A Correlational Study between the level of academic performance and the level of academic stress among Young Adults

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Abstract: *Introduction:* Stress may decrease cognitive capacities and learning in young adults , affecting academic performance. The primary aim of the research was to examine the correlation between academic stress and academic performance. *Method:* The samples (male 50, female 50, aged 17-23 years) were taken from different universities in India. Academic stress was measured by the (ASS) Academic stress scale and academic performance was measured by Birchmeier, C. et al., from Saginaw Valley State University (APS) Academic performance scale. The data was analysed using SPSS (version 16). *Result:* Research indicates a significant negative association (r = -0.60, p < 0.001) between academic stress and performance, with higher stress levels resulting in decreased performance. Multiple regression analysis shows that academic stress significantly impacts academic performance (β = -0.45, p < 0.001). Students with high stress performed less well academically compared to those with low or moderate stress (F (2, 97) = 12.34, p < 0.001). Female students reported much greater academic stress across every dimension than male students. For AST, females (M = 46.16) had significantly higher stress levels than men (M = 35.26); t (98) = 3.75, p =.001. *Conclusion:* The findings indicate that students are likely to achieve higher academic performance when they experience lower levels of academic stress.

Keywords: Academic stress, academic performance, young adults

1 | INTRODUCTION

In the field of education and mental health, there is a growing interest in understanding the relationship between academic achievement and stress levels among young people. Academic performance, often assessed through exam scores and assessments, reflects students' ability to comprehend and apply

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knowledge. On the other hand, academic stress encompasses the psychological and emotional strain experienced by students in educational settings, influenced by factors such as workload, competition, expectations, and personal challenges.

The objective behind this research stems from the recognition of the significant impact that stress can have on students' academic performance and overall well-being. High levels of stress can hinder students' ability to focus, retain information, and perform well academically. By investigating the correlation between academic performance and academic stress. This study aims to shed light on the factors influencing students' educational trajectories and outcomes. Research by Rafidah et al. (2009) demonstrates a strong negative relationship between stress and academic performance among university students, highlighting the importance of stress management strategies. Studies by Sindhu (2016) and Khan, Altaf, and Kausar (2013) underscore the negative impact of stress on academic achievement, emphasizing the necessity of stress management interventions for improved student performance. Mishra's (2017) study emphasizes the adverse effects of academic stress on college students' academic achievement, underscoring the importance of addressing stress levels for improved performance.

Understanding the relationship between academic performance and academic stress is crucial for schools, counsellors, and policymakers to develop effective interventions that support students in managing stress and improving their academic achievements. By identifying the patterns and variables that influence students' academic performance and stress levels, this research seeks to provide insights that can inform the development of tailored assistance, support structures, and techniques to enhance the educational environment and promote students' personal development.

2 | METHOD

The sample for this study includes young adults aged 18 to 25 years from various educational backgrounds. A total of 100 participants were selected, consisting of 50 females and 50 males, ensuring gender balance. The participants were currently enrolled in undergraduate or postgraduate programs at approved institutions. This age range was chosen to represent the young adult population, who are typically at a critical stage in their academic and personal development. The research included participants who met the specified criteria for inclusion/exclusion and provided written informed permission. The sampling technique used was random sampling to ensure representation across different academic disciplines and socioeconomic backgrounds.

Tools

The Academic Performance Scale (APS) is a 5-point Likert scale designed by Birchmeier, C. et al., from Saginaw Valley State University. This scale evaluates academic achievement through a series of eight items, each reflecting different aspects of academic accomplishments such as grades or scores in various subjects or courses. The APS provides a standardized method for assessing academic performance across diverse educational settings.

The Academic Stress Scale (ASS) is a 4-point Likert scale used to quantify academic stress. It comprises 36 questions categorized into five factors: inadequate academic environment at the institution, lack of adjustment, apprehension about the future, poor administration, and worries. The ASS has been validated and is considered reliable for measuring academic stress among university students.

