

The Effect of Self-Esteem on Academic Performance: Evidence from University Students in Khyber Pakhtunkhwa, Pakistan



Amber Rehman	PhD Scholar, Institute of Education and Research, Gomal University, Dera Ismail Khan, KP, Pakistan.
Professor Dr. Liaquat Hussain	Director, Institute of Education and Research, Gomal University, Dera Ismail Khan, KP, Pakistan.
Muhammad Ashraf (Corresponding Author)	PhD Scholar, Department of Business Administration Gomal University, D.I. Khan, Pakistan. muhammadashrafucc@gmail.com

Abstract: Self-esteem is considered one of the most important psychological resources that underlie students' approach to learning, their experience in learning-related failure, and their continued motivation to pursue a degree Programme (Baumeister et al., 2003; Orth & Robins, 2014). Despite years of focus and debate on the self-esteem–performance relationship from a Western psychological educational perspective, the empirical evidence available from South Asian higher education, and from Pakistan specifically, is still relatively sparse, and methodologically constrained by using small, non-probability samples. The purpose of present study is to focus on the impact of self-esteem on academic outcomes of the students appearing in semester final examinations in public universities of Khyber Pakhtunkhwa (KP) province of Pakistan and to see whether there is any difference between the effect of self-esteem in academic outcomes of male and female students and between the effect of self-esteem on academic outcomes of students of different years. A cross-sectional survey design was used to gather data from a stratified random sample of 343 undergraduate students from five public-sector universities. Rosenberg's (1965) ten-item Self-Esteem Scale was used to assess self-esteem, and academic performance was assessed by cumulative grade point average (CGPA) complemented by a multi-item self-reported academic performance scale. Data were analysed using the two-step assessment of the measurement and structural models recommended by Hair et al. (2019), and the partial least squares structural equation modelling (PLS-SEM) approach was used via the SmartPLS 4 software tool (Ringle et al., 2022). The measurement model had good reliability, convergent validity and discriminant validity. The positive and statistically significant relationship of self-esteem to academic performance ($\beta = 0.412$, $t = 7.85$, $p < .001$) accounts for 17.1% of the variance in academic performance. In addition, the multi-group and interaction-term analysis shows that the year of study significantly moderates this relationship but gender does not. The results suggest a possible expansion of the self-enhancement and self-determination theories to a South Asian higher education setting, and have practical implications for student-counselling, faculty advising, and policy development to support students' psychosocial bases for academic success. Restrictions and suggestions for further research are addressed.

Keywords: self-esteem, academic performance, university students, PLS-SEM, Pakistan, Higher Education, Rosenberg Self-Esteem Scale.

One of the most significant outcomes of the higher-education experience is academic performance, which affects the employment rates, self-concept and long-term socioeconomic mobility of graduates (Guay et al., 2003; Valentine et al., 2004). Although cognitive ability and study effort are known predictors of academic success, there is a growing body of research in the field of educational psychology indicating that non-cognitive, psychosocial resources, especially self-esteem, can be just as important in determining whether students approach, persist in, and flourish in challenging academic environments (Baumeister et al., 2003; Trautwein et al., 2006). Widely defined as an individual's overall appraisal of self-worth (Rosenberg, 1965), self-esteem has implications for how students process feedback, deal with failure, set goals, and monitor effort, which all have downstream effects on their academic success (Orth & Robins, 2014; Pullmann & Allik, 2008). The association between self-esteem and academic performance has been investigated in North American and European education and generally the relationship is positive, albeit weak and sometimes disputed (Baumeister et al., 2003; Marsh & O'Mara, 2008; Valentine et al., 2004). Others have warned that the causative pathway of this association is also not well established, and that academic achievement is as likely to be a more important determinant of self-esteem as it is

for self-esteem to affect academic achievement (Baumeister et al., 2003; Marsh, 1990). Others highlight that self-esteem works indirectly on performance via motivational and engagement mechanisms, such as academic self-concept, self-efficacy and coping strategies (Acosta-Gonzaga, 2023; Guay et al., 2003). Despite all this Western literature, the empirical evidence from the systems of higher education in South Asia, and in Pakistan in particular, is relatively limited, methodologically fragmented and limited to small convenience samples analysed using simple correlational techniques (Arshad et al., 2015; Mirzaei-Alavijeh et al., 2018). This relationship can be explored in the context of the higher-education sector in Pakistan. KP public-sector universities are known to have a wide variety of socio-economic, linguistic and family backgrounds with many students experiencing significant socio-economic, family and cultural stressors that can lead to a decrease in self-worth and consequently to a decrease in engagement with the curricula (Ashraf et al., 2023). Collectivist cultural norms, gendered expectations about educational achievement and hierarchical family structures can also shape the way self-esteem is expressed in academic behaviour, in ways that are different from individualist Western contexts (Kling et al., 1999). There is thus a theoretical and practical justification for a rigorous, adequately powered empirical

