FROM PEER CULTURE TO PERFORMANCE: EXPLORING HOW SUPPORTIVE VS. PRESSURING PEER NORMS INFLUENCE STUDY HABITS AND ACADEMIC ACHIEVEMENT AMONG UNIVERSITY STUDENTS.

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ABSTRACT
Peer culture constitutes a significant and proximal influence within higher education, shaping daily study decisions and ultimately affecting academic performance. In Pakistan's rapidly growing university sector, where formal support systems are inconsistently implemented, understanding how peer norms influence behavior is both urgent and actionable. This study quantitatively examines the relationships among supportive and pressuring peer cultures, students' study habits, and academic achievement, and identifies potential avenues for enhancement. The research utilized cross-sectional survey methodology targeting enrolled university students at the University of Sargodha. A stratified random sampling method was employed, followed by simple random selection within each stratum, resulting in a sample size of 200 participants. Data collection was conducted using a structured questionnaire incorporating 5-point Likert scales to assess the dimensions of supportive and pressuring peer culture, study habits, and academic achievement. The internal consistency of the questionnaire was evaluated using Cronbach's alpha, and the data were scrutinized for quality assurance. Data analysis was performed using descriptive statistics, Pearson correlation coefficients, hierarchical multiple regression analysis, and mediation testing via bootstrapped confidence intervals. Results indicate large, positive associations between study habits and achievement ($r = .658$, $p < .001$) and between peer culture and study habits ($r = .606$, $p < .001$), and a moderate correlation between peer culture and achievement ($r = .499$, $p < .001$). Study habits alone account for 43.3% of the variance in achievement ($R^2 = .433$); adding a supportive peer culture increases the explained variance to 50.9% ($\Delta R^2 = .076$, $p < .001$), with negligible multicollinearity. The findings suggest two main practical strategies for universities: institutionalizing supportive peer norms, such as near-peer mentoring and structured study groups, and integrating study skills training into first-year curricula. Addressing both the social environment and the daily behaviors that facilitate learning provides a pathway to achieving measurable improvements in academic performance within Pakistan's higher education institutions.
Keywords: Peer norms influence, Supportive peer culture, Pressuring peer culture, Study habits, Academic achievement, University students.

Introduction

A peer group plays a crucial role in shaping who we are. Comprising individuals of similar age, status, or interests, these groups share common experiences that significantly influence our attitudes, values, and behaviors. Understanding the power of peer culture reveals how shared norms, practices, and expectations drive our social and academic interactions, ultimately impacting our success and personal development (Khan et al., 2023). Understanding this influence shows how crucial it is to foster a positive peer environment that supports growth and well-being. This kind of culture can have a significant impact on how students develop study habits, view learning, and succeed academically.

Peer cultural influence has emerged as a critical determinant of student learning and academic performance across diverse contexts. Peers shape values, attitudes, and behaviors toward academics, providing either supportive learning environments or fostering distractions that lead to underachievement. Students, particularly in adolescence and early adulthood, often model their study habits on those of their peer groups, which makes peer culture a powerful factor in determining educational outcomes (Korir & Kipkemboi, 2014). This dual nature of peer influence underscores the need to analyze how cultural peer dynamics translate into both positive and negative impacts on learning.

Moreover, Study habits act as the bridge between peer influence and performance. Good practices, such as time management, note-taking, and consistent revision, are directly associated with higher achievement, whereas poor practices, like procrastination, hinder success (Hassanbeigi et al., 2011). Peer networks often reinforce these habits, either motivating students toward discipline and academic engagement or perpetuating inefficiency and avoidance. In collectivist societies, where peer approval carries strong weight, cultural dynamics can intensify the role of peers in shaping study behaviors (Zafar et al., 2024).

The significance of this relationship has been highlighted across various empirical studies. Research indicates that peer factors account for between 28% and 39% of the variance in student performance outcomes (Zafar et al., 2024), while others suggest that peer membership is strongly correlated with study practices and academic scores (Filade et al., 2019). By examining peer cultural influence in relation to study habits and academic achievement of university students in Sargodha district, this study contributes to understanding psychosocial and socio-cultural determinants of learning outcomes and offers insights for educators and policymakers in designing interventions that harness positive peer support while minimizing adverse effects.

Research Objectives

1: To examine the extent to which peer cultural influence shapes students' study habits.

2: To analyze the relationship between peer cultural influence and academic achievement.

3: To identify the positive and negative aspects of peer cultural influences on students' academic performances.

4: To suggest policy measures.