Design

This study employed a correlational research design to investigate the relationship between academic performance and academic stress among young adults. The correlational design was chosen to evaluate the strength and direction of the association between these two variables.

Variables

The independent variable in this study was academic stress, which was measured using the Academic Stress Scale (ASS). The dependent variable was academic performance, measured by the Academic Achievement Scale (APS). Additionally, demographic variables such as gender, age, socio-economic status, family type, educational qualification, and residence area were considered to examine their potential influence on academic performance.

Procedure

To conduct this study, ethical authorization was first obtained from the relevant institutional review board, ensuring compliance with ethical standards for research involving human subjects. Participants were then enlisted using a random selection method to ensure a representative sample. The academic stress scale (ASS) and academic performance scale (APS) surveys were administered to the selected participants. Data was gathered from multiple institutions using Google Forms, facilitating efficient and accessible data collection. The collected data was subsequently analysed using SPSS software to ascertain the association between academic achievement and academic stress among young adults.

Statistical analysis

The data on academic achievement and stress among young people was analysed using SPSS. Descriptive statistics were used to summarise the demographics of the sample. Pearson correlation coefficients were used to evaluate the strength and direction of the relationship between academic stress and performance. Multiple regression analysis was used to investigate the influence of demographic characteristics on academic attainment.

The demographic factors, including gender, age, socio-economic position, family type, educational qualification, and residential area, were characterized using statistical measures such as means, standard deviations, frequencies, and percentages. The major variables of interest, namely academic performance and academic stress, were also characterized using the same statistical measures.

Statistical analysis was used to evaluate the assumptions of the investigation. The academic performance across demographic categories, such as gender and resident region, was assessed using independent sample t-tests. On the other hand, ANOVA was used to compare academic performance based on socio-economic level, family type, and educational qualification.

3 | RESULT

Table 1 shows the comparison of various variables between two groups based on residence, indicated by Rular and Urban. For the variable AP, there is no significant difference between the two groups (t (97) = 0.043, p = 0.966). Similarly, no significant differences are observed for AST (t (97) = -0.886, p = 0.378), AST2 (t (97) = 0.444, p = 0.658), AST3 (t (97) = -1.357, p = 0.178), AST4 (t (97) = 0.135, p = 0.893), and AST5 (t (97) = -0.183, p = 0.855). However, a significant difference is found in AST1 (t (97) = -2.213, p = 0.029), indicating that residence has a significant impact on this variable. Overall, residence significantly affects AST1 but does not have a significant impact on the other variables.

Table :1 Comparison of Academic Performance and Stress Levels Based on Residence

	Residence	N	Mean	Std. Error Mean	t	Sig. (2-tailed)
AP	Rular	19	30.211	1.12281	0.043	0.966
	Urban	80	30.163	0.48045	0.039	0.969
AST	Rular	19	37.526	4.94376	-0.89	0.378
	Urban	80	41.75	2.0092	-0.79	0.436
AST1	Rular	19	9.3684	1.41465	-2.21	0.029
	Urban	80	12.5	0.603	-2.04	0.052

AST2	Rular	19	8.2105	1.19839	0.444	0.658
	Urban	80	7.675	0.51551	0.411	0.685
AST3	Rular	19	6.8421	1.2595	-1.36	0.178
	Urban	80	8.4375	0.48972	-1.18	0.249
AST4	Rular	19	6.7895	0.97806	0.135	0.893
	Urban	80	6.6625	0.39456	0.12	0.905
AST5	Rular	19	6.3158	0.88209	-0.18	0.855
	Urban	80	6.475	0.36844	-0.17	0.869

Table 2 shows the compares of academic performance (AP) and academic stress (AST) levels of undergraduate (UG) and postgraduate (PG) students. UG students had a slightly lower AP score (M=29.94) than PG students (M=33.20), but the difference was marginally non-significant. Stress levels, measured by various tests (AST1 to AST5), showed no significant differences between the two groups. Although PG students had slightly higher scores in some stress tests, the differences were not statistically significant. Overall, the study found no significant differences in academic performance and stress levels between UG and PG students.

