivation. Following are the results in the measurement of the said variable. Tables 4, 5, and 6 present groupwise comparisons across genders, grade levels, and strands, respectively. Senior high school students' scores in the five subscales of academic motivation are reported for each group.

Table 4. Descriptive levels and test of significant difference (t test) of senior high school students' academic motivation across genders

		n	M	SD	Interpretation	t	p
1	Intrinsic motivation	Male	22.50	4.11	<i>High</i>	0.683	0.495
		Female	22.16	4.04	<i>High</i>		
2	EM-Identified regulation	Male	22.46	4.36	<i>High</i>	-0.826	0.410
		Female	22.90	4.23	<i>High</i>		
3	EM-Introjected regulation	Male	21.73	4.34	<i>High</i>	1.571	0.117
		Female	20.82	4.91	<i>Moderate</i>		
4	EM-External regulation	Male	23.05	4.44	<i>High</i>	1.225	0.222
		Female	22.38	4.31	<i>High</i>		
5	Amotivation	Male	11.12	6.10	<i>Low</i>	3.063	0.002
		Female	8.96	4.94	<i>Low</i>		

The levels of academic motivation of male and female senior high school students are shown in Table 4. Both males and females scored high in terms of intrinsic motivation as well as in two of the three subscales of extrinsic motivation, namely identified regulation, and external regulation. As to introjected regulation, the mean score for males ( $M=21.73$ ,  $SD=4.34$ ) is high whereas that of the females ( $M=20.82$ ,  $SD=4.91$ ) falls under moderate, although it is close to the lower limit of "high" (See scoring procedure under Data Analysis Procedure) in a 0.18 difference. Therefore, the two genders do not significantly differ in that subscale ( $t=1.571$ ,  $p=0.117$ ) even with the difference in their descriptive interpretations.

On the other hand, it can be noted that both males ( $M=11.12$ ,  $SD=6.10$ ) and females ( $M=8.96$ ,  $SD=4.94$ ) have low amotivation scores. This can be seen as logical since the construct of amotivation is at the other end of the SDT continuum opposite to intrinsic motivation in which both genders scored high. Regarding gendered differences and still basing on the data presented in Table 4, it is only in the subscale of amotivation that a significant difference ( $t=3.063$ ,  $p=0.002$ ) is found to exist in favor of the males. In short, males have statistically higher amotivation than females, although this may not be true to some male individuals or subgroups as indicated by the slightly wider dispersion in the data ( $SD=6.10$ ) compared to the rest of the subscales of motivation.

Table 5. Descriptive levels and test of significant difference (t test) of senior high school students' academic motivation across grade levels

		n	M	SD	Interpretation	t	p	
1	Intrinsic motivation	Grade 11	148	21.91	4.11	<i>High</i>	-1.743	0.083
		Grade 12	119	22.78	3.98	<i>High</i>		
2	EM-Identified regulation	Grade 11	148	22.28	4.64	<i>High</i>	-1.907	0.058
		Grade 12	119	23.26	3.74	<i>High</i>		
3	EM-Introjected regulation	Grade 11	148	21.36	4.46	<i>High</i>	0.647	0.518
		Grade 12	119	20.98	5.00	<i>Moderate</i>		
4	EM-External regulation	Grade 11	148	22.64	4.58	<i>High</i>	-0.069	0.945
		Grade 12	119	22.67	4.12	<i>High</i>		
5	Amotivation	Grade 11	148	10.70	5.54	<i>Low</i>	2.846	0.005
		Grade 12	119	8.78	5.37	<i>Low</i>		

Table 5 lists the levels of academic motivation across the two grade levels of the senior high school, namely grades 11 and 12. Based on the data summarized on the table, both grade levels exhibit high levels of intrinsic and extrinsic motivation (identified regulation and external regulation). As in the previous table, mean score for introjected regulation is found to be moderate in one of the groups, namely the grade 12 ( $M=20.98$ ,  $SD=5.00$ ), although again this difference is not statistically significant ( $t=0.647$ ,  $p=0.518$ ) as that value is approaching the threshold for “high” after the addition of a mere 0.02.

As regards amotivation, both grade levels have low scores, but the two grade levels significantly differ in this respect ( $t=2.846$ ,  $p=0.005$ ) in favor of those in grade 11. In other words, grade 11 ( $M=10.70$ ,  $SD=5.54$ ) students have statistically higher amotivation than those students who are in their final year in high school ( $M=8.78$ ,  $SD=5.37$ ).

