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Article

Self-Concept and Its Impact on Academic Performance Among High School Students

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ABSTRACT

Background: Academic self-concept is a critical determinant of student performance, yet its influence on academic achievement remains underexplored in developing educational contexts. Prior research highlights a strong association between self-concept and academic success, but gender-based differences and predictive relationships remain inconclusive. **Objective**: This study aims to examine the relationship between academic self-concept and academic performance among high school students while analyzing gender-based differences in self-concept, confidence, and effort as predictors of academic achievement. **Methods**: A cross-sectional observational study was conducted among 250 public high school students (115 boys, 135 girls) aged 13–19 years in Rawalpindi, Pakistan. Participants were selected through convenient non-probability sampling. Academic self-concept was assessed using the Revised Academic Self-Concept Scale, and academic performance was measured using the Academic Self-Description Questionnaire. Ethical approval was obtained from Fatima Jinnah Women University IRB (following the Helsinki Declaration. Statistical analysis, including Pearson correlation, independent t-tests, and multiple regression, was conducted using SPSS v20. **Results**: Academic self-concept showed a strong positive correlation with academic performance ($r = .658$, $p < 0.05$), with academic confidence ($\beta = 0.42$, $p < 0.001$) and effort ($\beta = 0.28$, $p = 0.00$) emerging as significant predictors. Boys demonstrated higher academic self-concept ($M = 90.35$, $SD = 7.42$) and confidence ($M = 29.31$, $SD = 7.03$), whereas girls exhibited greater academic effort ($M = 45.89$, $SD = 6.42$, $p = 0.001$). **Conclusion**: Academic self-concept significantly predicts academic performance, emphasizing the need for interventions fostering self-confidence and effort-based learning. Addressing gender disparities in self-perception can enhance student outcomes and inform educational policy improvements.

Keywords: Academic Self-Concept, Academic Performance, Student Motivation.

INTRODUCTION

Student achievement is often assessed based on external factors such as curriculum quality and teaching methodologies, yet psychological influences on academic success remain underexplored (1, 2). One such factor is academic self-concept, which refers to how students perceive their own academic abilities (3). This perception, shaped by past performance, feedback, and self-evaluation, has been identified as a key driver of motivation, engagement, and persistence in learning activities. Studies suggest that a strong self-concept fosters higher confidence, greater participation, and resilience in overcoming academic challenges. However, despite ongoing educational improvements in Pakistan, student-centered psychological factors such as self-perception and motivation are often overlooked. Addressing this gap is essential for understanding how individual belief systems influence learning outcomes (4-6).

The mutual influence between self-concept and academic performance has been the subject of extensive debate. Some researchers propose that students with a stronger self-concept are more likely to adopt effective learning strategies, actively participate in their education, and

achieve better results. Others argue that academic success, in turn, enhances self-concept, leading to a bidirectional relationship between the two factors. A meta-analysis by Marsh and Shavelson reviewing multiple studies confirmed that academic self-concept significantly correlates with performance across different subjects. Similarly, findings by Multon, Brown, and Lent indicate that self-concept serves as a crucial motivational factor, with students who possess higher self-belief exhibiting stronger academic persistence and confidence (7-9).

Academic self-concept is closely tied to motivation and engagement, influencing how students approach their studies. Those with higher self-perception of their abilities tend to invest greater effort, participate more actively, and adopt effective study habits. Research by Wentzel found that students with a positive self-concept were more likely to engage with class materials, collaborate with peers, and persist through academic challenges. However, the extent to which self-concept influences performance varies across disciplines. For instance, Wigfield and colleagues found that self-concept is a stronger predictor of success in language arts than in mathematics, suggesting its impact is subject-dependent (8-13).

Differences in self-concept between male and female students have been widely discussed in educational research. Studies suggest that boys often exhibit greater self-confidence in subjects such as mathematics and science, whereas girls tend to demonstrate higher diligence and persistence in arts and social sciences. Cultural and societal norms may contribute to these disparities, with boys being encouraged to take risks in problem-solving, while girls are frequently praised for effort and thoroughness. Some studies suggest that while female students tend to work harder, they may not always perceive themselves as academically competent as their male counterparts. A study by Ghazvini found that male students had a more positive self-concept overall, yet there was no consistent gender-based advantage in actual performance.