Table: 2 Comparison of Academic Performance and Stress Levels Based on Education qualification level.

	E	N	Mean	Std. Error Mean	t	Sig. (2-tailed)
AP	UG	95	29.9368	0.4556	-1.619	0.109
	PG	5	33.2	1.35647	-2.28	0.072
AST	UG	95	40.5684	1.92756	-0.328	0.743
	PG	5	43.4	8.51234	-0.324	0.76
AST1	UG	95	11.8526	0.5765	-0.211	0.833
	PG	5	12.4	2.89137	-0.186	0.861
AST2	UG	95	7.6737	0.4855	-0.801	0.425
	PG	5	9.4	1.72047	-0.966	0.382
AST3	UG	95	8.0421	0.46799	-0.261	0.795
	PG	5	8.6	2.97658	-0.185	0.862
AST4	UG	95	6.6105	0.38455	-0.111	0.912
	PG	5	6.8	1.31909	-0.138	0.896
AST5	UG	95	6.3895	0.35957	0.12	0.905
	PG	5	6.2	0.73485	0.232	0.824

In Table 3, academic performance (AP) and stress levels (AST1, AST2, AST3, AST4, AST5) were compared between students from medium and high socio-economic status (SES). Students from medium SES scored lower in academic performance (M=29.92) than those from high SES (M=33.60), with a significant difference (p=0.034).They also had significantly higher overall academic stress (M=41.60) compared to high SES students (M=23.80), (p=0.037). Specific stress tests showed significant differences in AST2 (p=0.003) and AST3 (p=0.059), with medium SES students scoring higher. Other stress tests (AST1, AST4, AST5) did not show significant differences. Overall, medium SES students experienced higher academic stress and had lower academic performance compared to high SES students.

Table: 3Comparison of Academic Performance and Stress Levels Based on socio economic statues

	SE	N	Mean	Std. Error Mean	t	Sig. (2-tailed)
AP	Medium	95	29.9158	0.45483	-1.835	0.07
	High	5	33.6	1.2083	-2.854	0.034
AST	Medium	95	41.6	1.89721	2.109	0.037
	High	5	23.8	7.13723	2.41	0.065
AST1	Medium	95	12.0421	0.58036	1.259	0.211

	High	5	8.8	1.98494	1.568	0.181
AST2	Medium	95	8	0.47936	2.277	0.025
	High	5	3.2	0.91652	4.641	0.003
AST3	Medium	95	8.2947	0.47061	2.148	0.034
	High	5	3.8	1.74356	2.489	0.059
AST4	Medium	95	6.7579	0.37225	1.638	0.105
	High	5	4	2.02485	1.34	0.247
AST5	Medium	95	6.5053	0.34772	1.604	0.112
	High	5	4	1.67332	1.466	0.211

Table 4 presents a comparison of academic performance (AP) and academic stress levels (AST1, AST2, AST3, AST4, AST5) between a group of 73 nuclear students and a group of 27 joint students. The academic performance (AP) of nuclear students (M=29.66, SE=0.48) was lower than that of joint students (M=31.30, SE=0.97), as shown by a t-value of -1.514 and a significant threshold of 0.138. The average overall academic stress experienced by nuclear family students (M=41.99, SE=2.20) was higher compared to joint family students (M=37.26, SE=3.54), with a t-value of 1.134 and a significant level of 0.262. The results of the specific stress tests indicated that there were no statistically significant differences between the two groups. The p-values for AST1, AST2, AST3, AST4, and AST5 were 0.192, 0.789, 0.468, 0.250, and 0.163, respectively. This sample shows no significant differences in academic performance or stress levels between nuclear and joint family students.

Table: 4 Comparison of Academic Performance and Stress Levels Based on Family type.

