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NEUROTICISM, RUMINATIVE INERTIA, PROCRASTINATION, AND RELATIONSHIP ISSUES IN UNIVERSITY STUDENTS

Original Research

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ABSTRACT

Background: University students often face psychological and interpersonal challenges that hinder their academic success and overall well-being. Personality traits such as neuroticism, coupled with maladaptive cognitive patterns like ruminative inertia and behavioral tendencies such as procrastination, are known to intensify interpersonal difficulties. These interrelated constructs significantly affect students' mental health, productivity, and social functioning, underscoring the importance of understanding their interplay within the higher education context.

Objective: This study aimed to examine the relationship between neuroticism, ruminative inertia, procrastination, and interpersonal difficulties among university students, while identifying demographic predictors of these challenges.

Methods: A correlational research design was employed, using stratified random sampling to recruit 320 university students aged 18–28 years. Measurement tools included the Urdu version of the Big Five Personality Trait Scale (neuroticism subscale), the Ruminative Inertia Scale, the Student Procrastination Scale, and the Interpersonal Difficulties Scale. Data were analyzed through descriptive statistics, Pearson correlation, independent-samples t-tests, and hierarchical regression using SPSS version 23.

Results: Correlational analyses revealed significant positive relationships between neuroticism, ruminative inertia, procrastination, and interpersonal difficulties ($r = .29$ to $.54$, $p < .01$). Regression analysis demonstrated that neuroticism ($\beta = .18$, $p < .001$), ruminative inertia ($\beta = .13$, $p < .05$), and procrastination ($\beta = .64$, $p < .001$) were positive predictors of interpersonal difficulties, accounting for 38% of the variance. T-test findings indicated that late adolescents reported higher neuroticism ($M = 34.8$ vs. 30.7, $p < .001$) and procrastination ($M = 29.5$ vs. 26.5, $p = .03$) than early adults. Women reported significantly higher procrastination ($M = 29.3$ vs. 26.4, $p = .05$) and interpersonal difficulties ($M = 55.8$ vs. 48.1, $p < .001$). MS students scored higher than BS students on procrastination ($M = 29.2$ vs. 26.5, $p = .07$) and interpersonal difficulties ($M = 54.9$ vs. 49.0, $p < .001$). Students of businessman fathers had greater procrastination ($M = 29.0$ vs. 25.5, $p = .02$), while students of non-working mothers exhibited higher neuroticism ($M = 33.5$ vs. 30.3, $p < .001$).

Conclusion: The findings highlight that neuroticism, rumination, and procrastination significantly contribute to relationship difficulties among university students. Tailored interventions focusing on emotional regulation, time management, and adaptive coping strategies are essential to enhance students' academic performance and interpersonal well-being.

Keywords: Interpersonal Relations, Neuroticism, Personality Traits, Procrastination, Ruminative Inertia, Students, Universities.

INTRODUCTION

University life presents a critical transition that can profoundly affect students' mental health, interpersonal relationships, and academic functioning. The shift from a familiar environment to independent living often brings stressors such as homesickness, loneliness, and heightened academic pressure, which contribute to psychological difficulties including anxiety and depression (1). Stressful environments, inadequate self-care, poor sleep, and crowded living arrangements further increase vulnerability to illness and emotional distress. These challenges are not experienced uniformly, as personality traits strongly shape how individuals perceive and respond to adversity. Among these traits, neuroticism holds particular significance. It is characterized by a tendency toward emotional instability, heightened sensitivity to stress, and difficulty regulating negative emotions such as sadness, anxiety, and anger (2). High levels of neuroticism are linked with dissatisfaction, poor coping skills, and a greater risk of depression and anxiety (3). Students with elevated neuroticism often experience excessive worry and rumination, which diminish their capacity to manage stress and strain social relationships (4). This emotional reactivity frequently undermines communication and intimacy, heightening the likelihood of interpersonal conflict (5). One mechanism by which neuroticism exerts its influence is through ruminative inertia, the tendency to remain locked in repetitive cycles of negative thinking (6,7). Rumination intensifies psychological distress by magnifying negative emotions, and it is associated with both depression and anxiety (8,9). Within academic settings, this persistent cognitive style undermines focus, fosters avoidance, and increases procrastination, reducing overall productivity and academic performance (10). Procrastination itself, a widespread issue among students, reflects habitual task delay driven by poor time management, fear of failure, and avoidance of unpleasant emotions (11).