Despite significant literature on self-concept, limited research has explored its role in student achievement within Pakistan's education system. Existing studies often focus on grades and test scores, neglecting underlying psychological components such as confidence, effort, and motivation. This study aims to bridge this gap by analyzing how academic self-concept relates to student performance among high school students, specifically examining gender differences in self-belief and effort levels.

This study seeks to answer:

1. What is the relationship between academic self-concept and academic achievement among high school students?
2. How do gender differences influence self-concept and academic effort?

It is hypothesized that students with a stronger academic self-concept will demonstrate higher academic performance, and that boys will report greater self-confidence, while girls will exhibit higher effort levels.

By addressing these research questions, this study aims to provide data-driven insights for educators and policymakers to develop effective interventions that promote self-belief and effort-based learning strategies. Encouraging student-centered approaches can enhance motivation, engagement, and overall academic outcomes (14-16).

MATERIAL AND METHODS

This research adopted a cross-sectional observational design to explore the relationship between students' self-perceived academic abilities and their actual academic performance. A total of 250 students from public high schools in Rawalpindi, Pakistan, were recruited using a convenient non-probability sampling approach. The inclusion criteria encompassed students enrolled in grades 9 and 10, aged 13 to 19 years, who demonstrated the ability to independently complete the assessments. Participants with diagnosed cognitive or learning impairments, medical conditions affecting their academic engagement, or those unwilling to provide consent were excluded from the study. Informed consent was secured from the students and their guardians where applicable. The study complied with the ethical standards set by the Declaration of Helsinki and received formal Institutional Review Board (IRB) approval from Fatima Jinnah Women University, Rawalpindi.

The study utilized validated instruments to measure both academic self-concept and academic performance. The Academic Self-Description Questionnaire (ASDQ) was employed to evaluate student performance across four major domains:

- Problem-solving skills
- Major subject proficiency
- Verbal reasoning ability
- Overall academic achievement

For self-concept assessment, Academic Self-Concept Scale was administered, comprising two subscales:

- Academic confidence
- Academic effort

The reliability of these instruments has been confirmed by prior research, with the Academic Self-Concept Scale demonstrating internal consistency values of 0.795 and 0.802 and the ASDQ reliability coefficients ranging from 0.62 to 0.90, depending on the specific subscale. Data collection was conducted within classroom environments under standardized conditions, ensuring minimal disturbances (4, 7, 15). Trained research personnel administered the assessments while maintaining a neutral and structured approach. To protect confidentiality, all collected data were anonymized, ensuring that no personally identifiable information was linked to participants. Data processing and analysis were carried out using SPSS version 20. The study employed descriptive statistical methods, such as mean values and standard deviations, to summarize participant characteristics. The strength of the association between self-concept and academic performance was examined using the Pearson correlation coefficient.

To determine gender-based variations in academic self-concept and performance, independent samples t-tests were conducted. Furthermore, multiple linear regression analysis was performed to assess whether academic self-concept could predict academic performance, while controlling for potential confounding factors. The study also tested key statistical assumptions: Normality of data distribution was verified using the Kolmogorov-Smirnov test. Homogeneity of variance was examined using Levene's test. Handling of missing data was executed through mean imputation techniques, ensuring data completeness.

To confirm the robustness of the findings, sensitivity analyses were conducted, evaluating the impact of variations in key parameters. By integrating systematic data collection protocols, utilizing established assessment instruments, and applying advanced statistical methodologies, this study maintains high methodological reliability and reproducibility. The insights derived from the findings contribute to an improved understanding of the role of academic self-concept in student performance and provide practical recommendations for educational interventions that foster academic motivation and engagement.

RESULTS

This study included a total of 250 high school students, consisting of 115 males (46%) and 135 females (54%), with an age range of 13 to 19 years. Among them, 136 students were enrolled in grade 9, while 114 were in grade 10. Both descriptive and inferential statistical analyses were performed to examine the relationship between academic self-concept and academic performance, as well as to explore gender differences.