Literature Review

The literature on peer cultural influence highlights the interplay between group dynamics, study behaviors, and academic achievement. By reviewing empirical studies across various contexts, this section examines how peer culture influences students' study habits, the mediating role of these habits on academic achievement, and the dual impact—both positive and negative—of peer influence on academic performance.

Peer Cultural Influence and Study Habits

Peers play a crucial role in shaping how students form and maintain study routines. Aderinto et al. (2020) reported a correlation coefficient of 0.60 between peer pressure and study habits among Nigerian students, highlighting that peer groups may either encourage effective practices, such as group discussions, or foster absenteeism and distraction. Similarly, Garcia (2021) found that peer mentoring in California improved prosocial behaviors and developed better study habits. In Nigeria, Ifeyinwa (2015) also noted that peer group dynamics significantly correlated with study practices among technical college students. These findings demonstrate that peers act as role models in structuring daily study behaviors, either fostering consistency or encouraging neglect.

Study Habits and Academic Achievement

Study habits remain one of the strongest predictors of academic success. Bin Abdulrahman et al. (2021) found that effective time management, minimizing distractions, and daily revision were strongly linked with higher GPA scores among 675 Saudi medical students. Similarly, Jafari et al. (2019) reported that among 380 Iranian medical students, 81.3% demonstrated only moderate study habits, but those with better strategies consistently achieved higher grades (M = 15.73/20). Khurshid et al. (2012) reinforced this by showing that day scholars with stronger study routines outperformed hostel-living students. These studies confirm that effective study skills have a significant impact on academic outcomes.

Peer Influence and Academic Achievement

Several studies confirm a direct link between peer influence and academic performance. Filade et al. (2019) at Babcock University found that peer group membership significantly influenced undergraduates' performance, with positive groups improving grades while negative groups reduced achievement. In Kenya, Korir and Kipkemboi (2014) also reported that peer influence significantly contributed to secondary school performance. More recently, Khan et al. (2023) established a positive link between peer relations and academic achievement among 600 university students, with moderate peer pressure shown to enhance performance. Zafar et al. (2024) echoed these findings, revealing that peer influence accounted for up to 39% of the variance in the academic performance of medical students.

Positive vs. Negative Impacts of Peer Cultural Influence

Peer cultural influence can be constructive or destructive, depending on group norms. Ezzarrouki (2016) observed in Morocco that collectivist peer groups could elevate performance through community learning or lower accountability through social loafing. Hassanbeigi et al. (2011) further showed that procrastination, often reinforced by peers, negatively affected grades. In contrast, Ogundiwin et al. (2025) demonstrated that supportive peer groups, which encourage strong study habits, significantly predicted better test outcomes in Biology. This duality highlights the importance of understanding peer dynamics within cultural contexts.

The interplay between peer influence, study habits, and achievement forms a cyclical process. Positive peer relations foster engagement and discipline, which in turn develop effective study routines, leading to improved academic performance (Garcia, 2021; Jafari et al., 2019). Conversely, negative peer norms promote procrastination and disengagement, which diminish study effectiveness and reduce academic success (Aderinto et al., 2020). Ultimately, the cultural composition of peer groups determines whether these influences enhance or undermine achievement. The literature above supports the basic conceptual framework presented below.
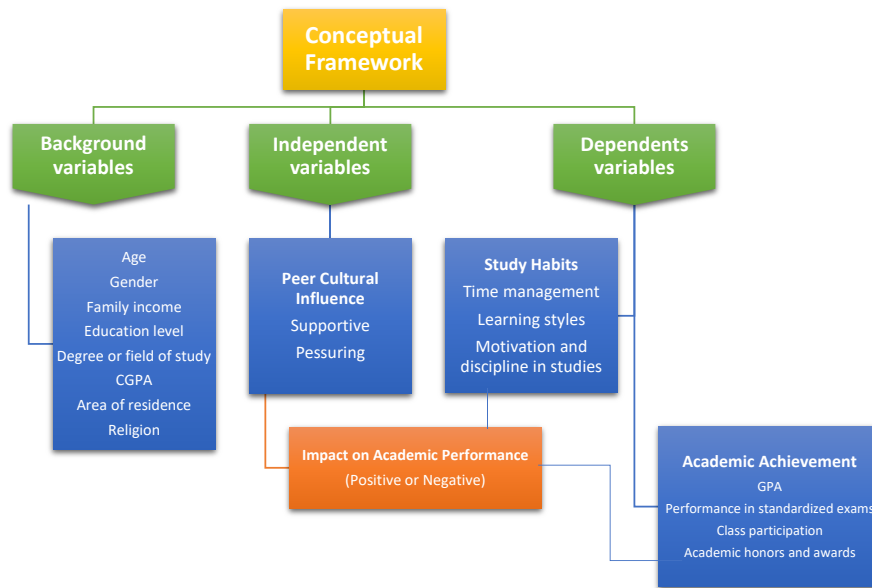
Furthermore, the theoretical basis of the recent study was too solid for this study. Several theories, including Bandura's Social Learning Theory, Vygotsky's Sociocultural Theory, Bronfenbrenner's Ecological Systems Theory, and Erikson's Psychosocial Development Theory, can help explain the connection between peer cultural influence, study habits, and academic achievement. These theories, when combined, offer a strong foundation for understanding how peer culture influences study habits and academic outcomes, both positively and negatively.