Table 6. Descriptive levels and test of significant difference (Welch's ANOVA) of senior high school students' academic motivation across strands

		n	M	SD	Interpretation	F	p	
1	Intrinsic motivation	ABM	47	21.55	4.50	<i>High</i>	0.553	0.647
		HUMSS	108	22.51	3.93	<i>High</i>		
		HE	35	22.46	3.88	<i>High</i>		
		IA	77	22.39	4.09	<i>High</i>		

2	EM-Identified regulation	ABM	47	22.57	4.01	High	1.385	0.252
		HUMSS	108	23.33	3.70	High		
		HE	35	21.94	5.14	High		
		IA	77	22.30	4.72	High		
3	EM-Introjected regulation	ABM	47	17.98	6.00	Moderate	6.315	0.001
		HUMSS	108	21.64	3.96	High		
		HE	35	22.46	3.95	High		
		IA	77	21.95	4.31	High		
4	EM-External regulation	ABM	47	22.11	4.54	High	1.513	0.215
		HUMSS	108	22.77	4.38	High		
		HE	35	21.60	4.37	High		
		IA	77	23.30	4.21	High		
5	Amotivation	ABM	47	7.45	4.22	Low	10.651	0.000
		HUMSS	108	8.68	4.58	Low		
		HE	35	12.26	6.11	Low		
		IA	77	11.84	6.17	Low		

Table 6 reports the descriptive levels of senior high school students' academic motivation across strands as well as the results of difference testing in each subscale. Following the suggestion of Frost (2018), Welch's ANOVA was used in these comparisons instead of Fisher's classic one-way ANOVA due to the presence of unequal variances among the strands in two of the subscales, namely introjected regulation (*Levene statistic*=5.712, *p*=0.001) and amotivation (*Levene statistic*=6.556, *p*=0.000).

As shown in the table, students from all the four strands are high in both intrinsic and extrinsic motivation, with the exception of those in the ABM strand who collectively scored moderate (*M*=17.98, *SD*=6.00) on the introjected regulation subscale. Thus, it is on this subscale that the first notable difference exists among the strands (*F*=6.315, *p*=0.001), with the ABM students grouped differently from the rest in the following homogeneous subsets table generated from the Games-Howell post hoc test results.

Table 6.a. Homogenous subsets for the introjected regulation subscale

Strand	n	Subset for alpha = 0.05	
		1	2
ABM	47	17.98	
HUMSS	108		21.64
IA	77		21.95
HE	35		22.46

From Table 6.a., it can be inferred that it is the ABM strand that differs significantly from the rest of the strands while there is no marked difference among the latter in terms of introjected regulation. Introjected regulation is the motivation for guilt-avoidance and ego-enhancement and is one of the three subscales of extrinsic motivation (Deci & Ryan, 2000; Ratelle et al., 2007).

As to the subscale of amotivation, students from all the four strands identically scored low, although statistically significant differences ( $F=10.651, p=0.000$ ) exist among the groups. The following homogeneous subsets table generated from the Games-Howell post hoc analysis classifies students taking ABM ( $M=7.45, SD=4.22$ ) and HUMSS ( $M=8.68, SD=4.58$ ) as Subset 1 while those taking IA ( $M=11.84, SD=6.17$ ) and HE ( $M=12.26, SD=6.11$ ) form Subset 2. This means that the amotivation scores of ABM and HUMSS students are significantly lower than those in the IA and HE strands. Interestingly, these subsets correspond exactly to the academic and TVL tracks under which the strands, respectively, are formally clustered.

Table 6.b. Homogenous subsets for the amotivation subscale

Strand	n	Subset for alpha = 0.05	
		1	2
ABM	47	7.45	
HUMSS	108	8.68	
IA	77		11.84
HE	35		12.26

From Table 6.b., it can be deduced that senior high school students in the academic track (ABM and HUMSS) have lower levels of amotivation, while those in the TVL track (IA and HE) have significantly higher levels of amotivation.