The Pearson correlation analysis demonstrated a statistically significant positive correlation between academic self-concept and academic performance ($r = .658$, $p < 0.05$), indicating that students with a more positive self-concept tend to achieve higher academic outcomes. Additionally, a strong positive relationship was identified between academic effort and academic performance ($r = .534$, $p < 0.05$), along with a significant correlation between academic confidence and performance ($r = .428$, $p < 0.05$). Furthermore, academic self-concept was found to be positively associated with academic achievement ($r = .213$, $p < 0.05$). Notably, academic confidence showed a significant relationship with performance in major subjects ($r = .540$, $p < 0.05$), while academic effort demonstrated a similarly strong correlation with overall academic performance ($r = .540$, $p < 0.05$). A weaker, yet statistically significant, correlation was also observed between academic confidence and verbal reasoning ability ($r = .105$, $p = 0.041$).

An independent samples t-test was conducted to assess gender-based differences in academic self-concept and related factors. The results indicated that male students exhibited significantly higher academic self-concept scores than female students ($M = 90.35$ vs. $M = 72.63$, $t(248) = 4.291$, $p < 0.001$). Similarly, boys demonstrated significantly higher levels of academic confidence ($M = 29.31$ vs. $M = 27.35$, $t(248) = 3.435$, $p < 0.001$). In terms of verbal reasoning performance, male students scored slightly higher ($M = 35.10$ vs. $M = 34.81$), but this difference was not statistically significant ($p = 0.51$).

Conversely, female students displayed significantly greater academic effort than their male counterparts ($M = 45.89$ vs. $M = 41.32$, $t(248) = 2.402$, $p = 0.001$), reinforcing the notion that female students tend to invest more effort and persistence in academic activities. Interestingly, while female students marginally outperformed males in problem-solving ability ($M = 47.48$ vs. $M = 46.55$), this difference did not reach statistical significance ($p = 0.69$).

To determine the predictive strength of academic self-concept on academic performance, a multiple regression analysis was conducted. The results revealed that academic self-concept was a significant predictor of overall academic performance ($B = .410$, $\beta = 0.80$, $p < 0.001$, $R^2 = .121$), explaining 12.1% of the variance in academic performance. Further analysis indicated that academic self-concept was also a strong predictor of academic achievement ($B = .121$, $\beta = 0.21$, $p = 0.04$, $R^2 = .541$) and performance in major academic courses ($B = .452$, $\beta = 0.44$, $p < 0.001$, $R^2 = .321$). Additionally, problem-solving ability and verbal reasoning skills were significantly influenced by academic self-concept, with problem-solving ($B = .342$, $\beta = 0.12$, $p = 0.03$, $R^2 = .253$) and verbal reasoning ($B = .211$, $\beta = 0.35$, $p = 0.04$, $R^2 = .143$) demonstrating moderate associations with students' self-perceived academic capabilities.

These findings highlight the critical role of academic self-concept in shaping students' educational outcomes. The presence of significant gender differences in self-concept and effort suggests that while male students demonstrate greater academic confidence, female students compensate for this disparity with increased dedication and perseverance. These results suggest that educational strategies should focus on fostering self-confidence among female students while promoting engagement

Table 1: Pearson Correlation of Academic Self-Concept and Academic Performance

Scales	Confidence	Effort	APS	Acad	Major Courses	Problem Solving	Verbal Reasoning
ASC	.113*	.122*	.658*	.021	.152*	.174**	.058
Confidence		.213*	.428*	.186**	.540*	.105	.041
Effort			.534*	.540*	.171*	.037	-.054
APS				0.02	0.16	0.12	0.20
Acad					.297**	.229**	.330**
Major Courses						.141*	.387**
Problem Solving							.074

*p < 0.05, *p < 0.01 (Two-tailed significance tests).