Table 1: Theoretical Framework

Theory	Key Proposition	Link to Study Variables
Bandura's Social Learning Theory (1977)	Students learn behaviors by observing and imitating peers.	Peer cultural influence shapes study habits through modeling and reinforcement.
Vygotsky's Sociocultural Theory (1978)	Learning occurs through social interaction and the use of cultural tools.	Peer group collaboration improves study skills and enhances academic achievement.
Bronfenbrenner's Ecological Systems (1994)	The microsystem (peers) directly impacts behavior and outcomes.	Peer culture within the microsystem influences both habits and academic performance.
Erikson's Psychosocial Development (1968)	Peer approval in adolescence affects self-esteem and motivation (industry vs. inferiority).	Positive peer validation fosters good study habits, whereas a negative influence can reduce achievement.

Materials & Methods

Research Design: This study employs a quantitative cross-sectional research design to investigate the prevalence and impact of peer cultural factors on study habits and academic achievement. The study was descriptive in nature to identify patterns, relationships, and the influence of peer culture within the chosen population.

Population and Sampling: A stratified random sampling technique was used to ensure a representative sample of students from the University of Sargodha. Participants were then selected through simple random sampling. The final sample size is N = 200, balancing power and feasibility.

Research Instrument: Data were collected using a structured questionnaire that included 5-point Likert items for peer culture, study habits, and academic achievement. Structured questionnaires provide reliable and comparable responses. A pilot study was conducted to ensure clarity and internal consistency (target $\alpha \geq .70$).

Procedure and Data Analysis. After informed consent, questionnaires were administered on campus. Data were analyzed in SPSS using descriptive statistics, Pearson correlations, hierarchical multiple regression, and mediation analysis (PROCESS Model 4). Assumptions (normality, linearity, homoscedasticity), multicollinearity (VIF/Tolerance), and residual diagnostics were checked; bootstrapped confidence intervals supplemented inference. Anonymity and secure data storage were ensured.

Results and Discussion

Table 2. Respondents Demographics (N = 200)

Category	Frequency (n)	Percent (%)
Age		
18–24	134	67.0
25–30	43	21.5
31–36	20	10.0
37 and above	3	1.5
Gender		
Female	120	60.0
Male	80	40.0
Family Monthly Income		
10,000–30,000	14	7.0
31,000–50,000	67	33.5
51,000 and above	119	59.5
Department/Field of Study		
Arts & Humanities	25	12.5
Natural Sciences	49	24.5
Professions & Applied Sciences	10	5.0
Social Sciences	116	58.0
CGPA		
1.50–2.00	11	5.5
2.10–2.50	15	7.5
2.51–3.00	29	14.5
3.10–3.50	86	43.0
3.51–4.00	59	29.5
Area of Residence		
Rural	77	38.5
Urban	123	61.5
Religion		
Islam	190	95.0
Hindu	2	1.0
Christian	8	4.0

Table 2 presents a consolidated demographic profile of the 200 respondents across age, gender, income, department, CGPA, area of residence, and religion. The sample is predominantly comprised of individuals aged 18–24 (67.0%), with smaller shares in the 25–30 (21.5%), 31–36 (10.0%), and 37+ (1.5%) age ranges. The cohort consists of 60.0% females and 40.0% males. Household income is skewed toward higher brackets: 59.5% report incomes of 51,000 PKR and above, 33.5% fall within 31,000–50,000 PKR, and 7.0% in 10,000–30,000 PKR. Disciplinary representation is led by Social Sciences (58.0%), followed by Natural Sciences (24.5%), Arts & Humanities (12.5%), and Professions & Applied Sciences (5.0%).