Visual representations of perceived academic stress and academic motivation levels

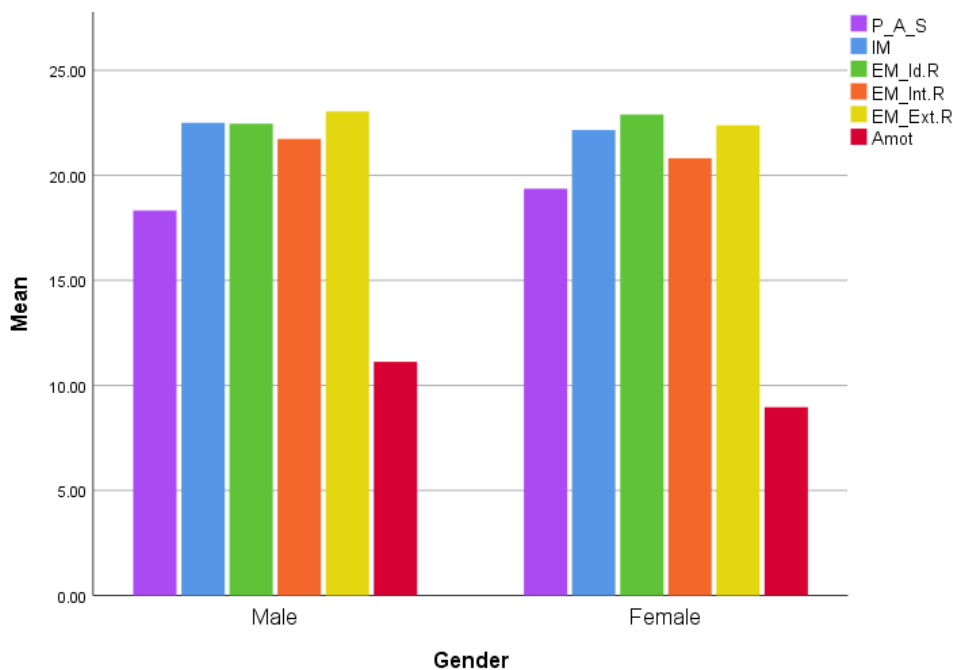


Figure 2. Levels of perceived academic stress and academic motivation per gender

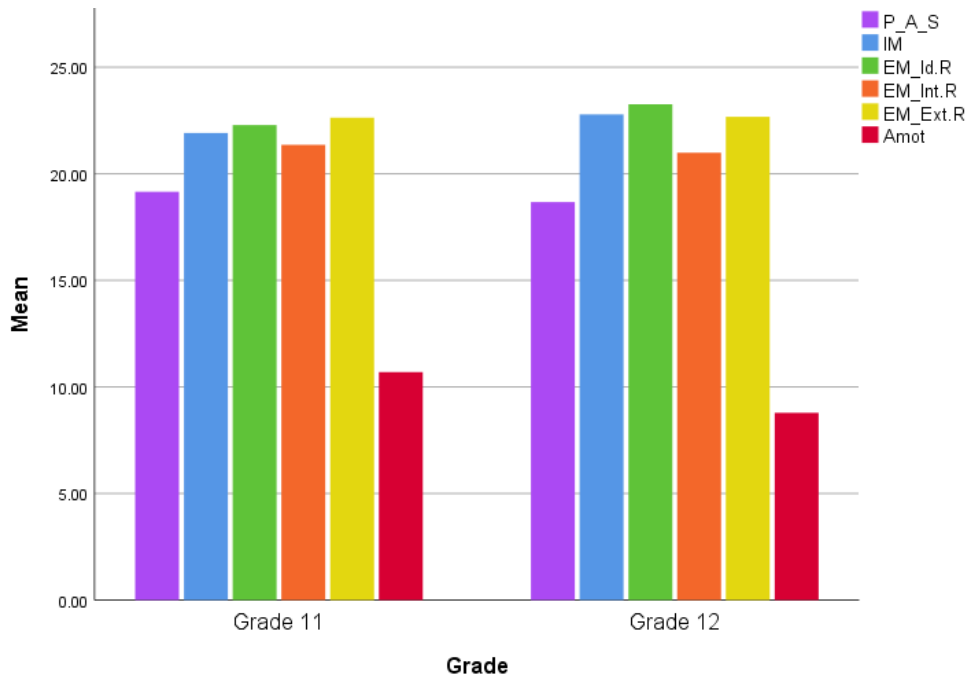


Figure 3. Levels of perceived academic stress and academic motivation per grade level