investigation of the self-esteem–academic performance relationship within this context. This study fills three particular gaps in the literature. In the first place, most of the available evidence from Pakistan has been based on small and limited number of respondents (fewer than 100) from a single institution and examined only through bivariate correlation or simple regression, and hence are not able to capture measurement error, or to test the robustness of the relationship being hypothesized (Arshad et al., 2015). Second, there has been little research studying boundary conditions (such as gender, year of study) that may increase or decrease the link between self-esteem and performance, although there are reasons to believe that these factors should matter (Gentile et al., 2009; Kling et al., 1999). Third, the methodological toolbox available for addressing this question in the regional literature is too limited to include variance-based structural equation modelling, which has a stronger ability to address issues of measurement error, formative indicators, and reflective indicators, and simultaneously estimate measurement and structural relationships (Hair et al., 2019). To fill these gaps, this study employs a stratified random sampling of 343 undergraduate students from five public-sector universities in KP and uses partial least squares structural equation modelling (PLS-SEM) to test (a) the direct influence of self-esteem on undergraduate

students' academic performance and (b) the moderating effect of gender and year of study. The study is anchored in the theories of self-enhancement theory (Baumeister et al., 2003), self-determination theory (Deci & Ryan, 1985, 2000), and social cognitive theory (Bandura, 1997) which afford one theoretical basis for how individuals with higher self-regard are more likely to set challenging goals, persist in the face of difficulty, and ultimately perform better academically. In doing so, this study joins the ongoing trend in higher-education studies in Pakistan to shift from descriptive, small sample studies of student psychology to the theory-driven, well-powered, and methodologically rigorous empirical studies that can guide institutional policy (Ashraf et al., 2023; Hair et al., 2019). It also addresses a larger call in the international self-esteem literature for increased diversity in populations sampled of cultures and contexts, as the vast majority of the evidence has come from North American and Western European samples (Orth & Robins, 2014). The remainder of this paper is organized as follows. The theoretical and empirical literature related to self-esteem and academic performance are reviewed in Section 2, and the study's hypotheses are developed. The conceptual framework is presented in Section 3. Section 4 presents the research design and sampling, instrumentation, and analytical procedure. The results of the measurement and

structural-models are reported in section 5. Sections 6-9 contain the findings, implication of theory and practice, limitations and concluding remarks respectively.

2. Literature Review and Hypothesis Development

2.1 Conceptualizing Self-Esteem

Self-esteem is the general overall attitude of a person towards the self, that is, the extent to which the person has a positive or negative attitude towards themselves (Rosenberg, 1965). Rosenberg theorized self-esteem as being a unidimensional, global entity, separate from more domain-specific self-evaluations like academic or physical self-concept, and this view is still prominent in current self-esteem research (Orth & Robins, 2014). A complementary formulation was proposed by Coopersmith (1967) who conceived of self-esteem as "a self-evaluation, and as an attitude of approval or disapproval, and a degree of belief in one's ability, significance, success and worthiness. Harter (1999) also distinguished between global self-estimate and domain specific self-evaluations as related, but empirically separable constructs, with global self-esteem being a more affective trait and domain self-concept being more cognitively specific self-evaluations. A more influential practitioner-based description of self-esteem was

provided by Branden (1994) who proposed that self-esteem consists of two components, self-efficacy (the belief in one's ability to think and cope) and self-respect (the feeling that one is deserving of happiness and success), that are both interrelated and have plausible links to sustained academic effort and achievement. More recent theorizing also makes the distinction between trait (stable, dispositional) self-esteem and state (fluctuating, situational) self-esteem (Kernis, 2003). As a relatively stable personality attribute that emerges during childhood and adolescence through social feedback, competence experiences and the nature of attachment relationships (Denissen et al., 2008; Gecas, 1982), trait self-esteem is most strongly related to longer term life outcomes such as educational outcomes (Orth & Robins, 2014; Twenge & Campbell, 2001). The global, trait-based conceptualisation of self-esteem adopted in the present study is consistent with its numerous applications in previous empirical studies in Pakistan and South Asian region (Arshad et al., 2015; Mirzaei-Alavijeh et al., 2018). As for methodology, self-esteem has been mostly measured using self-report Likert-type inventory – RSES (Rosenberg, 1965), a vast, psychometrically most widely validated and used self-esteem inventory in multi-cultural research (Heatherton and Wyland, 2003), and has sound psychometric grounds to be used with a Pakistani university sample. Further, the theoretical

model that self-esteem researchers subscribe to has direct implications for the design of school and university based interventions with self-esteem, which further underscores the importance of an empirical study being theoretically conceptualized in a clearly specified manner.

2.2 Academic Performance as a Construct

Academic performance is a multi-faceted measure that reflects whether a student is able to achieve short- and long-term academic objectives (DiPerna & Elliott, 1999). Although cumulative grade point average (CGPA) remains the most widely-used objective measure, researchers have come to supplement it with self-reported measures of perceived competence, task completion, and engagement because administrative grade records are subject to the influence of grading leniency, course difficulty variation, and missingness, while self-report scales reflect the student's own judgment about their functioning in the academic domain across a range of dimensions (Acosta-Gonzaga, 2023; Shavelson et al., 1976). In line with this trend, this study employs a multi-item validated self-report measure for academic performance that is cross validated with the latest CGPA.