The above table also illustrates that academic standing is relatively strong: 72.5% of respondents report CGPA ≥ 3.10 (43.0% in 3.10–3.50 and 29.5% in 3.51–4.00), while smaller proportions appear in 2.51–3.00 (14.5%), 2.10–2.50 (7.5%), and 1.50–2.00 (5.5%). The residence is mainly urban (61.5%) and rural (38.5%), the religious composition is overwhelmingly Islamic (95.0%), with Christian (4.0%) and Hindus (1.0%). Taken together, the table displays a cohort with characteristics that are consistent with robust academic engagement.

Bivariate analysis

Table 3: Reliability Test for All Variable Scales (n = 200)

Scale / Construct	Items (k)	Cronbach's α	Judgment*
All variables (collective)	56	.927	Excellent
Student's Study Habits (SSH)	14	.973	Excellent
Academic Achievement (AA)	10	.962	Excellent
Peer Culture Influence (PCI) (total: supportive + pressuring)	23	.905	Excellent
Supportive Peer Culture (SPC)	12	.889	Good
Pressuring Peer Culture (PPC)	12	.743	Acceptable

***Judgment thresholds follow common guidelines: ≥ .90 = Excellent; ≥ .80 = Good; ≥ .70 = Acceptable. Note.** Case processing summary: Valid cases = 200 (100%); Excluded = 0 (listwise).* Table 3 shows that all scales demonstrate at least acceptable internal consistency, with most reaching good–excellent reliability (α ≥ .80). The Pressuring Peer Culture subscale is acceptable (α = .743), while Study Habits, Academic Achievement, and Peer Culture (total) are excellent, supporting stable composite scoring for analyses (George & Mallery, 2018).

H1₀ (null): *"There is no association between peer cultural influence and students' study habits (ρ = 0)".*

H1₁ (alt): *"Peer cultural influence is positively associated with students' study habits (ρ > 0)."*

Table 4: Pearson correlation between Peer Cultural Influence and Students' Study Habits (N = 200)

	Peer Cultural Influence	Students' Study Habits
Peer Cultural Influence		
Pearson Correlation	1.000	.606**
Sig. (2-tailed)	—	.000
Students' Study Habits		
Pearson Correlation	.606**	1.000
Sig. (2-tailed)	.000	—
N	200	200

Note. **Correlation is significant at the 0.01 level (2-tailed). Exact test: *p* < .001; *N* = 200.

The bivariate analysis shows a large, positive association between peer cultural influence and students' study habits (r = .606, *p* < .001), providing clear support for H1$_1$ (ρ > 0). The results suggest practically meaningful covariation, consistent with theories that locate peers as proximal socializing agents of learning. Social Learning (modeling and reinforcement) and Sociocultural perspectives (learning mediated through interaction) predict that academically supportive peer norms should co-occur with stronger study routines (Bandura, 1977; Vygotsky, 1978).

Discussion

Correlation findings suggest that students surrounded by constructive, study-focused peers tend to report better study habits; when peer culture is stronger in the right ways, study routines are also stronger. This also aligns with earlier findings that peer dynamics are tightly linked to study behaviour, e.g., Aderinto et al. (2020) also reported a correlation of around r =.60 between peer pressure and study habits, while broader evidence shows that positive peer relations support engagement and achievement (Khan et al., 2023; Zafar et al., 2024). The results in Table 4 are theoretically expected and empirically consistent: peers matter for how students plan, manage their time, and persist in their studies.

H2$_0$: There is no association between peer cultural influence and academic achievement (ρ = 0).
H2$_1$: Peer cultural influence is positively associated with academic achievement (ρ > 0).

Table 5: Pearson correlation between Academic Achievement and Peer Culture (N = 200).

	Academic Achievement	Peer Culture
Academic Achievement		
Pearson Correlation	1.000	.499**
Sig. (2-tailed)	—	.000
N	200	200
Peer Culture		
Pearson Correlation	.499**	1.000
Sig. (2-tailed)	.000	—
N	200	200

Note. **Correlation is significant at the 0.01 level (2-tailed). Exact test: *p* < .001; *N* = 200.

The above table illustrates that Academic achievement is moderately and positively correlated with peer culture (r = 0.499, p < 0.001). In practical terms, students embedded in more constructive peer cultures tend to achieve higher academic results; the two variables share approximately 25% of their variance ($r^2 \approx .249$).