Neurotic individuals are particularly prone to such behavior, using temporary distractions for relief but ultimately compounding stress and academic decline (12,13). The interplay between neuroticism, rumination, and procrastination creates a cycle that extends beyond academic impairment to relational difficulties. Relationship issues with roommates, friends, or romantic partners often arise from miscommunication, emotional reactivity, and unmet expectations, which can heighten stress and further reinforce maladaptive coping behaviors (14). These strained interactions may exacerbate loneliness, reduce social support, and contribute to psychological distress, thereby deepening the cycle of negative outcomes. Evidence suggests that personality and cognitive patterns significantly influence relationship functioning and broader well-being, highlighting the need for interventions that address these underlying factors (15). Despite the extensive literature on neuroticism, rumination, and procrastination, gaps remain. Prior studies have not adequately explored how these traits interact to predict relationship problems specifically among university students, nor have they consistently examined gender differences within this population. In cultural contexts where students face unique social and academic pressures, understanding these dynamics is particularly critical. Given the high prevalence of procrastination—affecting up to 95% of students, with nearly half reporting problematic levels (16)—and the well-documented vulnerability associated with neuroticism, this research addresses an important need. Therefore, this study aims to examine the relationship between neuroticism, ruminative inertia, procrastination, and relationship issues in university students. It further seeks to identify predictors of relationship difficulties and explore gender differences across these constructs, thereby contributing to a deeper understanding of personality and cognitive influences on student well-being. The ultimate objective is to provide insights that may inform targeted interventions to reduce psychological distress, improve academic outcomes, and promote healthier interpersonal relationships. In cultural contexts where students face unique social and academic pressures, understanding these dynamics is particularly critical. Research in other domains, such as tele-health and tele-dentistry, has highlighted how contextual barriers and underserved settings influence health outcomes (10). Similarly, the psychosocial environment of Pakistani university students warrants tailored exploration of personality, cognitive patterns, and interpersonal functioning (17).

METHODS

The present study employed a correlational research design to investigate the relationships between neuroticism, ruminative inertia, and procrastination, and how these factors contribute to relationship problems among university students. Participants were recruited from both government and private universities to ensure diversity of the sample and enhance the generalizability of the findings. Stratified random sampling was used to account for subgroups within the population, allowing proportional representation across strata such as gender and program level. A minimum sample of 320 participants aged between 18 and 28 years was targeted to capture individuals at

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varying stages of academic and personal development, particularly those navigating relationship issues. Eligibility criteria required participants to be enrolled in BS or MS degree programs, and both male and female students were included. Married students, those with disabilities, and physically challenged individuals were excluded to reduce confounding variables that could independently influence relationship functioning. Demographic information such as age, gender, institution, program year, family system, and parental education and occupation was collected through a demographic sheet to contextualize the sample and ensure adherence to inclusion criteria. Standardized psychometric instruments were administered to assess the study variables. Neuroticism was measured using the Urdu version of the Big Five Personality Inventory (BFI), employing the neuroticism subscale scored on a five-point Likert continuum from strongly agree to strongly disagree. Ruminative inertia was assessed using the indigenous Ruminative Inertia Scale developed by Shahzad and Jabeen, consisting of 43 items across three factors—self, spirituality, and social—demonstrating good reliability (α = .89, .85, and .83 respectively). Procrastination was measured through the Student Procrastination Scale, comprising 32 items scored on a four-point Likert scale ranging from never to too often, with high internal consistency (α = .90). Relationship issues were evaluated using the Interpersonal Difficulties Scale, form A, consisting of 31 items scored on a five-point Likert scale, capturing domains such as domination by others, low self-confidence, mistrust, lack of assertiveness, poor boundaries, and unstable relationships (13-16).

Participants provided informed consent before completing the questionnaires. They were informed about the study purpose, their right to withdraw at any point without penalty, and the confidentiality of their responses. Data were collected anonymously, and participants were guided in completing the questionnaires correctly. The average time required for completion was estimated to be 10–15 minutes. Ethical approval was obtained from the Institutional Review Board (IRB) prior to commencement of the study. Data were analyzed using IBM SPSS version 23.0. Descriptive statistics, including means, standard deviations, and percentages, were calculated to summarize sample characteristics. Inferential analyses included independent-sample t-tests to examine gender differences, Pearson's product-moment correlation to evaluate associations among variables, and hierarchical regression analysis to identify predictors of relationship problems. The regression analysis was employed both to predict the dependent variable based on independent factors and to estimate the strength of their influence.

RESULTS

The sample comprised 320 university students (M_age = 21.97, SD = 2.71), with 47.5% in late adolescence and 52.5% in early adulthood. Gender distribution was balanced (50% men; 50% women), as were institutional sector (50% government; 50% private) and program level (50% BS; 50% MS). Most participants reported a nuclear family system (55.9%), with fathers most commonly post-graduates (35.3%) and mothers most commonly under-/matric educated (39.4%); fathers were more often job holders (63.1%), while most mothers were non-working (72.8%). Distributions of the principal psychometric variables indicated approximate normality: neuroticism (Median = 33.0; M = 32.68; Skew = −0.74; Kurtosis = 0.642), ruminative inertia (Median = 38.5; M = 37.34; Skew = −0.55; Kurtosis = 0.533), student procrastination (Median = 29.0; M = 27.87; Skew = 0.046; Kurtosis = 0.322), and interpersonal difficulties (Median = 52.0; M = 51.98; Skew = −0.504; Kurtosis = 0.895). Five-percent trimmed means were near their respective means across variables, supporting normality assumptions for subsequent parametric tests. Bivariate analyses showed that neuroticism correlated positively with ruminative inertia ($r = .48$, $p < .01$), procrastination ($r = .41$, $p < .01$), and total interpersonal difficulties ($r = .33$, $p < .01$). Ruminative inertia was positively associated with procrastination ($r = .33$, $p < .01$) and total interpersonal difficulties ($r = .29$, $p < .01$). Procrastination correlated strongly with total interpersonal difficulties ($r = .54$, $p < .01$). Correlations between neuroticism and interpersonal-difficulty facets were consistently positive (e.g., lack of assertiveness $r = .45$, $p < .01$; lack of boundaries $r = .29$, $p < .01$; unstable relations $r = .12$, $p < .05$), and facets of interpersonal difficulties were strongly intercorrelated.