2.3 Self-Esteem and Academic Performance: Empirical Evidence

There has been a significant amount of research that has investigated the link between self-esteem and academic achievement; the majority of the studies indicate that there is a moderate positive relationship. In a highly cited review, Baumeister et al. (2003) reported that there is a correlation between self-esteem and academic achievement, but warned that the causal relationship is uncertain, and that the practical significance of the relationship is often small when controlling for other factors. Valentine et al. (2004) also conducted a meta-analysis that determined that the relationship between self-beliefs such as self-esteem and subsequent academic achievement was small to moderate. Marsh and O'Mara (2008) found that self-concept, self-esteem and achievement were mutually related over seven years during the adolescent period, indicating that there are reciprocal effects among these factors. Pullman and Allik (2008) observed a positive correlation between general self-esteem and school achievement, as well as academic self-esteem and school achievement, indicating a stronger correlation between the latter two variables. Acosta-Gonzaga (2023) conducted a study involving 243 university students, and tested whether self-esteem to academic performance was an indirect relationship mediated by academic engagement. Arshad et al (2015) conducted a study on 80 students of a public university,

Faisalabad on the Rosenberg Self-Esteem Scale and the results showed that there was a strong positive correlation between self-esteem and academic performance of students, and female students had higher academic performance than males despite having self-esteem levels similar to males. Mirzaei-Alavieh et al. (2018) also reported a significant positive correlation between self-esteem and academic achievement of 300 medical-sciences students, but warned that the association was different among the sub-groups. Taken together, this literature suggests a generally positive relationship between self-esteem and academic outcomes, as well as that this relationship varies by context, sample and demographic sub-group, which forms the basis for the moderation hypotheses of this study. In addition to the direct bivariate relationship, a related strand of research has been on the role of self-esteem in larger models of academic self-concept and motivation. Guay et al., (2003) showed that the relationship between academic self-concept and academic achievement is reciprocal and not unidirectional across the school years, and this relationship was later extended by Marsh and O'Mara, (2008) to self-esteem specifically. Huang's (2011) meta-analysis of longitudinal studies also suggested that self-concept and achievement are mutually related over time, with the magnitude of the relationship depending on the type of self-concept measure used (which is a

methodological issue that led to the use of a domain specific, multi-item self-report measure of academic performance in this study). As a whole, the results from these studies indicate that self-esteem is unlikely to be the only or the most important factor influencing academic performance, but is a variable consistently identified as an important, theoretically based, and practically applied predictor that deserves further empirical research with under-researched populations.

H1: Self-esteem is positively and significantly related to the academic performance of university students.

2.4 Theoretical Framework

2.4.1 Self-Enhancement and Self-Broadening Perspective

Self-enhancement theory suggests that people are driven to maintain and build positive self-regard, and that high self-esteem is a psychological resource that helps buffer against anxiety, aids persistence, and encourages approach-oriented (as opposed to avoidance-oriented) behavior in achievement contexts (Baumeister et al., 2003; Crocker & Park, 2004). In this context it is expected that pupils with higher self-esteem would view academic challenges as something to overcome, should persevere longer after failures and become more proactive in learning tasks, which should result in better academic performance.

However, DuBois and Flay (2004) note that the striving for self-esteem is positive but only when it is based on real competence and mastery, but not when it is defensive or contingent – a point that highlights the need to measure stable, trait-based self-esteem, as this study does, rather than domain contingencies or transient self-evaluations. Swann et al. (2007) also suggest that what is important for outcomes like academic performance is if self views, including self-esteem, are chronically accessible and behaviorally consequential, as well as evaluative.

2.4.2 Self-Determination Theory

According to self-determination theory (Deci & Ryan 1985, 2000), satisfying the three basic needs of autonomy, competence and relatedness is essential for psychological well-being and effective functioning. Self-esteem is closely connected to the need for competence and students who feel competent and worthwhile are more likely to internalize academic goals, maintain intrinsic motivation and adopt self-regulated learning strategies which in turn, will improve their own performance (Deci & Ryan, 2000). This theoretical prism indicates that self-esteem functions partially on academic achievement, by satisfying the need for competence, which is the foundation of self-regulated academic motivation.

2.4.3 Social Cognitive Theory

According to Bandura's (1997) social cognitive theory, the relationship between personal factors (such as self-beliefs), behaviour and environment are all interrelated. While self-efficacy (beliefs about one's ability to perform a task) is the primary self-referent construct in social cognitive theory, self-esteem is a very closely related, more general self-evaluative belief that influences students' goals, the amount of effort applied, and perseverance in the face of challenges (Judge et al., 2002; Zimmerman, 2000). This study suggests that self-esteem is a basic psychosocial resource that is linked to approach motivation (self-enhancement), satisfaction of basic needs (social cognitive theory and social cognitive self-efficacy theory), and self-regulated academic actions (social cognitive theory), all of which have a positive effect on academic performance.

2.5 Self-Esteem and Higher Education in the Pakistani Socioeconomic Context

Self-esteem is not formed independently, but is a product of the family structure, socioeconomic conditions, and the cultural scripts that are used to measure success and self-esteem (Gecas, 1982; Twenge & Campbell, 2001). In Pakistan, and particularly Khyber Pakhtunkhwa, students at universities often face a combination of collectivist family expectations, gender-based restrictions on mobility, and, for many, a precarious economic situation that

can increased the psychological demands on students. Previous studies conducted in Pakistan with the Rosenberg Self-Esteem Scale have shown that there is significant variation in self-esteem by socio-economic status and origin (urban or rural), with students from lower income and rural origins having comparatively low self-esteem, which may be due to differential access to enrichment opportunities, social capital, and family educational support (Arshad et al., 2015). The self-esteem–academic performance relationship is a matter of practical importance and not just theoretical significance in the context of the Pakistani higher education sector due to the above mentioned contextual pressures. In contexts where student self-worth issues may be already compromised by external socioeconomic demands, information about the extent to which — and the way that — sense of self-worth is related to academic outcomes has direct implications for how universities in resource poor countries allocate limited budgets for supporting their students. This contextual reasoning further motivates the inclusion of family income as a demographic control variable in the present study, in addition to the main moderators (gender, year of study).