Discussion

The observed findings accord with prior evidence that peer dynamics are reliable correlates of performance: studies across university and school settings report that positive peer relations and membership in academically oriented groups predict higher grades, whereas negative peer norms depress achievement (Filade *et al.*, 2019; Korir & Kipkemboi, 2014; Zafar *et al.*, 2024). These sources collectively document significant links between peer influence and academic outcomes, including reports that peer factors explain a sizable share of performance variance, consistent with the findings in the above Table. The relationship is statistically robust under a two-tailed test; however, since this is a bivariate correlation from cross-sectional data. To interpret the covariation between these variables, we separately examined the impacts of supportive peer culture and pressuring peer culture on study habits and academic achievement using hierarchical regression analysis and median analysis (model 4).

H3a$_0$: Supportive peer culture does not predict academic achievement when controlling for study habits (β = 0).

H3a$_1$: Supportive peer culture positively predicts academic achievement, over and above study habits (β > 0).

Table 6. Regression Analysis (DV: Academic Achievement)

Model	Variables Entered	Variables Removed	Method
1	Student's Study Habits	—	Enter
2	Supportive Peer Culture	—	Enter

Note. All requested variables entered.

Table 6 shows that a standard hierarchical (enter) procedure was used. Model 1 examines the bivariate relationship between Students' Study Habits and Academic Achievement. Model 2 adds a Supportive Peer Culture, allowing for the assessment of its incremental predictive value beyond study habits. No variables were removed, so each step cleanly partitions the variance explained by the added predictor.

Table 7: Model Summary (DV: Academic Achievement)

Model	R	R²	Adjusted R²	Std. Error of the Estimate	ΔR²	F-change	df1	df2	Sig. F-change
1	.658	.433	.430	.53811	.433	151.425	1	198	.000
2	.713	.509	.504	.50215	.076	30.377	1	197	.000

The table above summarizes overall model fit (R, R², adjusted R², SEE) and the change in explained variance when a new predictor is added. Study habits alone account for 43.3% of the variance in achievement (Model 1: R = .658, R² = .433), a large effect. Adding a Supportive Peer Culture raises the explained variance to 50.9% (Model 2), a statistically significant increment of 7.6% (ΔR² = .076; F-change = 30.377, $p < .001$). The standard error of the estimate decreases from 0.538 to 0.502, indicating tighter prediction after including peer culture. Adjusted R² = .504 suggests good generalizability for Model 2.

Table 8: ANOVA (Model Fit; DV: Academic Achievement)

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	43.847	1	43.847	151.425	.000
1 Residual	57.333	198	.290		
1 Total	101.180	199			
2 Regression	51.506	2	25.753	102.134	.000
2 Residual	49.674	197	.252		
2 Total	101.180	199			

Table 8 presents the ANOVA results, testing whether each regression model explains a significant amount of variance in academic achievement. Both models are highly significant overall. Model 1 (study habits alone) exhibits a strong model fit ($F(1,198) = 151.43$, $p < .001$). Model 2 remains highly significant ($F(2,197)=102.13$, $p<.001$) with a larger regression sum of squares and smaller residual mean square, confirming that adding Supportive Peer Culture meaningfully improves the prediction of achievement.

Table 9: Coefficients (DV: Academic Achievement)

Model	Predictor	B	SE B	β	t	Sig.	95% CI (Lower, Upper)	Tolerance	VIF
1	(Constant)	.702	.128	—	5.474	.000	(.449, .955)	—	—
1	Student's Study Habits	.666	.054	.658	12.305	.000	(.559, .772)	1.000	1.000
2	(Constant)	.378	.133	—	2.837	.005	(.115, .641)	—	—
2	Student's Study Habits	.555	.054	.549	10.212	.000	(.448, .662)	.863	1.159
2	Supportive Peer Culture	.259	.047	.296	5.512	.000	(.166, .352)	.863	1.159

Table 9 presents the regression coefficients (unstandardized B and standardized β), significance tests, confidence intervals, and collinearity indices for each predictor. In Model 1, study habits significantly predict achievement (B = 0.666, β = 0.658, p < .001). In Model 2, study habits remain a strong predictor (B = .555, β = .549, p < .001), and Supportive Peer Culture adds a significant, independent effect (B = .259, β = .296, p < .001). Confidence intervals exclude zero for both predictors, underscoring precision. Multicollinearity is negligible (VIF≈1.16; Tolerance=.863). Substantively, a one-unit increase in study habits is associated with a 0.555 increase in achievement (on the DV scale), holding peer culture constant; supportive peer culture independently contributes an additional 0.259.