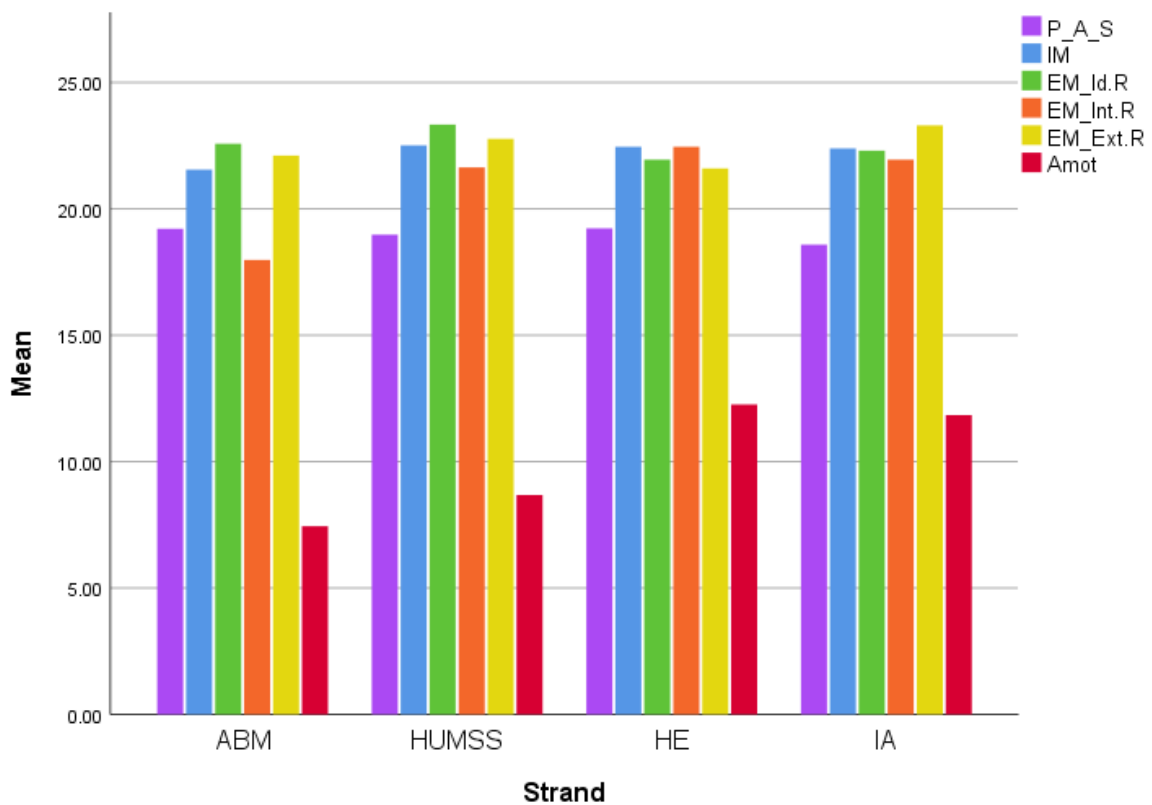


Figure 4. Levels of perceived academic stress and academic motivation per strand

Figures 2, 3, and 4 are visual representations of the measurements done on the two variables under study, namely perceived academic stress and academic motivation. The statistically significant difference in male and female students' stress and amotivation can be noted in Figure 2. Also, the marked difference in amotivation across grade levels is apparent in Figure 3. Finally, Figure 4 shows the significantly lower level of introjected regulation among ABM students, as well as the disparity in the amotivation levels among those in the academic (ABM and HUMSS) and TVL track (HE and IA). These measurements were done to answer the first two questions of this research and pave the way for addressing the major inferential question that follows.

#### Relationship between senior high school students' perceived academic stress and academic motivation

The final objective of the study was to test the association between perceived academic stress and academic motivation. Since academic motivation is composed of subscales which, by its nature as a continuum, cannot be summed up to arrive at a single value for the whole motivation construct, multiple correlations were run to test the relationship between perceived academic stress and each of the subscales of motivation, as well as among the subscales themselves. Results are illustrated in the following correlation matrix.