2.6 The Moderating Role of Gender

Gender has been a subject of much research as a boundary condition for the SE-Achievement link, with mixed results. Kling

et al.'s (1999) meta-analysis of 216 effect sizes revealed a small but consistent male advantage in global self-esteem; Gentile et al.'s (2009) domain-specific meta-analysis revealed no significant overall gender difference in academic self-esteem, though there were gender differences in self-esteem in the physical-appearance and athletic domains. In the context of higher education in Pakistan, Arshad et al (2015) reported no significant difference between males and females on self-esteem but a significant difference on academic performance favouring females, indicating that the relationship between self-esteem and academic achievement may be different for males and females due to the varying sociocultural expectations, parental monitoring, and gender role socialization of students. Given the plausible gender differences in the strength of the association between a psychological resource and behavioural outcome in gender differentiated socialization contexts, this study suggests:

H2: The effect of self-esteem on academic performance is moderated by gender.

2.7 The Moderating Role of Year of Study

Typically, academic self-schema, coping repertoires and institutional familiarity are shaped during the course of a degree programme (Trautwein et al., 2006). Compared to junior students, senior students have received more academic feedback, internalized more effective study strategies

and have stronger academic self-concept, which may impact the extent to which global self-esteem is translated into concrete academic behaviors and, ultimately, performance (Huang, 2011; Marsh, 1990). In line with these arguments, Diseth et al. (2014) discovered systematic variation in self-beliefs (self-esteem and self-efficacy) across grade levels among Norwegian students, and Hulleman et al. (2010) reported in their meta-analysis on the measurement of achievement-goals that there is not a single motivational structure underlying academic engagement but rather a structure that changes as students gain academic experiences. On the other hand, transitional adjustment factors might be stronger determinants of the academic outcomes of junior students than pre-existing self-esteem level. This argument leads to the following hypothesis: The self-esteem–performance relationship is not necessarily constant through a student's academic career. *H3: The effects of self-esteem on academic performance are moderated by the year of study.*

2.8 Conceptual Framework

The conceptual model tested in this study is based on the above-mentioned theoretical integration and in which self-esteem is the exogenous (independent) construct and academic performance is the endogenous (dependent) construct with gender and year of study as categorical

moderators of the direct path. As shown in narratively described Figure 1 (due to lack of space, the data tables presented in this manuscript replace the path diagram), the moderating paths are: gender $\times$ self-esteem on academic performance (H2) and year of study $\times$ self-esteem on academic performance (H3) and the direct path is: self-esteem on academic performance (H1). The choice of a parsimonious model was intentional: self-esteem was not chosen to be a part of a larger nomological network of mediators (in this case, academic self-efficacy, engagement), but rather was isolated for the purpose of providing an unambiguous, adequately powered test of the core relationship in a population that has not been extensively studied.

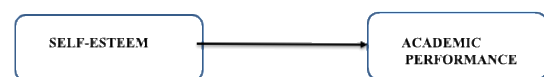


Figure 1: Conceptual Framework

3. Methodology

The study used a quantitative, cross-sectional survey design, suitable to examine the relationships between latent psychological and performance constructs at a specific time (Hair et al., 2019). The positivist research philosophy and deductive approach was used in line with the theory-testing aim of the study.

The population of study was undergraduate students of public University of Khyber Pakhtunkhwa, Pakistan. In order to ensure a

proportional representation across universities and disciplines, a stratified random sampling technique was applied whereby the strata were defined by university and faculty (natural sciences, social sciences and management sciences). The target sample size was set at 350, based on G*Power-based a priori sample-size estimation for PLS-SEM (the minimum sample size to detect a medium effect size at $f^2 = 0.15$, $\alpha = .05$ and power = .80 for the maximum number of predictors in any regression within the model). Incomplete responses and those identified during the data screening were removed leaving a total of 343 respondents (98.0% valid response rate) from five public-sector universities in KP.

The questionnaire had three sections, (a) demographic questions (gender, age, year of study, university, and family monthly income), (b) the ten item Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), with answers on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), and (c) the six item self-reported Academic Performance scale adapted from existing academic-competence scales (DiPerna & Elliott, 1999; Shavelson et al., 1976) with a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) and a 1 item requesting the most recent semester CGPA for convergent cross validation. The RSES is one of the most widely valid self-esteem

instruments worldwide and has been applied in numerous studies involving students in Pakistan's higher-education context (Arshad et al., 2015; Mirzaei-Alavijeh et al., 2018). Negatively worded items were reverse coded before analysis. Table 3.1 provides an overview of operational definitions, number of items and source of each construct included in the model.