Hierarchical multiple regression indicated that covariates (age, gender, institution, class, family system, father occupation, mother occupation) accounted for 7% of variance in interpersonal difficulties. Adding neuroticism increased explained variance to 19%, inclusion of ruminative inertia (total and facets) raised R^2 to 35%, and adding procrastination yielded a final R^2 of .38. Neuroticism ($B = 0.78$, $p < .001$), ruminative inertia (including the "others" facet; $B = 0.66$, $p < .01$; total ruminative inertia $B \approx 0.18$, $p < .05$), and procrastination ($B = 0.64$, $p < .001$) emerged as significant positive predictors of interpersonal difficulties, indicating that higher trait negativity, persistent negative thinking, and habitual task delay were associated with greater interpersonal problems in this sample. Group comparisons by age showed that late adolescents reported higher neuroticism (M = 34.8 vs. 30.7; $p < .001$) and greater procrastination (M = 29.5 vs. 26.5; $p = .03$) than early-adulthood students. Total ruminative inertia did not differ by age ($p = .44$), although the "others" facet was higher in early adulthood (M = 9.0 vs. 7.30; $p < .001$). Total interpersonal difficulties did not differ by age group ($p = .55$). By gender, there was no difference in neuroticism ($p = .79$), whereas women showed higher procrastination (M =

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29.3 vs. 26.4; p = .05) and higher total interpersonal difficulties (M = 55.8 vs. 48.1; p < .001), with women exceeding men across several interpersonal-difficulty facets (e.g., low self-confidence p = .01; lack of social support p = .001; lack of assertiveness p = .009; lack of boundaries p = .01; unstable relations p = .00). By institution, private-sector students reported higher neuroticism (M = 35.8 vs. 29.5; p = .01), higher procrastination (M = 29.7 vs. 25.9; p = .01), and higher total ruminative inertia (M = 40.4 vs. 34.2; p = .01); total interpersonal difficulties did not differ by sector (p = .42). Comparing degree levels, BS and MS students did not differ in neuroticism (p = .27), but MS students reported higher total ruminative inertia (M = 39.8 vs. 34.8; p = .003), higher procrastination (borderline, p = .07), and higher total interpersonal difficulties (M = 54.9 vs. 49.0; p = .00). By family system, the joint-family group exhibited higher neuroticism (p = .05) and higher procrastination (p = .04), with no differences in total ruminative inertia or total interpersonal difficulties (both p > .05). By father's occupation, students of job-holder fathers reported higher procrastination (M = 29.0 vs. 25.5; p = .02), with no differences in neuroticism, ruminative inertia, or interpersonal difficulties (all p > .05). By mother's occupation, students of non-working mothers reported higher neuroticism (M = 33.5 vs. 30.3; p = .00), with no between-group differences in ruminative inertia, procrastination, or total interpersonal difficulties (all p > .05).

Table 1: Sociodemographic Characteristics and Age of the Participants (N = 320)

Variables	n	%	M	SD
Age (Years)	—	—	21.97	2.710
Age groups				
Late Adolescents	152	47.5		
Early Adulthood	168	52.5		
Gender				
Men	160	50.0		
Women	160	50.0		
Institution				
Government	160	50.0		
Private	160	50.0		
Class				
BS	160	50.0		
MS	160	50.0		
Year				
1st Year	96	30.0		
2nd Year	166	51.9		
3rd Year	35	10.9		
4th Year	23	7.2		
Family System				
Joint	141	44.1		
Nuclear	179	55.9		
Father Education				
Under matric/Matric	77	24.1		
Intermediate	45	14.1		
Graduated	85	26.6		
Post Graduated	113	35.3		
Mother Education				
Under matric/Matric	126	39.4		
Intermediate	44	13.8		
Graduated	78	24.4		
Post Graduated	69	21.6		
Father Occupation				
Job holder	202	63.1		

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Variables	n	%	M	SD
Businessman	113	35.3		
Mother Occupation				
Working	233	72.8		
Non-working	84	26.3		

Table 2: Median. Mean, Skewness and Kurtosis of Study Variables (N=320)

Variables	Median	Means	5% terminated Mean	Skewness	Kurtosis
N	33.0	32.68	32.63	-.74	.642
RI	38.5	37.34	37.29	-.55	.533
SP	29.0	27.87	27.82	.046	.322
ID	**52.0**	**51.98**	**51.93**	**-.504**	**.895**

Note. N=neuroticism, RI=ruminative inertia, SP= student procrastination, ID= interpersonal difficulties