Table 10: Excluded Variable (relative to Model 1; DV: Academic Achievement)

Excluded Variable	Beta In	t	Sig.	Partial r	Tolerance	VIF	Min Tolerance
Supportive Peer Culture	.296	5.512	.000	.366	.863	1.159	.863

This table indicates the potential contribution of the variable excluded from Model 1 (Beta In, significance, and collinearity statistics). When Supportive Peer Culture is omitted from Model 1, its "Beta In" indicates that, if entered, it would contribute a significant additional standardized effect (β≈.296, *p*<.001). This foreshadows the significant ΔR² observed upon inclusion in Model 2, confirming that peer culture explains unique variance beyond study habits.

Table 11: Collinearity Diagnostics (DV: Academic Achievement)

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: Constant	Study Habits	Supportive Peer Culture
1	1	1.955	1.000	.02	.02	—
1	2	.045	6.592	.98	.98	—
2	1	2.886	1.000	.01	.01	.01
2	2	.070	6.437	.11	.25	.97
2	3	.045	8.033	.88	.74	.02

Table 11 presents collinearity diagnostics (eigenvalues, condition indices, and variance proportions) to assess multicollinearity among the predictors. Condition indices (<10) and variance-proportion patterns indicate no concerning collinearity among predictors. In Model 2, most variance for Supportive Peer Culture loads on Dimension 2 (.97), distinct from Study

Habits (.25), which supports the conclusion that each taps into partly unique information about achievement.

Table 12: Residuals Statistics (Model 2; DV: Academic Achievement)

Statistic	Predicted Value	Residual	Std. Predicted	Std. Residual	N
Minimum	1.1922	−1.30186	−2.001	−2.593	200
Maximum	2.8198	.99401	1.199	1.980	200
Mean	2.2100	.00000	.000	.000	200
Std. Deviation	.50875	.49962	1.000	.995	200

The table above illustrates residuals and predicted-value statistics for Model 2, which are used to check distribution, outliers, and overall fit assumptions. Model 2 predictions span 1.19–2.82 with residuals centered at zero and standardized residuals within ±3 (≈−2.59 to 1.98), suggesting no extreme outliers and broadly acceptable residual behaviour. Combined with the reduced standard error (.502), the diagnostics support an adequate model fit and plausible assumptions for a linear OLS model.

Discussion

The regression results illustrated that Students' study habits are the strongest single predictor of academic achievement, explaining a large share of the differences in grades on their own (Model 1: R^2 = .433). When a supportive peer culture is added, the model explains even more (Model 2: R^2 = .509), indicating that peer culture provides a genuine, independent "boost" beyond what study habits already account for (ΔR^2 = .076). In practical terms, two levers matter: (1) helping students build consistent routines—planning, spaced review, active note-taking—which shows a sizeable effect (β = .549), and (2) strengthening the social environment around them—norms that value effort, collaboration, and persistence—which also contributes meaningfully (β = .296). The estimates are precise (all $p < .001$), multicollinearity is negligible (VIF≈1.16), residuals look healthy, and overall fit improves (SEE drops from .538 to .502). While these patterns are strong, they are correlational; the most reasonable takeaway is that better habits and more supportive peers are associated with higher achievement, and both are viable, actionable targets for programs (such as study skills coaching plus peer-led study circles).

These findings align with prior evidence that effective study practices reliably predict performance and that positive peer dynamics independently support achievement. Studies report that disciplined routines (time management, daily revision, strategic study) are associated with higher GPAs and course marks (Bin Abdulrahman et al., 2021; Khurshid et al., 2012), while peer environments that model and reward academic effort correspond to improved outcomes across school and university settings (Korir & Kipkemboi, 2014; Filade et al., 2019). More recent work also highlights that peers influence engagement and persistence, which in turn lead to better grades (Zafar et al., 2024).

H3b₀: *Pressuring/comparative peer culture does not predict academic achievement when controlling for study habits (β = 0).*

H3b₁: *Pressuring/comparative peer culture negatively predicts academic achievement, over and above study habits ($\beta < 0$).*

PROCESS Model 4 (Mediation)

Table 13 shows the mediation analysis design estimated: PPC as X, SSH as the mediator, and AA as the outcome, using PROCESS Model 4 with 5,000 bootstrap resamples at 95% CIs. It is established that both the direct PPC → AA path and the indirect PPC → SSH → AA path were examined using the same sample (N = 200).