Table 3.1 Operationalization of Study Constructs

Construct	Operational Definition	Items	Source
Self-Esteem	An individual's global, evaluative attitude toward the self, reflecting perceived self-worth	10	Rosenberg (1965)
Academic Performance	A student's self-perceived competence and success in meeting academic task demands	6	Adapted from DiPerna & Elliott (1999)
Gender	Categorical moderator: male / female	1	Demographic item
Year of Study	Categorical moderator: 1st–4th year, recoded junior (1st–2nd) vs. senior (3rd–4th)	1	Demographic item

The analysis method was partial least squares structural equation modelling (PLS-SEM) in SmartPLS v.4 (Ringle et al., 2022), an SEM method focused on variance, which is suitable for prediction-oriented research and models that combine reflective measurement and moderation analysis, given the sample size in this study (Hair et al., 2019; Sarstedt et al., 2021). In line with methodological recommendations regarding situations in which PLS path modelling is preferable to covariance-based SEM for applied social-science studies (Rigdon, 2016), PLS-SEM was chosen over covariance-based SEM for various methodological reasons: (1) prediction is a key objective in SEM; (2) PLS-SEM does not require normally distributed data; and

(3) PLS-SEM can be used to model a mix of reflective measurement items and categorical moderators. Following the two-step approach suggested in the PLS-SEM literature, the internal consistency reliability, convergent validity and the discriminant validity of the measurement model were evaluated, then the structural model was assessed using collinearity diagnostics, path coefficient significance (based on 5,000 subsample bootstrapping), coefficient of determination R^2 , effect size f^2 and predictive relevance Q^2 (Chin, 1998; Fornell & Larcker, 1981; Henseler et al., 2015). Moderation effects were analyzed with the two-stage approach in SmartPLS, while multi-group analysis (PLS-MGA) was used to explore the gender-based moderation. Before the PLS-SEM analysis, descriptive statistics, demographic profiling, and Harman's single-factor test for common method bias were calculated using IBM SPSS 27 (Podsakoff et al., 2003).

The raw dataset ($N = 350$) was examined for missing data, straight-lining responses, and multivariate outliers prior to substantive data analysis. Seven cases were dropped because they had over 15% missing data or because they had a pattern of inattentive responding (e.g., the same answer to all the items, despite the different wording of the items). Little's Missing Completely at Random (MCAR) test on the remaining data was not significant ($\chi^2 = 38.42$, $df = 34$, $p = .282$), indicating that the small amount of

missing data at the item level ($< 2\%$ of cells) could be replaced using mean substitution. Univariate normality was examined by reviewing the skewness and kurtosis values, which were all within the accepted range of ± 2 (Hair et al., 2019), while Mardia's multivariate skewness and kurtosis coefficients also showed that the data were not multivariate normal, which gives further support to the choice of the non-parametric, bootstrapping approach to PLS-SEM rather than covariance-based SEM, which assumes multivariate normality.

4. Results and Discussion

4.1 Demographic Profile of Respondents

The demographic characteristics of the 343 respondents are summarized in Table 4.1. The sample was fairly evenly spread in terms of gender, although there were slightly more male than female respondents and was evenly spread across the four years of undergraduate study, with the second- and third-year students making up the largest sub-groups. Proportional sampling was done on the five sampled public-sector universities.

Table 4.1 *Demographic Profile of Respondents ($N = 343$)*

Characteristic	Category	f	%
Gender	Male	189	55.1
	Female	154	44.9
Age	18–20 years	128	37.3
	21–23 years	161	46.9
	24 years and above	54	15.7
Year of Study	1st year	71	20.7
	2nd year	98	28.6
	3rd year	94	27.4
	4th year	80	23.3
Faculty	Natural Sciences	112	32.7
	Social Sciences	119	34.7
	Management Sciences	112	32.7
Family Monthly Income	Below PKR 50,000	147	42.9
	PKR 50,000–100,000	131	38.2
	Above PKR 100,000	65	19.0

Note. *f* = frequency; % = percentage of total valid sample (*N* = 343).

4.2 Descriptive Statistics for Study Variables

The descriptive statistics - in terms of mean, standard deviation, skewness, and kurtosis - of the composite self-esteem and academic performance scores and the self-reported CGPA by the respondents are presented in Table 4.2 prior to the construct-level PLS-SEM estimation. The mean scores of self-esteem (*M* = 3.71 on a 5-point scale) reflect a moderately high self-esteem score of the sample, which is largely similar to previous studies conducted in Pakistan with similar type of university student samples on RSES (Arshad et al., 2015). All variables had values of skewness and kurtosis that were within the range of ± 2 , which was considered acceptable for structural equation modelling (Hair et al., 2019).

Table 4.2 *Descriptive Statistics for Study Variables (N = 343)*

Variable	M	SD	Skewness	Kurtosis
Self-Esteem (composite)	3.71	0.58	-0.34	0.21
Academic Performance (composite)	3.64	0.61	-0.19	-0.12
Self-Reported CGPA	3.12	0.44	-0.27	0.09

Note. Self-Esteem and Academic Performance composites are measured on 5-point Likert metric and CGPA is measured on standard 4.00-point metric of Pakistan. The obtained *r* between composite Academic Performance scores and self-reported CGPA was .58 ($p < .001$), which validated the self-report scale with the objective scale.