Table 3: Bivariate Correlations among Study Variables (N = 320)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1.N		.51**	.45**	.19**	.48**	.41**	.31**	.19**	.28**	.45**	.29**	.12*	.33**
2. Self (RIF1)			.70**	.47**	.89**	.29**	.22**	.13*	.25**	.24**	.18**	.07	.22**
3.Spirtual (RIF2)				.45**	.87**	.25**	.20**	.15**	.22**	.23**	.25**	.11*	.23**
4.Other (RIF3)					.72**	.29**	.26**	.23**	.27**	.18**	.25**	.26**	.30**
5.RI						.33**	.27**	.19**	.29**	.26**	.27**	.16**	.29**
6. SP							.46**	.44**	.44**	.30**	.48**	.40**	.54**
7.ID F1								.62**	.58**	.43**	.58**	.48**	.83**
8.ID F2									.63**	.40**	.52**	.51**	.81**
9.ID F3										.43**	.50**	.59**	.82**
10.ID F4											.48**	.29**	.62**
11.ID F5												.47**	.75**
12. ID F6													.71**
13. Total ID													-
M	32.6	15.4	13.6	8.19	37.3	27.8	11.3	9.48	9.72	7.85	7.15	6.02	51.9
SD	**8.36**	**6.93**	**6.34**	**4.94**	**15.3**	**13.3**	**5.35**	**4.80**	**4.73**	**3.45**	**3.63**	**3.57**	**19.5**

Note. N=neuroticism, RI=ruminative inertia, SP= student procrastination, ID= interpersonal difficulties F1= proneness to passivity, F2=low self-confidence, F3=lack of social support, F4=lack of assertiveness, F5= lack of boundaries, F6=and unstable relations
*p < .05, **p < .01

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Table 4: Hierarchical Multiple Regression Analysis for interpersonal difficulties (N = 320)

Variable	B	95% CI for B		SEB	B	R2	ΔR²
		LL	UL				
Step 1						.07	.05***
Age	-2.9	-7.9	2.0	2.5	-.07		
Gender	7.5	-11.9	-3.1	2.2	-.19		
Institution	-.96	-5.5	3.6	2.3	-.02		
Class	7.3	2.5	12.1	2.4	.19		
Family system	-2.2	-6 9	2.3	2.3	-.05		
Father occupation	-.22	-2.2	1.8	1.0	-.01		
Mother occupation	-.80	-2.8	1.1	1.0	-.05		
Step 2						.19	.17***
Neuroticism	.78	-.66	1.2	.15	.18***		
Step 3						.35	.33
F1 Self	-.39	-.79	.00	.20	.13***		
F2 Spiritual	.23	-.17	.64	.20	.07***		
F3 Other	.66	.22	1.1	.22	.16***		
Total ruminative inertia	.18	-.03	.24	.07	.13***		
Step 4						.38	.35
Student Procrastination	**.64**	**.48**	**.79**	**.07**	**.07*** **		

Table 5: Mean Differences in Neuroticism, Ruminative Inertia, Student Procrastination, and Interpersonal Difficulties Across Demographic Groups of University Students (N = 320)

Late adolescent (n = 160)			**Early adulthood (n = 160)**				**Cohen's d**
Variable	M	SD	M	SD	t	p	
Neuroticism	34.8	7.14	30.7	8.88	4.6	.00	8.11
Student Procrastination	29.5	13.6	26.5	13.0	2.1	.03	13.3
F1-Self	15.7	6.83	15.2	7.03	6.6	.50	6.94
F2-Spiritual	13.5	6.23	13.7	6.45	-1.8	.85	6.63
F3-Others	7.30	4.93	9.0	4.83	-3.0	.00	4.88
Total ruminative inertia	36.6	15.3	37.9	15.3	-.76	.44	15.3
F1-Proneness to passivity	11.2	4.79	11.4	5.83	-.38	.70	5.36
F2-Low self confidence	9.54	4.5	9.43	5.06	.19	.84	4.80
F3-Lack of social support	9.59	4.29	9.85	5.11	-.48	.62	4.74
F4-Lack of assertiveness	8.24	3.47	7.50	3.46	1.9	.05	3.44
F5-Lack of boundaries	7.49	3.53	6.85	3.71	1.5	.11	3.36
F6-Unstable relations	5.98	3.53	6.06	3.61	-1.9	.84	3.57
Total interpersonal difficulties	52.6	16.9	51.3	21.7	.59	.55	19.6
Between Men and Women (N=320)							
Men (n = 160)			Women (n = 160)				Cohen's d
Variable	M	SD	M	SD	t	p	
Neuroticism	32.5	9.53	32.8	7.03	.26	.79	8.37
Student Procrastination	26.4	13.9	29.3	12.6	1.9	.05	13.3