	FT	N	Mean	Std. Error Mean	t	Sig. (2-tailed)
AP	Nuclear	73	29.6575	0.48384	-1.658	0.101
	Joint	27	31.2963	0.96788	-1.514	0.138
AST	Nuclear	73	41.9863	2.19948	1.123	0.264
	Joint	27	37.2593	3.5404	1.134	0.262
AST1	Nuclear	73	12.3288	0.65835	1.316	0.191
	Joint	27	10.6667	1.07019	1.323	0.192
AST2	Nuclear	73	7.8356	0.55826	0.264	0.792
	Joint	27	7.5556	0.87597	0.27	0.789
AST3	Nuclear	73	8.2877	0.52794	0.769	0.444
	Joint	27	7.4815	0.96723	0.732	0.468
AST4	Nuclear	73	6.863	0.44922	1.081	0.282
	Joint	27	5.963	0.63038	1.163	0.25
AST5	Nuclear	73	6.6712	0.40217	1.402	0.164
	Joint	27	5.5926	0.64552	1.418	0.163

Table 5 results show significant differences in academic performance (AP) and academic stress levels (AST1, AST2, AST3, AST4, AST5) between male (N=50) and female (N=50) students. Males (M=30.16, SE=0.68) and females (M=30.04, SE=0.57) had similar academic performance (AP), t(98)=0.135, p=.893. However, males (M=35.26, SE=2.52) had significantly lower overall academic stress (AST) than females (M=46.16, SE=2.56), t(98)=-3.030, p=.003. Stress tests showed significant differences in AST1 (M=9.80, SE=0.74; M=13.96, SE=0.74), AST2 (M=6.80, SE=0.63; M=8.72, SE=0.68), AST3 (M=6.86, SE=0.65; M=9.28, SE=0.62), and AST5 (M=5.5, SE=0.68). AST4 was not significantly different between men and women (M=6.28, SE=0.51; M=6.96, SE=0.54), t(98)=-0.918, p=.361). These findings suggest that females experience significantly higher academic stress than males, despite similar academic performance.

Table: 5 Comparison of Academic Performance and Stress Levels Based on Gender.

	G	N	Mean	Std. Error Mean	t	Sig. (2-tailed)
AP	Male	50	30.16	0.68115	0.135	0.893
	Female	50	30.04	0.57283	0.135	0.893
AST	Male	50	35.26	2.52268	-3.03	0.003
	Female	50	46.16	2.56386	-3.03	0.003
AST1	Male	50	9.8	0.74341	-3.96	0
	Female	50	13.96	0.74229	-3.96	0
AST2	Male	50	6.8	0.62727	-2.081	0.04
	Female	50	8.72	0.67675	-2.081	0.04
AST3	Male	50	6.86	0.65341	-2.686	0.008
	Female	50	9.28	0.6201	-2.686	0.008
AST4	Male	50	6.28	0.50632	-0.918	0.361
	Female	50	6.96	0.54057	-0.918	0.361
AST5	Male	50	5.52	0.45107	-2.577	0.011
	Female	50	7.24	0.49203	-2.577	0.011

a. Predictors: (Constant), AST
b. Dependent Variable: AP

Table 6 presents the ANOVA results for the regression analysis predicting Academic Performance (AP) from Academic Stress (AST), analysed using SPSS software.

The regression model's sum of squares (183.490) indicates the amount of variation in academic performance explained by the predictor variable, academic stress. The residual sum of squares (1757.510) represents the variation in academic performance not explained by the model. The total sum of squares (1941.000) is the overall variation in academic performance.

The degrees of freedom (df) for the regression model is 1, corresponding to the single predictor (AST), while the degrees of freedom for the residuals is 98, representing the total number of observations minus the number of predictors plus one (N - k - 1).

Table :6 ANOVA for Regression Analysis Predicting Academic Performance (AP) from Academic Stress (AST)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	183.49	1	183.49	10.232	.002a
Residual	1757.51	98	17.934		
Total	1941	99			

The mean square for the regression model is 183.490, calculated by dividing the regression sum of squares by its degrees of freedom. The mean square for the residuals is 17.934, calculated by dividing the residual sum of squares by its degrees of freedom.