4.3 Common Method Bias

Since all constructs were measured with self-report items drawn from one source at one point in time, prior to substantive analysis, Harman's single factor test was performed (Podsakoff et al., 2003). The first factor in an unrotated principal-components factor analysis of all measurement items explained 31.4% of the total variance, which is lower than the 50% threshold typically adopted as a benchmark to indicate that common method bias is a significant issue. The full collinearity variance inflation factors (VIFs) calculated at the construct level in SmartPLS also did not exceed the conservative limit of 3.3 (self-esteem VIF = 1.21; academic performance VIF = 1.21), which further confirmed that common method bias is not likely to substantially influence the study's findings.

4.4 Measurement Model Assessment

In line with the two-step PLS-SEM approach, the measurement (outer) model was evaluated for indicator reliability, internal consistency reliability and convergent and discriminant validity (Hair et al., 2019). Two items (RSES4 and RSES8) had outer loadings below the minimum threshold of 0.60 and were removed, leading to AVEs of all items being above 0.60 (Hair et al., 2019), with most items above 0.7. The final outer loadings and statistics of reliability and validity at the construct level are presented in Table 4.3.

Table 4.3 *Measurement Model: Outer Loadings, Reliability, and Convergent Validity*

Construct / Item	Loading	Cronbach's α	rho_A	CR	AVE
Self-Esteem (SE)		0.861	0.868	0.892	0.545
SE1	0.712				
SE2	0.734				
SE3	0.768				
SE5	0.701				
SE6	0.756				
SE7	0.789				
SE9	0.723				
SE10	0.745				
Academic Performance (AP)		0.847	0.851	0.887	0.567
AP1	0.741				
AP2	0.769				
AP3	0.782				
AP4	0.735				
AP5	0.729				
AP6	0.754				

Note. CR = composite reliability; AVE = average variance extracted. Items RSES4 and RSES8 were dropped due to low outer loadings (< 0.60). All retained loadings, α , CR, and AVE values exceed the recommended thresholds of 0.60, 0.70, 0.70, and 0.50, respectively (Hair et al., 2019).

Both constructs were found to be internally consistent and valid as presented in Table 4.3, the constructs had internal consistency reliability, Cronbach's α and composite reliability higher than the recommended thresholds of 0.70 and higher for internal consistency reliability and greater than 0.50 for convergent validity, showing that the measurement model is psychometrically sound (Hair et al., 2019).

4.5 Discriminant Validity

Discriminant validity was determined both by the Fornell-Larcker criterion, where the square root of the AVE of each construct is greater than the correlation between the construct and the others (Fornell & Larcker, 1981), and by the HTMT, which should not exceed the conservative value of 0.85 (Henseler et al., 2015). Table 4.4 and Table 4.5 demonstrate that both of these criteria were met.

Table 4.4 *Discriminant Validity: Fornell-Larcker Criterion*

Construct	AP	SE
Academic Performance (AP)	0.753	
Self-Esteem (SE)	0.414	0.738

Note. Diagonal values (bold in original output) represent the square root of AVE; off-diagonal values represent inter-construct correlations.

Table 4.5 *Discriminant Validity: Heterotrait-Monotrait Ratio (HTMT)*

Construct	AP	SE
Academic Performance (AP)	—	—
Self-Esteem (SE)	0.481	—

Note. All HTMT values are below the conservative 0.85 threshold, confirming discriminant validity (Henseler et al., 2015).

4.6 Structural Model Assessment

After determining a psychometrically sound measurement model, the structural (inner) model was examined. To check for collinearity, variance inflation factor (VIF) analysis was first conducted; all inner VIF values were less than 3.0 (VIF = 1.00, in the single-predictor direct-effect model), a value that is generally considered to be free from collinearity. The significance of the paths were evaluated using the bias corrected and accelerated (BCa) bootstrapping method with a subsample of 5,000. Table 5 shows the coefficient of determination (R^2), predictive relevance (Q^2) and effect size (f^2) for the endogenous construct.

Table 4.6 *Explanatory and Predictive Power of the Structural Model*

Endogenous Construct	R^2	Q^2 (blindfolding)	f^2 (SE → AP)
Academic Performance	0.171	0.132	0.206

Note. $R^2 = 0.171$ indicates a weak-to-moderate explanatory power for a single-predictor model (Chin, 1998); $Q^2 > 0$ confirms predictive relevance (Hair et al.,

2019); $f^2 = 0.206$ indicates a medium effect size (Cohen's benchmarks).

The standardized path coefficient, bootstrapped standard error, t-statistic and p-value for the proposed direct link between self-esteem and academic performance (H1) are reported in Table 4.7.

Table 4.7 *Structural Model: Path Coefficient and Hypothesis Test (H1)*

Path	β	SD	t-value	p-value	Decision
SE → AP (H1)	0.412	0.052	7.85	< .001	Supported

Note. Bootstrapping based on 5,000 subsamples, BCa method, two-tailed test at 95% confidence. SE = self-esteem; AP = academic performance.

Results showed a positive statistically significant relationship between academic performance and self-esteem ($\beta = 0.412$, $t = 7.85$, $p < .001$) which is in line with Hypothesis 1. The variance in academic performance accounted for was 17.1% with the effect size ($f^2 = 0.206$) considered medium size (Chin, 1998).