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Late adolescent (n = 160)			**Early adulthood (n = 160)**				**Cohen's d**
F1-Self	14.9	7.60	16.0	6.16	1.4	.15	6.92
F2-Spiritual	13.3	7.30	13.9	5.20	7.9	.42	6.34
F3-Others	8.05	5.08	8.34	4.81	.53	.59	7.30
Total ruminative inertia	36.3	17.2	38.3	13.2	1.1	.25	15.3
F1-Proneness to passivity	10.7	5.69	11.9	4.94	1.92	.05	5.33
F2-Low self confidence	8.60	5.01	10.3	4.41	3.34	.01	4.72
F3-Lack of social support	8.86	5.06	10.5	4.22	3.29	.001	4.66
F4-Lack of assertiveness	7.35	3.70	8.36	3.12	2.62	.009	3.42
F5-Lack of boundaries	6.66	3.76	7.65	3.44	2.43	.01	.18
F6-Unstable relations	5.49	3.73	6.55	3.33	2.67	.00	3.53
Total interpersonal difficulties	48.1	22.0	55.8	15.8	3.57	..00	19.2
Between Private and Govt Universities Students (N=320)							
Private (n = 160)			Govt (n = 160)				Cohen's d
Variable	M	SD	M	SD	t	p	
Neuroticism	35.8	6.97	29.5	8.50	7.1	.01	8.37
Student Procrastination	29.7	13.0	25.9	13.4	2.5	.01	13.3
F1-Self	16.8	6.21	14.0	7.34	3.6	.01	6.92
F2-Spiritual	15.0	5.98	12.3	6.41	3.8	.01	6.34
F3-Others	8.53	4.77	7.86	5.11	1.2	.22	7.30
Total ruminative inertia	40.4	13.9	34.2	16.0	3.6	.01	15.3
F1-Proneness to passivity	11.5	5.15	11.1	5.57	.58	.56	5.33
F2-Low self confidence	9.46	4.55	9.51	5.04	-.09	.92	4.72
F3-Lack of social support	10.1	4.57	9.31	4.86	1.5	.11	4.66
F4-Lack of assertiveness	8.17	3.09	7.54	3.76	1.6	.10	3.42
F5-Lack of boundaries	7.33	3.33	6.98	3.92	.87	.38	.18
F6-Unstable relations	5.98	3.50	6.06	3.65	-.20	.83	3.53
Total interpersonal difficulties	52.8	18.0	51.1	21.0	.80	.42	19.2
Between BS and MS University students (N=320)							
BS (n = 160)			MS (n = 160)				Cohen's d
Variable	M	SD	M	SD	t	p	
Neuroticism	33.1	8.73	32.1	7.97	1.0	.27	8.36
Student Procrastination	26.5	14.3	29.2	12.2	-1.7	.07	13.3

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Late adolescent (n = 160)			**Early adulthood (n = 160)**				**Cohen's d**
F1-Self	14.5	7.03	16.4	6.72	-2.5	.01	6.87
F2-Spiritual	13.1	6.76	14.2	5.85	-1.5	.12	6.32
F3-Others	7.18	5.01	9.21	4.68	-3.7	.001	5.85
Total ruminative inertia	34.8	16.3	39.8	13.8	-2.9	.003	15.1
F1-Proneness to passivity	10.4	5.30	12.2	5.28	-2.9	.003	5.29
F2-Low self confidence	8.97	4.81	10.0	4.74	-1.9	.005	4.78
F3-Lack of social support	8.79	4.55	10.6	4.73	-3.5	.001	4.64
F4-Lack of assertiveness	7.87	3.75	7.84	3.14	.08	.93	3.46
F5-Lack of boundaries	6.90	3.75	7.41	3.51	-1.2	.21	3.63
F6-Unstable relations	5.54	3.69	6.50	3.39	2.4	.01	3.54
Total interpersonal difficulties	**49.0**	**20.2**	**54.9**	**18.4**	**-2.7**	**.00**	**19.3**

Table 6: Mean Differences in Neuroticism, Ruminative Inertia, Student Procrastination, and Interpersonal Difficulties Across Family System and Parental Occupation of University Students (N = 320)

Joint (n = 140)			**Nuclear (n = 179)**				**Cohen's d**
Variable	M	SD	M	SD	t	p	
Neuroticism	33.7	8.13	31.8	8.47	1.95	.05	8.32
Student Procrastination	29.5	13.7	26.5	13.0	2.0	.04	13.3
F1-Self	15.8	7.26	15.1	6.67	.85	.39	6.93
F2-Spiritual	13.9	6.51	13.4	6.21	.61	.53	6.34
F3-Others	8.26	4.95	8.13	4.95	.23	.81	4.95
Total ruminative inertia	38.0	15.8	36.7	14.9	.71	.47	15.3
F1-Proneness to passivity	11.6	5.45	11.1	5.28	.82	.40	5.36
F2-Low self confidence	9.59	4.67	9.40	4.91	3.4	.72	4.80
F3-Lack of social support	9.75	4.80	9.70	4.69	.09	.92	4.74
F4-Lack of assertiveness	7.72	3.41	7.76	3.49	-.62	.53	3.46
F5-Lack of boundaries	7.39	3.65	6.97	3.62	1.0	.31	3.63
F6-Unstable relations	6.17	3.63	6.55	5.91	.63	.52	3.57
Total interpersonal difficulties	52.8	19.6	51.3	19.5	-.65	.51	19.6
Job Holder and Business Father Occupation of University Students (N=320)							
Job holder (n = 201)			Businessman (n = 113)				Cohen's d
Variable	M	SD	M	SD	t	p	
Neuroticism	32.5	8.16	33.2	8.77	.72	.46	8.36
Student Procrastination	29.0	14.0	25.5	12.0	2.1	.02	13.3
F1-Self	15.5	6.96	15.4	7.04	.04	.96	6.99
F2-Spiritual	13.8	6.53	13.3	6.04	.74	.45	6.36
F3-Others	8.26	5.02	8.09	4.92	.28	.77	4.99