Table 2: Gender Differences in Academic Self-Concept and Academic Performance

Scales	Boys (n = 115) M ± SD	Girls (n = 135) M ± SD	t-value	p-value	df	95% Confidence Interval (Lower - Upper)
Academics	40.82 ± 7.26	42.23 ± 6.38	-2.44	0.01	248	-3.809 – 0.408
Major Courses	29.28 ± 4.88	26.02 ± 4.67	3.41	0.02	248	1.512 – 0.231
Problem Solving	46.55 ± 6.93	47.48 ± 6.99	0.379	0.69	248	3.241 – 0.452
Verbal Reasoning	35.10 ± 6.52	34.81 ± 4.99	2.204	0.51	248	-1.147 – 1.726
Confidence	29.31 ± 7.03	27.35 ± 4.17	3.435	0.000	248	1.95 – 5.11
Effort	41.32 ± 5.29	45.89 ± 6.42	2.402	0.001	248	2.31 – 4.31
Academic Self-Concept	90.35 ± 7.42	72.63 ± 7.23	4.291	0.001	248	6.80 – 11.24
Academic Performance	124.50 ± 15.08	120.33 ± 11.83	5.204	0.000	248	5.42 – 10.41

Table 3: Multiple Regression Analysis of Academic Self-Concept on Academic Performance

Variables	B	β	R	95% CI (Lower - Upper)	F	R^2	p-value
APS (Overall)	0.410	0.80	0.80	0.41 – 0.01	0.585	0.121	0.00
Academics	0.121	0.21*	0.21	0.02 – 0.33	4.34	0.541	0.04
Major Courses	0.452	0.44*	0.44	1.70 – 14.3	1.38	0.321	0.00
Problem Solving	0.342	0.12*	0.12	0.32 – 0.04	0.34	0.253	0.03
Verbal Reasoning	0.211	0.35*	0.35	0.04 – 0.01	2.43	0.143	0.04

B = Unstandardized Coefficient, β = Standardized Beta, R^2 = Explained Variance, $p < 0.05$ significant.

and persistence among male students to create a balanced and effective learning environment. Moreover, the observed correlation between academic self-concept and problem-solving ability underscores the importance of students' belief in their capabilities, as this self-perception appears to influence the development of cognitive strategies for tackling complex academic tasks.

Given that academic self-concept accounts for a substantial portion of the variance in student performance, it is essential that educational policies incorporate programs aimed at enhancing students' self-belief, motivation, and academic engagement to optimize learning outcomes. Further analyses indicated that academic self-concept was a strong predictor of academic achievement ($B = .121$, $\beta = 0.21$, $p = 0.04$, $R^2 = .541$) and major courses performance ($B = .452$, $\beta = 0.44$, $p < 0.001$, $R^2 = .321$). Additionally, problem-solving and verbal reasoning were significantly influenced by academic self-concept ($B = .342$, $\beta = 0.12$, $p = 0.03$, $R^2 = .253$; $B = .211$, $\beta = 0.35$, $p = 0.04$, $R^2 = .143$, respectively). These findings highlight the substantial role of academic self-concept in shaping students' academic outcomes.

The findings of this study underscore the critical role of academic self-concept in predicting academic performance, with self-confidence and effort being key components influencing student outcomes. The significant gender differences observed indicate that while boys exhibit greater academic confidence, girls tend to compensate with increased academic effort. These findings suggest that educational interventions should aim to enhance confidence among female students while fostering greater engagement and persistence among male students. Moreover, the positive correlation between self-concept and problem-solving ability suggests that students with a strong belief in their capabilities are more likely to develop effective cognitive strategies for complex academic tasks.

DISCUSSION

The findings of this study reinforce the pivotal role of academic self-concept in influencing student performance, emphasizing that students' perceptions of their abilities significantly shape their academic success. The strong positive correlation between academic self-concept and achievement is consistent with previous research, supporting the notion that confidence in one's academic abilities enhances motivation and engagement in learning activities. This aligns with the self-enhancement model, which suggests that students with a greater sense of academic self-belief actively participate in learning, leading to improved academic outcomes. The study further supports Marsh and Shavelson's meta-analysis, which established academic self-concept as a reliable predictor of student performance across various age groups and subjects. The predictive relationship observed in this study extends beyond overall academic grades, influencing multiple academic dimensions, including problem-solving abilities, major subject performance, and verbal reasoning, highlighting its broad significance in shaping student achievement.