4.7 Moderation Analysis: Gender (H2) and Year of Study (H3)

The moderation analysis for gender (H2) is presented. The moderating effect of gender was examined using two-stage interaction-term approach in SmartPLS and multi-group approach (PLS-MGA) for comparing sub-

samples of males and females. The interaction term ($\text{Gender} \times \text{SE} \rightarrow \text{AP}$) as shown in Table 7 was not statistically significant and there was no statistically significant difference between the size of the $\text{SE} \rightarrow \text{AP}$ path in the male sub-sample ($\beta = 0.398, t = 5.41$) and the female sub-sample ($\beta = 0.431, t = 5.02$) ($\Delta\beta = 0.033, p = .662$). Hypothesis 2 thus was rejected. A simple-slope analysis revealed that the positive effect of self-esteem on academic performance was greater for the senior students (third and fourth year) (simple slope = 0.487, $t = 6.12, p < .001$) than for the junior students (first and second year) (simple slope = 0.329, $t = 4.58, p < .001$), suggesting that the impact of self-esteem on academic performance increases as students advance in their degree, as would be expected from a theoretical perspective, given that self-schemas consolidate with time (Marsh, 1990; Trautwein et al., 2006). Hypothesis 3 thus was supported.

Table 4.8 Moderation Analysis: Gender and Year of Study

Moderation Path	β	SD	t-value	p-value	Decision
Gender $\times$ SE $\rightarrow$ AP (H2)	0.089	0.052	1.72	.086	Not Supported
Year of Study $\times$ SE $\rightarrow$ AP (H3)	0.143	0.062	2.31	.021	Supported

Note. SE = self-esteem; AP = academic performance. Interaction terms created using the two-stage approach in SmartPLS 4 with mean-centred indicators.

5. Discussion

The aim of this study was to investigate the impact of self-esteem on the academic performance of the university students in Khyber Pakhtunkhwa, Pakistan and to determine if the impact is gender and year of study specific. Results in support of Hypothesis 1 showed that self-esteem positively and significantly influenced academic performance ($p < .001, \beta = 0.412$), which accounted for 17.1% of the variance in academic performance and had a medium effect size ($f^2 = 0.206$). This finding is consistent with the general international literature, which shows a positive self-esteem–achievement connection (Baumeister et al., 2003; Pullmann & Allik, 2008; Valentine et al., 2004), and builds on the smaller-scale studies conducted in Pakistan, which found comparable directional effects (Arshad et al., 2015; Mirzaei-Alavijeh et al., 2018) but adds to this evidence base by using a multi-institution, stratified sample of considerably larger size, analysed using a more rigorous structural equation modelling approach that explicitly accounts for measurement error. The effect size obtained in this study ($R^2 = 0.171$) is consistent with the notion that self-esteem acts as a psychological resource to facilitate approach-oriented academic involvement rather than as a determinant of academic achievement (Baumeister et al., 2003; Crocker & Park, 2004). That self-esteem accounts for a meaningful (but not exclusive) proportion of the variance in

academic outcomes also fits into social cognitive theory's view that personal, behavioural and environmental factors are all interacting and mutually influencing factors in determining achievement outcomes of students (Bandura, 1997); that self-esteem is not an exclusive determinant but one of a range of determinants that can include study skills, quality of instruction, and socioeconomic context. Table 9 places the current findings in the context of similar previous research on the relationship between self-esteem and academic achievement, showing a consistency in the direction of the relationship, but also differences in the size of the relationship that may be due to differences in sample size, method of measuring self-esteem and academic performance, and method of analysis.

Table 9 *Comparison of Findings with Selected Prior Studies*

Study	N	Method	Key Finding
Arshad et al. (2015)	80	Pearson correlation, t-test	Strong positive correlation ($r = .88$)
Mirzaei-Alavijeh et al. (2018)	300	Correlation analysis	Significant positive correlation ($r = .29$)
Acosta-Gonzaga (2023)	243	PLS-SEM (indirect effects)	Self-esteem engagement, affects not performance directly
Present Study (2026)	343	PLS-SEM, moderation, PLS-MGA	Direct effect $\beta = .412$; moderated by year of study

Note. Effect magnitudes are not directly comparable across studies given differences in measurement scale, sample composition, and statistical technique; the table is intended to illustrate directional convergence rather than precise effect-size equivalence.

There are two divergence points that must be discussed. First, the correlation reported as a result of Arshad et al. (2015) is much larger than the standardised path coefficient obtained here, which can be attributed to the smaller, single-institution, non-probability sample used in that study, which is more prone to sampling variability and potential common-method inflation than the larger, multi-institution, stratified sample used here. Second, although the effect of self-esteem on performance was significant, it was indirect, going through the construct of academic engagement, which may indicate genuine differences between the higher education contexts of Mexico and Pakistan, differences in operationalisation of the academic performance construct, or the absence of an intervening construct of academic engagement in the present intentionally parsimonious model. Such a disassociation alone suggests a fruitful avenue for subsequent integrative studies using both direct and mediated pathways in a single sample from Pakistan. The non-significant moderation of gender (H2) indicates that, in this study, the psychological pathway between self-esteem and academic performance is similar for both boys and girls, even though past studies conducted in Pakistan have identified the gender differences in absolute values of academic performance (Arshad et al., 2015). This is a typical picture of gender differences in self-esteem, which are

domain-specific and not particularly present in the academic domain, despite the fact that other domain-specific gender differences in self-esteem are small, in favor of men (Kling et al., 1999; Gentile et al., 2009). From a practical perspective, it indicates that, in order to enhance academic achievement, self-esteem-based interventions do not necessarily have to be gender-specific. In contrast, the year of study (H3) as a moderating variable shows that the relationship between self-esteem and performance becomes stronger as student progresses through their degree programme, and that the effect is almost 50% steeper for senior students than junior students. This is consistent with theoretical explanations which emphasize how self-schemas and self-regulatory skill become more consolidated over the course of a degree programme (Marsh, 1990; Trautwein et al., 2006), with students' performance likely being more heavily influenced by transitional adjustment factors (operating somewhat independently of existing self-esteem) for junior students, while more mature students' performance is more likely to be influenced by existing self-esteem.