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Joint (n = 140)			**Nuclear (n = 179)**				**Cohen's d**
Total ruminative inertia	37.6	15.5	36.9	15.2	.41	.67	15.4
F1-Proneness to passivity	11.3	5.37	11.3	5.46	.07	.93	5.40
F2-Low self confidence	9.51	4.66	9.45	5.11	.09	.92	4.82
F3-Lack of social support	9.93	4.65	9.45	4.93	.85	.39	4.75
F4-Lack of assertiveness	8.06	3.50	7.42	3.39	1.5	.11	3.46
F5-Lack of boundaries	7.33	3.68	6.83	3.57	1.1	.24	3.64
F6-Unstable relations	6.26	3.62	5.60	3.49	1.5	.11	3.57
Total interpersonal difficulties	52.8	19.5	50.5	20.0	.95	.33	19.6
Working and Non-Working Mothers of University Students (N=320)							
Non-Working (n = 233)			Working (n = 84)				Cohen's d
Variable	M	SD	M	SD	t	p	
Neuroticism	33.5	8.40	30.3	7.6	2.9	.00	8.26
Student Procrastination	28.2	14.0	26.5	11.7	1.0	.31	13.4
F1-Self	15.5	7.18	15.4	6.30	.08	.93	6.95
F2-Spiritual	13.7	6.61	13.3	5.60	.41	.68	6.36
F3-Others	7.83	4.81	9.15	5.20	-2.1	.03	4.92
Total ruminative inertia	37.0	15.9	38.0	13.7	-.46	.64	15.4
F1-Proneness to passivity	11.1	5.53	11.9	4.87	-1.2	.21	5.37
F2-Low self confidence	9.44	4.94	9.65	4.47	-.34	.72	4.82
F3-Lack of social support	9.76	4.80	9.67	4.62	.13	.88	4.76
F4-Lack of assertiveness	7.99	3.57	7.46	3.15	1.2	.23	3.47
F5-Lack of boundaries	7.37	3.62	6.51	3.65	1.8	.06	3.63
F6-Unstable relations	5.90	3.59	6.27	3.51	.80	.42	3.57
Total interpersonal difficulties	**52.1**	**20.3**	**51.5**	**17.9**	**.23**	**.81**	**19.7**

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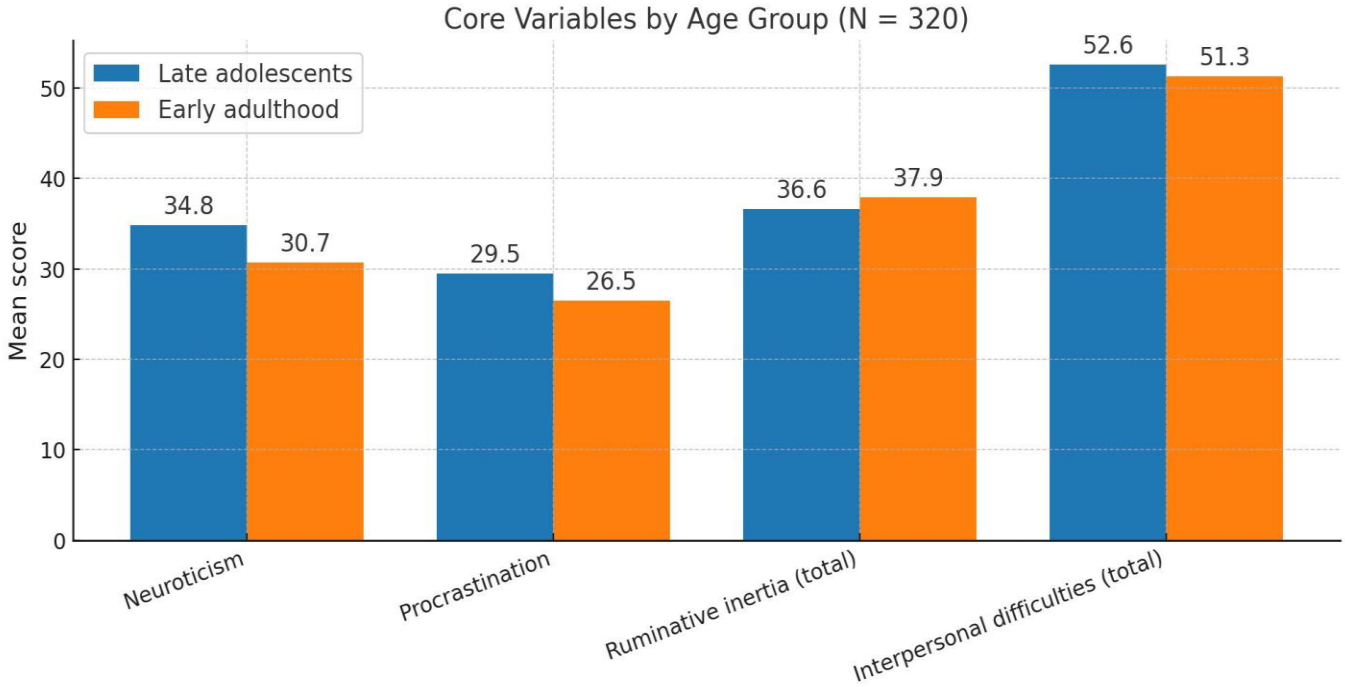