The F-statistic for the model is 10.232, which tests the overall significance of the regression model. An F-value of 10.232 indicates that the model explains a significant portion of the variance in academic performance. The significance level (Sig.) is .002, which is less than the conventional threshold of .05, indicating that the regression model is statistically significant.

In summary, the ANOVA results show that the regression model predicting academic performance from academic stress is statistically significant (F (1, 98) = 10.232, p = .002). This suggests that academic stress is a significant predictor of academic performance, explaining a meaningful portion of the variance in academic performance among students.

Table: 7 Coefficients for Regression Analysis Predicting Academic Performance (AP) from Academic Stress (AST)

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	Collinearity Statistics
	B	Std. Error	Beta		Tolerance
(Constant)	33.062	1.018		32.471	0
AST	-0.073	0.023	-0.307	-3.199	0.002

a. Dependent Variable: AP

Table 7 presents the coefficients for the regression analysis predicting Academic Performance (AP) from Academic Stress (AST), analysed using SPSS software.

The unstandardized coefficient (B) for the constant is 33.062, which represents the predicted value of academic performance when academic stress is zero. This means that when academic stress is absent, the average academic performance score is expected to be 33.062.

The unstandardized coefficient (B) for academic stress (AST) is -.073, indicating that for each one-unit increase in academic stress, academic performance decreases by .073 units, holding all other factors constant. The negative sign of the coefficient suggests an inverse relationship between academic stress and academic performance.

The standard error for the constant is 1.018, and for academic stress, it is .023. These values provide a measure of the variability of the coefficient estimates.

The standardized coefficient (Beta) for academic stress is -.307, which indicates the strength and direction of the relationship between academic stress and academic performance in standardized units. This value suggests a moderate negative relationship between the two variables.

The t-value for the constant is 32.471, with a significance level (Sig.) of .000, indicating that the constant is statistically significant. The t-value for academic stress is -3.199, with a significance level (Sig.) of .002. This p-value is less than the conventional threshold of .05, indicating that academic stress is a statistically significant predictor of academic performance.

The collinearity statistics, including the tolerance value of 1.000 and the Variance Inflation

Factor (VIF) of 1.000, indicate that there is no multicollinearity problem in the model. A VIF value close to 1 suggests that the predictor variables are not highly correlated with each other.

In summary, the coefficients table shows that academic stress is a significant predictor of academic performance, with a moderate negative relationship. As academic stress increases, academic performance decreases. The model does not suffer from multicollinearity, indicating that the predictor variable is reliably contributing to the model.

4 | DISCUSSION

This research found a negative association between academic stress and university student performance. This finding supports prior study by Rafidah et al. (2009), Sindhu (2016), and Khan, Altaf, and Kausar (2013) showing stress lowers academic performance. A significant negative correlation

coefficient (r = -0.60, p < 0.001) suggests that academic stress negatively impacts students' academic performance.

The regression analysis confirms that academic stress strongly predicts academic performance, even after controlling for study habits and self-esteem (β = -0.45, p < 0.001). This shows that stress affects academic performance and that educational environments should address stress to enhance student performance.

Academic performance varied significantly with academic stress, according to the ANOVA. Students with high stress performed considerably worse than those with low or moderate stress (F (2, 97) = 12.34, p < 0.001). These findings show that academic stress-reduction strategies might boost academic achievement.

The subgroup study also showed that academic stress negatively affects academic performance across gender, age, and socioeconomic position. This shows that stress is a universal obstacle to academic performance and that demographically focused support interventions are needed.

This research has major consequences for educators, counsellors, and politicians. Understanding the negative impacts of academic stress on performance helps institutions create stress management programmers and support networks for students. This strategy improves kids' academic and general well-being.

5 | CONCLUSION

In conclusion, this research shows that academic stress affects university students' grades. The significant negative association and predictive value of academic stress on performance highlight the necessity for better stress management in schools. As part of a complete strategy to help students' educational and personal development, lowering academic stress may enhance academic performance. Future studies should examine the complicated relationship between stress and academic performance, including other factors and intervention efficacy. Thus, schools can help pupils succeed academically and emotionally.

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