6. Theoretical and Practical Implications

6.1 Theoretical Implications

This study has a number of theoretical contributions. First, it applies a self-enhancement, self-determination and social

cognitive theory of self-esteem to a South Asian higher education context that is relatively under-researched in the field of self-esteem (Orth & Robins, 2014). Secondly, the study illuminates theory with empirical evidence that it is year of study — not gender — that is the more important boundary condition, implying that temporal/developmental factors are more significant than static demographics in this context. Third, the study highlights the importance of variance-based structural equation modelling in testing the relationship between psychosocial and performance in the study of higher education in the region and indicates that the majority of studies have utilized bivariate correlation and simple regression (Arshad et al., 2015; Mirzaei-Alavijeh et al., 2018).

6.2 Practical and Policy Implications

As self-esteem has been proven to have a measurable and inevitable connection with students' academic performance, the results should encourage integration of self-esteem enhancing elements in the orientation programmes for freshers, academic advising and students' counselling services for the administration and student affairs practitioners of the universities of Khyber Pakhtunkhwa and similar settings. As the self-esteem–performance relationship increases as students proceed through the later years of their program, targeted psychosocial support may be particularly

useful for students as they enter the final years of their degree program, where the academic expectations are higher, and where self-esteem seems to matter more in terms of performance. With the known downstream effects of low self-worth on academic engagement (Deci & Ryan, 2000; Zimmerman, 2000), faculty advisors and mentors can be trained to identify and respond constructively to signs of low self-worth among students. At the policy level, all Higher Education Institutions in Pakistan are resource-challenged with limited attention given to student well-being services compared to academic infrastructure. These findings provide an evidence-based argument for directing institutional resources at counselling and psychosocial-support programs, not only as welfare services, but as investments that are directly associated with main academic outcomes—and therefore institutional performance measures like retention and graduation. In the Pakistani context, such interventions should also include self-esteem building measures as part of a culturally and locally relevant framework instead of just taking on the western therapeutic models wholesale. Since the family, community and religious values systems play a significant role in shaping the Pakistani students' sense of self-worth, counselling and peer-mentoring programmes that are based on locally meaningful conceptions of self-respect and

dignity are likely to be more acceptable and credible to the students than the generic self-esteem curricula which are decontextualised. This observation is provided as a possible design consideration and is a promising avenue for future intervention research, but not an empirical claim that has been tested.

7. Limitations and Directions for Future Research

Some limitations of this study should be noted. One limitation is that the cross-sectional design does not allow for inferences about the direction of causal relationships, so while the theory and previous longitudinal studies suggest a self-esteem to performance direction of causality, alternative models of reciprocity or bi-directionality are not excluded (Marsh & O'Mara, 2008). Future studies with longitudinal or experimental designs would increase causal inferences. Second, self-report was the primary measure of academic performance, although cross-validated with CGPA, this approach might be prone to social desirability bias and future studies might use verified institutional academic records. Third, although being much bigger and geographically spread than previous studies in Pakistan, the sample was limited to public-sector universities in one province only; replication in private-sector universities in other provinces would add to generalisability. Lastly, even though the

parsimonious two-construct model is methodologically worthwhile for isolating the direct effect, it does not attempt to capture potential mediating mechanisms through which self-esteem may influence performance (Acosta-Gonzaga, 2023; Guay et al., 2003). Another limitation is that year of study was used as a proxy for academic experience, but in the future one could measure more proximal variables like accumulated academic feedback or academic self-regulatory skill. Finally, as in all psychological research based on self-report, mood state at the time of responding to the questionnaire or event-related changes in self-esteem (e.g., a recent exam grade) may affect these responses; future studies using diary or experience-sampling designs may be helpful in distinguishing between stable trait and state self-esteem (Kernis, 2003).

8. Conclusion

This study gives good quality, adequately powered empirical evidence that self-esteem has a positive and significant effect on the academic performance of the university students of Khyber Pakhtunkhwa, Pakistan and this relationship is significantly enhanced as students go on the degree programme and is not meaningfully different for males and females. Using a multi-institution, stratified sample of 343 students, the study contributes to and methodologically enriches a growing body

of literature, albeit small-scale, from the region that has focused on fewer students, fewer institutions, and less complicated analytical methods. The results highlight that self-esteem is not just an affective variable but a psychosocial resource with real implications for the academics; and offer a concrete evidence basis for the universities who want to invest in psychosocial support of students as a means to improve their academic outcome and ultimately, educational and socioeconomic outcomes in the higher education system of Pakistan.

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