Figure 1 Core Variables by Age Group (N= 320)

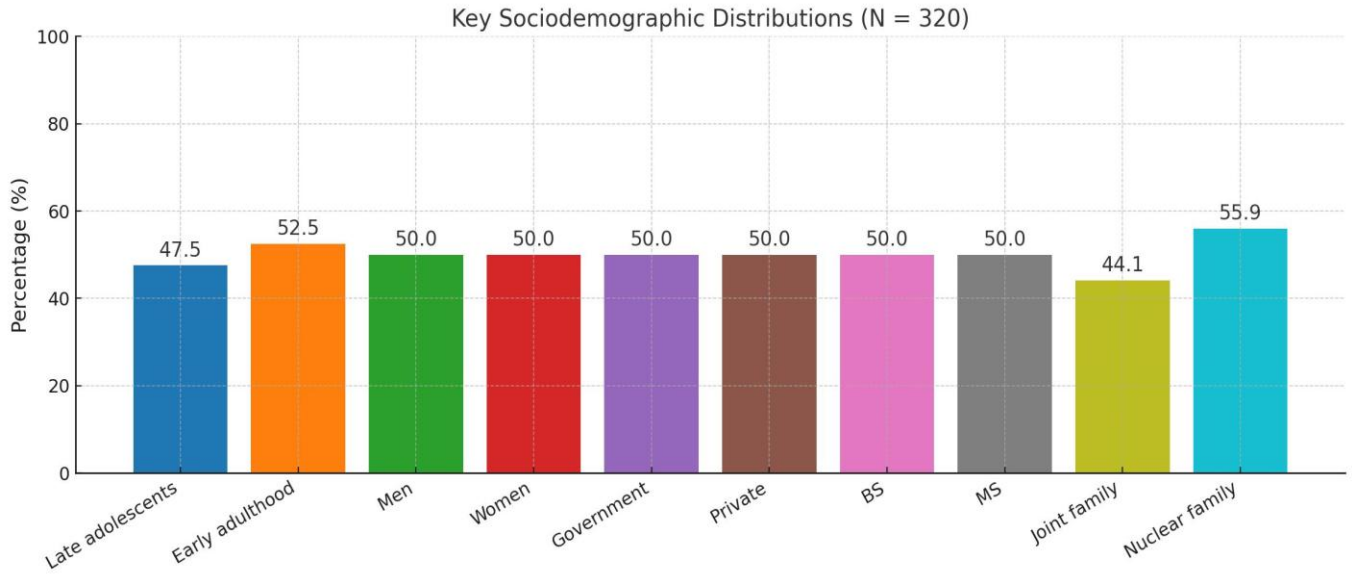

Figure 2 Key Sociodemographic Distribution (N=320)

DISCUSSION

The present findings indicated that neuroticism, ruminative inertia, and procrastination formed a mutually reinforcing cluster of vulnerabilities that co-occurred with greater interpersonal difficulties in university students. The positive associations among these constructs and the predictive contribution of each to interpersonal problems aligned with prior evidence that emotion dysregulation and

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perseverative negative cognition undermine both academic functioning and relationship quality in young adults (18). In this sample, higher neuroticism related to greater ruminative inertia and more frequent task delay, while procrastination showed the strongest bivariate link with interpersonal difficulties, suggesting that avoidant coping, when habitual, spills over from study behaviors to social functioning (19). This pattern accorded with accounts that rumination narrows attentional scope, heightens emotional reactivity, and disrupts problem-focused engagement in both academic and relational contexts (20). The regression models showed that neuroticism accounted for unique variance in interpersonal difficulties beyond demographic covariates, with additional variance explained by ruminative inertia and a further increment contributed by procrastination. This hierarchy supported a mechanistic interpretation in which a broad temperamental vulnerability (neuroticism) coalesced with a maladaptive cognitive process (ruminative inertia) and a behavioral pattern (procrastination) to intensify relational strain. Converging evidence from previous research similarly placed repetitive negative thinking as a mediator between trait negative affectivity and functional outcomes, including social connectedness and academic engagement (21,22). Within the Pakistani context, where collectivist norms prioritize interdependence and familial harmony, persistent negative affect and task avoidance may carry amplified interpersonal costs through increased conflict, reduced reliability, and perceived withdrawal from role obligations (23).