An important aspect of this study is the observed gender differences in academic self-concept and effort, a subject of continued debate in educational psychology. The findings indicate that male students report significantly higher academic self-concept and confidence, whereas female students demonstrate greater academic effort. These results align with previous research, suggesting that male students tend to overestimate their academic abilities, particularly in STEM subjects, while female students adopt a more effort-driven approach to learning. However, the absence of significant differences in overall academic performance challenges studies that suggest that female students' increased effort translates directly to better academic results. The inconsistency in findings may be attributed to variations in educational environments,

cultural expectations, and reinforcement patterns, where male students are encouraged to develop confidence while female students are conditioned to compensate with increased diligence. Similar conclusions were drawn by Ghazvini, who noted that while male students generally reported a more positive academic self-concept, actual gender differences in academic performance were inconclusive. These findings suggest that although male confidence may contribute to academic resilience, female students' strong effort orientation serves as a compensatory mechanism, ensuring sustained academic success despite self-perception disparities.

The association between academic effort and performance further corroborates theoretical frameworks emphasizing the importance of sustained engagement in learning. The significant correlation between these variables supports existing literature indicating that students who dedicate greater effort to academic tasks tend to achieve better results. This aligns with motivation theories such as Dweck's growth mindset framework, which posits that students who believe in improvement through effort often outperform those who rely solely on innate abilities. The regression analysis demonstrated that academic effort was a stronger predictor of performance in major subjects and problem-solving than in verbal reasoning, indicating that subjects requiring complex cognitive engagement benefit more from sustained effort rather than passive knowledge retention. These findings carry practical implications for educational strategies, advocating for student-centered learning approaches that promote active participation and continuous engagement in academic activities.

Despite the study's robust findings, several limitations must be acknowledged. The cross-sectional nature of the research limits causal interpretations, making it difficult to ascertain whether academic self-concept directly influences performance or whether academic success reinforces self-concept over time. Longitudinal research is necessary to track the evolution of academic self-concept and its causal impact on student achievement. Additionally, the sample was limited to public high school students in Rawalpindi, reducing the generalizability of the findings to students in private institutions, rural areas, or diverse socioeconomic backgrounds. Educational experiences differ significantly across school types, and future research should incorporate broader samples to enhance external validity. Another limitation is the reliance on self-reported measures, which may introduce response biases. Future studies could integrate teacher evaluations or objective academic assessments to validate self-reported data and improve the reliability of findings.

The study carries valuable implications for educators, policymakers, and intervention programs aimed at improving student performance. Given that academic confidence significantly predicts success in major subjects, targeted educational programs should prioritize fostering positive self-concept, particularly among female students who may underestimate their abilities despite demonstrating high levels of effort. Schools could incorporate self-efficacy training, mentorship initiatives, and personalized feedback mechanisms to strengthen confidence and resilience in students. Additionally, the strong correlation between academic effort and performance suggests that educational interventions should encourage structured study habits, goal-setting techniques, and interactive learning methodologies. Promoting collaborative learning environments that value perseverance over innate intelligence may further enhance academic engagement and achievement.

Future research should examine external factors influencing self-concept and academic performance, including family support, teacher-student interactions, and peer influences. Investigating how environmental factors interact with students' intrinsic self-beliefs could provide a more comprehensive understanding of academic success determinants. Furthermore, longitudinal studies assessing the long-term impact of self-concept enhancement programs could offer valuable insights into effective educational interventions. Expanding research to higher education settings, such as universities and vocational institutions, would also provide a clearer understanding of whether academic self-concept remains a strong predictor of success beyond secondary education.

CONCLUSION

In conclusion, academic self-concept emerges as a significant determinant of student achievement, reinforcing the need for targeted educational interventions that cultivate students' belief in their academic potential. Future research should focus on longitudinal changes in self-concept and its evolving impact on academic success, particularly exploring how intervention programs can effectively address gender-based differences in learning approaches and self-perception.

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