Table 7. Test of significant relationship (Pearson) between senior high school students' academic stress and the subscales of academic motivation (N=267)

	M	SD	1	2	3	4	5
1 Perceived academic stress	18.94	2.84	-				
2 Intrinsic motivation	22.30	4.07	-0.042 0.497	-			
3 Identified regulation	22.72	4.28	-0.078 0.206	0.535*	-		
4 Introjected regulation	21.19	4.70	-0.018 0.773	0.504*	0.409*	-	
5 External regulation	22.65	4.37	0.117 0.055	0.543*	0.555*	0.519*	-
6 Amotivation	9.84	5.54	0.069 0.264	-0.192* 0.002	-0.334* 0.000	0.100 0.103	-0.070 0.256

Note: Cell contains Pearson's correlation coefficient ( $r$ ) (above) and p-value (below). \*Correlation is significant at the 0.05 level (2-tailed).  $r$  is interpreted using Cohen's (1992) scale: -0.3 to +0.3 = weak relationship, -0.5 to -0.3 or +0.3 to +0.5 = moderate relationship, -0.9 to -0.5 or +0.5 to +0.9 = strong relationship, -1.0 to -0.9 or +0.9 to +1.0 = very strong relationship.

Looking at Table 7, it is apparent that significant correlations exist among the subscales of academic motivation. As expected, the three domains of extrinsic motivation are all positively correlated with each other and their associations range from moderate ( $r=0.409$ ,  $p=0.000$  for identified regulation & introjected regulation) to strong ( $r=0.555$ ,  $p=0.000$  for identified regulation & external regulation;  $r=0.519$ ,  $p=0.000$  for introjected regulation and external

regulation). This finding exhibits the unity of the extrinsic motivation construct and can be seen as a further validation of the adopted instrument in the Philippine context.

Another point of evaluation is the relation between extrinsic motivation and the other category of motivation, namely intrinsic motivation. Based on the data, the latter can be said to have a positive strong relationship with identified regulation ( $r=0.535$ ,  $p=0.000$ ), introjected regulation ( $r=0.504$ ,  $p=0.000$ ), and external regulation ( $r=0.543$ ,  $p=0.000$ ), respectively. This means that, in the population under study, those who have high extrinsic motivation in terms of their schooling are also generally highly intrinsically motivated. This echoes the findings of Rucker (2012) who found a positive association between both types, as well as the contention of Sennet (2021, as cited in Nickerson, 2023) that the two types of motivation, although placed in different points in the SDT continuum, are not mutually exclusive. Based on the study of Ratelle et al. (2007), it is a good thing that high school students have high levels of both autonomous and controlled motivation as students with this motivational configuration have relatively better academic adjustment than those with other setups with respect to this variable.

As to the relationship between amotivation and the other domains of motivation, the anticipated negative relationship has surfaced in the results between amotivation and the two subscales at the opposite end of the continuum, namely intrinsic motivation ( $r=-0.192$ ,  $p=0.002$ ) and identified regulation ( $r=-0.334$ ,  $p=0.000$ ), these two being the subscales that correspond to the autonomous motivation type under the autonomous-controlled typology. On the other hand, amotivation was not found to significantly correlate with either of the controlled motivation subscales, namely introjected regulation ( $r=0.100$ ,  $p=0.103$ ) and external regulation ( $r=-0.070$ ,  $p=0.256$ ). This is slightly different from the findings of Rucker (2012) who reported that both the extrinsic and intrinsic types are negatively associated with amotivation. In this study, only intrinsic motivation and one of the three subscales of extrinsic motivation, namely identified regulation, were found to have significant relationship with amotivation, and these relationships are weak ( $r=-0.192$ ) and moderate ( $r=-0.334$ ), respectively.

To answer the major inferential question of the study, it can be noted from the results in Table 8 that senior high school students' perceived academic stress is not significantly correlated with any of the subscales of motivation ( $p=0.497$ ,  $0.206$ ,  $0.773$ ,  $0.055$ , &  $0.264$ , respectively). In other words, it doesn't matter whether students have high or low motivation; anybody can have high or low stress regardless of their motivational configuration. Based on the concept with which this study has operated, it may not be a coincidence that amotivation, too, is not found to significantly correlate with perceived academic stress since both intrinsic and extrinsic motivation are not statistically related to stress in the first place. It is just logical to assume that this somehow confirms the absence of a clear connection between the two variables in the current context.

This last major finding goes against a number of previous studies such as those of Rucker (2012) who found stress to have a positive relationship with amotivation, Squincaha et al. (2021) who found it to correlate positively with amotivation, introjected regulation, and identified regulation, and negatively with intrinsic motivation, and other scholars (Alipio, 2020b; Buenvenida et al., 2022; David, 2010; Liu, 2015; Yang et al., 2022). On the other hand, results of the present study echo those of Calhoun (2022) and Tus (2020) who found no significant correlation between stress and motivation.