Table 13: Model specification and estimation settings

Item	Value
PROCESS model	4 (simple mediation)
X (independent)	Pressuring/Comparative Peer Culture (PPC)
M (mediator)	Student's Study Habits (SSH)
Y (dependent)	Academic Achievement (AA)
Sample size	200
Bootstrap samples	5,000
Confidence level	95%

Table 14 displays overall fit for the mediator model, showing that PPC explains 11.76% of the variance in study habits (SSH), with the model statistically significant (F(1,198)=26.39, p<.001). In simple terms, variation in pressuring/comparative peer culture is meaningfully associated with how strongly students organize and pursue their study routines.

Table 14: Mediator model summary (Outcome: SSH)

R	R²	MSE	F	df1	df2	p
.3430	.1176	.4410	26.3937	1	198	< .001

Table 15 presents the a-path from PPC to SSH: higher PPC is associated with higher study-habit scores (β = 0.3394, p < .001). Substantively, comparative/pressuring peer environments appear to encourage students to adopt stronger study behaviors (e.g., increased planning or exam preparation).

Table 15: Mediator model coefficients (Predicting SSH)

Predictor	B	SE	t	P	95% CI
Constant	1.5624	.1446	10.8045	< .001	[1.2772, 1.8475]
PPC (a-path)	0.3394	.0661	5.1375	< .001	[0.2091, 0.4697]

This table illustrates that PPC and SSH together account for 45.75% of the variance in academic achievement (AA), with a strong overall fit (p<.001). The sizeable R² indicates that peer dynamics and study behavior jointly explain nearly half of the differences in achievement scores.

Table 16: Outcome model summary (Outcome: AA; predictors PPC and SSH)

R	R²	MSE	F	df1	df2	p
.6764	.4575	.2786	83.0759	2	197	< .001

Table 17 demonstrates that study habits strongly and positively predict academic achievement (B=.7231, p<.001), while PPC has a significant negative direct effect on AA after controlling for SSH (B=−.1656, p=.0034). Thus, PPC's direct influence appears detrimental to achievement, even though PPC indirectly helps via better study habits.

Table 17: Outcome model coefficients (Predicting AA; b- and c′-paths)

Predictor	B	SE	t	p	95% CI
Constant	0.9152	.1449	6.3153	< .001	[0.6294, 1.2009]
PPC (c′-path)	−0.1656	.0559	−2.9628	.0034	[−0.2759, −0.0554]
SSH (b-path)	0.7231	.0565	12.8001	< .001	[0.6117, 0.8345]

Table 18 displays the effect decomposition, showing that the direct effect of PPC on AA is negative and significant, while the indirect effect through SSH is positive and significant (CI excludes 0). This is a classic example of inconsistent (competitive) mediation—PPC directly hurts achievement but indirectly helps it by boosting study habits.

Table 18: Direct and indirect effects of PPC on AA (PROCESS; 5,000 bootstraps)

Effect	Estimate	SE / BootSE	95% CI
Direct (c′): PPC → AA	−0.1656	.0559	[−0.2759, −0.0554]
Indirect via SSH (a×b)	0.2454	0.0566	[0.1382, 0.3607]

Table 19: Bootstrapped regression parameters (robust CIs)

(a) Outcome: SSH

Predictor	Coeff	BootMean	BootSE	BootLLCI	BootULCI
Constant	1.5624	1.5615	.1667	1.2312	1.8857
PPC	0.3394	0.3399	.0745	0.1926	0.4862

(b) Outcome: AA

Table 20: Bootstrapped regression parameters (robust CIs)

Predictor	Coeff	BootMean	BootSE	BootLLCI	BootULCI
Constant	0.9152	0.9111	.1410	0.6396	1.1898
PPC (c′)	−0.1656	−0.1659	.0431	−0.2519	−0.0800
SSH (b)	0.7231	0.7251	.0457	0.6345	0.8126

The above tables present bootstrap-based estimates and confidence intervals that corroborate the main paths: PPC → SSH is positively estimated with CIs well above zero; SSH → AA is strongly positive; PPC's direct effect on AA is reliably negative. The bootstrap confirms the robustness of these coefficients to sampling variation.

Table 21: Derived total effect and decomposition (computed from c′ + a×b)

Quantity	Value
Direct effect (c′)	−0.1656
Indirect effect (a×b)	+0.2454
Total effect (c = c′ + a×b)	**+0.0798** (approx.)