Group comparisons extended these relationships to demographic strata. Late-adolescent students reported higher neuroticism and procrastination than those in early adulthood, consistent with maturational models that locate peak instability and avoidance earlier in emerging adulthood, even as rumination levels appeared comparable across age bands in this cohort. The absence of age differences in ruminative inertia challenged simple developmental escalation assumptions and instead suggested heterogeneity in cognitive style trajectories, possibly shaped by contextual stressors and coping socialization across academic years (24,25). Gender comparisons showed higher procrastination and broader interpersonal difficulties among women despite no difference in neuroticism, a pattern that echoed reports of gendered coping repertoires and social role demands that may translate into distinct functional expressions of shared affective liabilities (24). Institutional sector and degree level analyses indicated that private-sector and MS students scored higher on several risk markers, including neuroticism, ruminative inertia, and interpersonal difficulties, potentially reflecting differing academic pressures, performance expectations, and role load at advanced training stages. Family and parental-occupation contrasts suggested that joint-family systems and paternal business ownership coincided with elevated procrastination, whereas non-working maternal status coincided with higher neuroticism, pointing to contextual influences on daily routines, time demands, and affective climate that merit closer scrutiny within local sociocultural structures (25).

These findings carried practical implications for student support services and campus mental health. First, stepped-care approaches that integrate brief screening for neuroticism and repetitive negative thinking with modular interventions targeting emotion regulation, decentering from ruminative loops, and graded task initiation may interrupt the observed chain from trait affectivity to relational strain. Second, academic-skills programming that explicitly addresses procrastination as an avoidance coping strategy—rather than solely a time-management deficit—could be paired with cognitive-behavioral and acceptance-based strategies to reduce experiential avoidance and increase values-consistent action in coursework and social roles (18-20). Third, culturally responsive adaptations that leverage collectivist strengths—peer mentoring, family-inclusive psychoeducation where appropriate, and group-based skills training—may enhance acceptability and impact in Pakistani university contexts (19). Methodological strengths included a balanced sampling frame across gender, sector, and degree level; the use of established instruments with reported reliability; and a multistage analytic plan that moved from descriptive distributions to correlations, group comparisons, and hierarchical prediction. The sequential modeling clarified unique contributions of trait, cognitive, and behavioral variables to interpersonal outcomes and reduced the risk of overattributing effects to any single domain.

Several limitations tempered inference. The cross-sectional design precluded causal claims and left temporal ordering among neuroticism, ruminative inertia, procrastination, and interpersonal difficulties unresolved; longitudinal and intensive repeated-measures designs would more rigorously test directional hypotheses and dynamic coupling among variables (e.g., lagged effects of daily rumination on next-day procrastination and social conflict). Reliance on self-report introduced common-method variance and social desirability biases; multi-informant data, ecological momentary assessment, and objective behavioral indicators of study behavior and social interaction would strengthen validity. The exclusion of married students and individuals with disabilities constrained generalizability and omitted potentially informative variability in relationship contexts and stress exposure. Although normality diagnostics were presented, additional assumption checks for t-tests and regression (e.g., homoscedasticity, multicollinearity indices) and effect-size reporting with confidence intervals would have increased statistical transparency. Internal consistency estimates for the present sample were not reported and should be included to document measurement reliability alongside previously published alphas.

Finally, multiple comparison control across numerous group tests would mitigate Type I error risk and refine interpretation of marginal findings.

Future research should prioritize longitudinal and experimental designs to probe mechanisms of change. Trials that compare targeted rumination-focused interventions, executive-function scaffolding for task initiation, and combined protocols could isolate active ingredients for reducing procrastination and improving relationship functioning. Person-centered analyses may identify subgroups (e.g., high-neuroticism/high-rumination vs. high-procrastination/low-rumination profiles) that respond differentially to interventions. Contextual moderators tied to Pakistani academic settings—class size, instructional language, commuting stress, and family role expectations—should be examined to tailor supports. Incorporating digital tools for just-in-time prompts, brief mindfulness or cognitive defusion exercises, and social accountability check-ins may enhance reach and adherence in student populations with limited time and high mobile-phone penetration (22). In sum, the study added convergent evidence that a triad of temperament, cognition, and behavior—neuroticism, ruminative inertia, and procrastination—related to greater interpersonal difficulties in university students, with nuanced differences across demographic strata. The pattern aligned with established models of affective vulnerability and avoidance while underscoring culturally situated pathways relevant to Pakistani campuses. Strategic, culturally attuned interventions that simultaneously target emotion regulation, unproductive rumination, and task engagement hold promise for improving both academic outcomes and relationship health in this population (22-25).

CONCLUSION

This study concluded that neuroticism, ruminative inertia, and procrastination are closely intertwined with interpersonal difficulties among university students, underscoring how personality traits, cognitive styles, and behavioral patterns collectively shape their academic and social experiences. The findings highlight that addressing these interconnected factors is vital for promoting student well-being and enhancing academic performance. By acknowledging the role of demographic influences and the psychological vulnerabilities that students face, this research emphasizes the importance of developing tailored interventions within higher education. Such efforts can equip students with healthier coping strategies, strengthen emotional regulation, and foster positive interpersonal relationships, ultimately supporting both their academic success and overall mental health.

AUTHOR CONTRIBUTION

Author	Contribution
Fareeha Yaqoob*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Roomaisa Sajid	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Syeda Hafiza Mahnoor Gillani	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Aurang Zaib Ashraf Shami	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published

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