## CONCLUSION

This paper contributes to the scientific literature on academic stress and academic motivation, specifically in the context of a rural post-quarantine face-to-face learning context. Based on the findings, it is safe to assume that, in terms of the affective dimensions of stress and motivation, the population of senior high school students in this part of the country has regained the psychological strength to continue developing and growing into their respective career orientations. However, the above findings also raise a particular concern for female students who have a slight but statistically higher level of stress than males, and for males, grade 11 students collectively, and those in the TVL track who have significantly higher levels of amotivation compared to those in their counterpart subgroups. At this point, one may consider whether to accept these differences as part of the reality underlying the nature of these subgroups, or to think proactively as educators and look for possible solutions to somehow improve those whose conditions are unfavorable to some extent. It is the contention of the authors to take the latter option, hence the following recommendations.

## RECOMMENDATIONS

The following recommendations are crafted based on the findings of this study.

1. School administrators may continue to implement the current best practices in running the school. Stress management policies and programs targeting female students are particularly encouraged. Moreover, policies and programs that can potentially reduce amotivation, particularly among male students, grade 11 students, and those in the TVL track, would most surely be helpful.
2. Teachers should as well go on with their best practices in the classroom. Special attention may be given to females in view of their statistically higher level of perceived academic stress. In addition, consideration regarding the significantly higher amotivation levels of males, grade 11 students, and those in the TVL track may also be of help in meeting the daily academic and psychosocial needs of these students in the classroom.
3. The present study filled a gap in the local scientific literature on perceived academic stress and academic motivation, as well as on their hypothesized relationship. Nonetheless, clear gaps have surfaced such as the possible explanations regarding the differences in the dimensions under investigation, which somehow call for exploratory studies from different angles. Further, the scope of the study may be amplified to include students in the district or division for a more generalizable result. Other demographic variables may also be included, thereby providing insights into how the variables under study interplay with such factors. Finally, an attempt at exploring the possible interaction effects between the study variables and various factors may be best to fully capture the nuance of these dimensions in the Philippine rural senior high school reality.

## REFERENCES

- Alipio, M. (2020). *Academic success as estimated by locus of control and motivation* [Preprint]. EdArXiv. <https://doi.org/10.35542/osf.io/smf84>
- Alipio, M. (2020). Predicting academic performance of college freshmen in the Philippines using psychological variables and expectancy-value beliefs to outcomes-based education: A path analysis. *Education & Administration*. <https://doi.org/10.35542/osf.io/pra6z>
- Amrai, K., Motlagh, S. E., Zalani, H. A., & Parhon, H. (2011). The relationship between academic motivation and academic achievement students. *Procedia - Social and Behavioral Sciences*, 15, 399–402. <https://doi.org/10.1016/j.sbspro.2011.03.111>
- Australian Bureau of Statistics. (n.d.). *Statistical language—Census and sample*. Australian Bureau of Statistics. Retrieved January 18, 2023, from <https://www.abs.gov.au/websitedbs/D3310114.nsf/Home/Statistical+Language+-+census+and+sample>
- Banu, P., Deb, S., Vishnuvardhan, & Padi, T. R. (2015). Perceived Academic Stress among University Students across Gender, Academic Streams, Semester and Academic Performance. *Indian Journal of Health and Wellbeing*, 6, 412–416.
- Bonneville-Roussy, A., Evans, P., Verner-Filion, J., Vallerand, R. J., & Bouffard, T. (2017). Motivation and coping with the stress of assessment: Gender differences in outcomes for university students. *Contemporary Educational Psychology*, 48, 28–42. <https://doi.org/10.1016/j.cedpsych.2016.08.003>
- Buenvinida, L. P. B., Tan, C. S., Rodriguez, M. T. M., Lapie, L. P., & Salandanan, F. H. (2022). Stress and anxiety levels of the college of teacher education students and their motivation to learn: An input to an intervention program. *American Academic Scientific Research Journal for Engineering, Technology, and Sciences*, 86(1), 77–88.
- Buchner, A., Erdfelder, E., Faul, F., & Lang, A.-G. (2020). *G\*Power* (3.1.9.7).
- Cahapay, M. B. (2020). Rethinking education in the new normal post-COVID-19 era: A curriculum studies perspective. *Aquademia*, 4(2), ep20018. <https://doi.org/10.29333/aquademia/8315>
- Calhoun, S. K. (2022). *Impact of the COVID-19 pandemic on psychological stress and academic motivation on psychology graduate students*. <https://repository.lib.fit.edu/handle/11141/3486>
- Çetinkaya, T. (2019). The analysis of academic motivation and career stress relationships of the students in department of physical education and sport. *International Education Studies*, 12(4), 24–35.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A Global Measure of Perceived Stress. *Journal of Health and Social Behavior*, 24(4), 385. <https://doi.org/10.2307/2136404>
- Corpus, J. H., Robinson, K. A., & Wormington, S. V. (2020). Trajectories of motivation and their academic correlates over the first year of college. *Contemporary Educational Psychology*, 63, 101907. <https://doi.org/10.1016/j.cedpsych.2020.101907>
- David, A. (2010). Examining the relationship of personality and burnout in college students: The role of academic motivation. *Educational Measurement and Evaluation Review*, 1, 90–104.
- de la Fuente, J., Pachón-Basallo, M., Santos, F. H., Peralta-Sánchez, F. J., González-Torres, M. C., Artuch-Garde, R., Paoloni, P. V., & Gaetha, M. L. (2021). How has the COVID-19 crisis affected the academic stress of university students? The role of teachers and students. *Frontiers in Psychology*, 12. <https://www.frontiersin.org/articles/10.3389/fpsyg.2021.626340>

- Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. In P. A. M. V. Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of Theories of Social Psychology* (Vol. 1, pp. 416–437). SAGE Publications Inc.
- Department of Education. (2022). *School Calendar and Activities for the School Year 2022-2023*.
- Dong, Y. (2014). *Examining the role of motivation in the relationship between perceived academic stress and coping among freshmen* [Dissertation, The University of North Dakota]. <https://commons.und.edu/theses/764/>
- Elliot, A. J., & Zahn, I. (2008). Motivation. In N. J. Salkind (Ed.), *Encyclopedia of Educational Psychology* (pp. 686–692). SAGE Publications Inc.
- Frost, J. (2018). Benefits of Welch’s ANOVA compared to the classic one-way ANOVA. *Statistics By Jim: Making Statistics Intuitive*.
- Garcia-Moya, I., Diez, M., Paniagua, C., & Jimenez-Iglesias, A. (2021, September 6). *School Stress in Secondary School: An Analysis of Gender Differences in Stress Levels, the Impact of COVID and their Links with School Satisfaction*. European Educational Research Association, Geneva (online). <https://eera-ecer.de/ecer-programmes/conference/26/contribution/50475>
- Jayanthi, P., Thirunavukarasu, M., & Rajkumar, R. (2015). Academic stress and depression among adolescents: A cross-sectional study. *Indian Pediatrics*, 52(3), 217–219. <https://doi.org/10.1007/s13312-015-0609-y>
- Karabulut, N., Gurcayir, D., Yildiz, B. Z., & MSc, R. (2021). Effect of stress on academic motivation and achievement of students in nursing education. *International Journal of Caring Sciences*, 14(1), 370.
- Lappe, J. M. (2000). Taking the mystery out of research: Descriptive correlational design. *Orthopaedic Nursing*, 19(2), 81.
- Liu, Y. (2015). The longitudinal relationship between Chinese high school students’ academic stress and academic motivation. *Learning and Individual Differences*, 38, 123–126. <https://doi.org/10.1016/j.lindif.2015.02.002>
- Marco-Ahulló, A., Villarrasa-Sapiña, I., & Monfort-Torres, G. (2022). Estudio descriptivo sobre las diferencias de género en el estrés académico derivado del contexto COVID-19 en población universitaria española (Descriptive study on gender differences in academic stress derived from the COVID-19 context in a Spanish unive. *Retos*, 43, 845–851. <https://doi.org/10.47197/retos.v43i0.88968>
- Nickerson, C. (2021). *Extrinsic vs. intrinsic motivation: What’s the difference?* <https://simplypsychology.org/differences-between-extrinsic-and-intrinsic-motivation.html>
- Park, J., Chung, S., An, H., Park, S., Lee, C., Kim, S. Y., Lee, J.-D., & Kim, K.-S. (2012). A Structural Model of Stress, Motivation, and Academic Performance in Medical Students. *Psychiatry Investigation*, 9(2), 143–149. <https://doi.org/10.4306/pi.2012.9.2.143>
- Rahe, M., & Jansen, P. (2022). Understanding the relationship between perceived stress, academic motivation, and physical activity in college students during the coronavirus pandemic. *Frontiers in Education*. <https://doi.org/10.3389/feduc.2022.943091>
- Ramaprabou, V., & Dash, S. K. (2018). Effect of academic stress on achievement motivation among college studentes. *I-Manager’s Journal on Educational Psychology*, 11(4), 32. <https://doi.org/10.26634/jpsy.11.4.14219>
- Ratelle, C. F., Guay, F., Vallerand, R. J., Larose, S., & Senécal, C. (2007). Autonomous, controlled, and amotivated types of academic motivation: A person-oriented analysis. *Journal of Educational Psychology*, 99(4), 734–746. <https://doi.org/10.1037/0022-0663.99.4.734>