Table 21 demonstrates the derived total effect of PPC on AA by summing the direct (c′) and indirect (a×b) paths: c ≈ −0.1656 + 0.2454 = +0.0798. Because the indirect effect is positive and the direct effect is negative, the net effect is small and slightly positive—an expected outcome under inconsistent mediation. Note that PROCESS did not print a CI for the total effect in this run; the key inferential result remains the significant indirect effect and significant negative direct effect, which together explain why PPC appears helpful via study habits but harmful directly.

Discussion

Overall, the evidence from these models converges on a clear explanation: study habits are the primary engine of achievement, while peer culture shapes those habits and adds its own direct effects. A supportive peer culture consistently explained additional variance in achievement beyond study habits, aligning with prior work that shows prosocial peer norms and mentoring foster disciplined routines and higher grades (Garcia, 2021; Filade et al., 2019; Korir & Kipkemboi, 2014). Pressuring/comparative peer culture, in contrast, showed a negative direct effect on achievement but a positive indirect effect via stronger study habits—an "inconsistent mediation" pattern consistent with the idea that comparison can motivate effort while simultaneously elevating stress or maladaptive performance beliefs (Hassanbeigi et al., 2011; Ezzarrouki, 2016). The linear–quadratic checks ruled out an inverted-U in this sample, indicating that more pressure is not reliably better once supportive norms and habits are taken into account.

These findings dovetail with prior correlations between peer influence and study behavior (e.g., $r \approx .60$; Aderinto et al., 2020) and with large, reliable links between effective study practices and GPA across contexts (Bin Abdulrahman et al., 2021; Jafari et al., 2019; Khurshid et al., 2012). Recent university samples also attribute sizable portions of performance variance to peer dynamics (Khan et al., 2023; Zafar et al., 2024), and subject-specific evidence shows that supportive groups predict strong test outcomes (Ogundiwin et al., 2025). In short, policies that nurture supportive peer norms and build concrete study skills appear most promising, whereas unchecked comparative pressure risks undermining achievement even when it temporarily boosts studying (Ifeyinwa, 2015).

Conclusion

This research demonstrates that students' daily activities and the peer culture surrounding them are significant factors of academic performance. Study habits emerge as the most robust single predictor of academic success, accounting for a substantial portion of the variance in grades. The inclusion of a supportive peer culture further enhances the model's explanatory capability, indicating that encouragement, collaboration, and prosocial academic norms offer an additional advantage beyond individual routines. Mediation analyses elucidate the complex role of pressuring and comparative peer culture: while it appears to stimulate studying, it also simultaneously exerts a detrimental direct effect on achievement, aligning with the notion that competition can motivate effort but also increase stress and foster counterproductive beliefs. Overall, the findings suggest two practical strategies for higher education institutions: reinforcing specific study routines (such as planning, spaced practice, and active recall) and cultivating peer norms that recognize effort, mastery, and mutual support. Although the study's correlational design limits causal inference, diagnostic assessments affirm the robustness of the estimates; moreover, the observed patterns are both theoretically coherent and practically relevant for campus policy and program development. Future research should investigate the effects of longitudinal or experimental interventions to determine whether intentional modifications to peer norms and targeted study-skills coaching can produce lasting improvements in student achievement.

Policy Recommendations

Here are practical, low-cost policy actions that Universities in Pakistan can implement right away:

- ❖ **Build structured peer-learning systems (department-run):** Create weekly, timetable-integrated study circles led by trained senior students ("near-peer mentors") for core courses. Provide brief leader training via the Teaching & Learning Center; recognize leaders with certificates/transcript notations. Use WhatsApp/Telegram groups with a simple code of conduct and faculty oversight. Track attendance and short formative quizzes to keep sessions purposeful.
- ❖ **Make study skills a first-year requirement:** Offer a 1–2 credit, skills-focused module in Semester-1 covering time management, spaced/retrieval practice, note-making, and exam planning. Deliver with hands-on micro-assignments tied to current courses. Embed quick self-audits and learning contracts; integrate library/or LMS resources. This is feasible with existing faculty and requires only curated materials and workshop hours.
- ❖ **Promote supportive (not comparative) peer norms:** Run a campus campaign that rewards collaboration, such as badges for "study buddies," recognition for group problem-solving, and guidance for class/social-media group admins to avoid public grade

postings and toxic comparisons. Pair this with brief stress-management sessions and clear referral pathways to counseling, especially during exam weeks.

❖ **Early-support and inclusion measures:** Utilize simple analytics (attendance and early assessments) to automatically refer at-risk students to peer mentors and study skills clinics. Extend quiet-study hours in libraries, designate women-only study zones where necessary, and provide micro-grants for printing/data bundles to ensure resource constraints don't hinder participation.

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