- Rücker, J. C. (2012). *The relationship between motivation, perceived stress and academic achievement in students* (public) [Bachelor's Thesis, University of Twente]. <https://purl.utwente.nl/essays/62412>
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25(1), 54–67. <https://doi.org/10.1006/ceps.1999.1020>
- Shahar, G., Henrich, C. C., Blatt, S. J., Ryan, R., & Little, T. D. (2003). Interpersonal relatedness, self-definition, and their motivational orientation during adolescence: A theoretical and empirical integration. *Developmental Psychology*, 39, 470–483. <https://doi.org/10.1037/0012-1649.39.3.470>
- Shahid, W., & Farhan, S. (2022). The effect of self-compassion intervention on academic motivation and academic stress on mental health of students in hybrid learning. *Journal of Professional & Applied Psychology*, 3(2), Article 2. <https://doi.org/10.52053/jpap.v3i2.101>
- Shankar, N. L., & Park, C. L. (2016). Effects of stress on students' physical and mental health and academic success. *International Journal of School & Educational Psychology*, 4(1), 5–9. <https://doi.org/10.1080/21683603.2016.1130532>
- Squincalha, G. R., Leal, E. A., & Silva, T. D. (2021). Relationship between academic motivation and perceived stress: A study with accounting science students. *Journal of Accounting, Management and Governance*, 24(1), 72–91. [https://doi.org/10.51341/1984-3925\\_2021v24n1a5](https://doi.org/10.51341/1984-3925_2021v24n1a5)
- Tus, J. (2020). Academic stress, academic motivation, and its relationship on the academic performance of the senior high school students. *Asian Journal of Multidisciplinary Studies*, 8(11), 29–37.
- Ursachi, G., Horodnic, I. A., & Zait, A. (2013). How reliable are measurement scales? External factors with indirect influence on reliability estimators. *7th International Conference on Globalization and Higher Education in Economics and Business Administration*, 20, 679–686. <https://www.sciencedirect.com/science/article/pii/S2212567115001239>
- Usher, E. L., Golding, J. M., Han, J., Griffiths, C. S., McGavran, M. B., Brown, C. S., & Sheehan, E. A. (2021). Psychology students' motivation and learning in response to the shift to remote instruction during COVID-19. *Scholarship of Teaching and Learning in Psychology*. <https://doi.org/10.1037/stl0000256>
- Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallieres, E. F. (1992). The academic motivation scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement*, 52(4), 1003–1017. <https://doi.org/10.1177/0013164492052004025>
- World Health Organization. (2021). *Stress Q&A*. World Health Organization. <https://www.who.int/news-room/questions-and-answers/item/stress>
- Yang, M., Viladrich, C., & Cruz, J. (2022). Examining the relationship between academic stress and motivation toward physical education within a semester: A two-wave study with Chinese secondary school students. *Frontiers in Psychology*, 13. <https://www.frontiersin.org/articles/10.3389/fpsyg.2022.965690>
- Zhang, X., Gao, F., Kang, Z., Zhou, H., Zhang, J., Li, J., Yan, J., Wang, J., Liu, H., Wu, Q., & Liu, B. (2022). Perceived academic stress and depression: The mediation role of mobile phone addiction and sleep quality. *Frontiers in Public Health*, 10. <https://www.frontiersin.org/articles/10.3389/fpubh.2022.760387>