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Parental Involvement and Students Academic Outcome: Exploring the Mediating Role of Academic Motivation

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ABSTRACT

The research is aimed to determine the influence of mediating variable academic motivation in relationship between parental involvement and academic outcomes (dropout/pass) partially and complementarily among intermediate 1st-year students. Additionally, significant differences were explored in independent variable of parental involvement and mediating variable of academic motivation between passing and dropout students. The study included randomly selected 350 intermediate students; 223 passed the part-I annual examination, whereas 127 did not. Data on parental involvement, academic motivation, and academic outcomes were collected and analyzed using mediation and comparative (inferential) statistical methods. The hypotheses were supported by the results: the association between parental involvement and academic outcomes was partially mediated by academic motivation. Furthermore, complementary mediation was observed, indicating that academic motivation enhances the effect of parental involvement on academic outcomes. Pass students exhibited significantly higher levels of parental involvement and academic motivation compared to dropout students. The findings suggest that both parental involvement and academic motivation play crucial roles in determining academic outcomes among intermediate 1st-year students. Enhancing parental involvement can positively influence academic motivation, thereby improving academic success and reducing dropout rates. Based on the results, it is recommended to promote strategies that increase parental involvement in students' academic lives. Schools and policymakers should also focus on fostering academic motivation among students, particularly those at risk of dropping out, to enhance their academic performance and retention.

Keywords: *Academic Outcome, Academic Motivation, Family Engagement, Parenting*

INTRODUCTION

In the context of globalization, fostering robust personality development and nurturing academic drive early on is crucial for aligning youth with international education standards through parental support and encouragement (Lerner et al., 2022). Parental involvement, in any form, contributes to significant increases in students' academic achievement, regardless of age. Starting this practice early increases students' academic motivation (Barger et al., 2019; Helm et al., 2023).

Parental encouragement and active support are essential for instilling enthusiasm and ambition for academic success in young students. This combination of responsibility and dynamic engagement powers their motivation (Vandergrift & Greene, 1992). UNESCO's Education 2030 initiative aims to achieve the Sustainable Development Goal by ensuring that all children are academically prepared through parental involvement from early childhood by 2030.

Students who lack parental involvement in educational activities from an early age struggle in higher grades and have low academic aspirations (Fan & Williams, 2010). Parental involvement includes parents' participation at home, such as communicating about expectations, assisting with studies and homework, offering advice and encouragement, and communicating with teachers and children about schoolwork (Skaliotis, 2010).

Parental involvement encompasses plenty of actions and beliefs related to sending children to school and supporting their learning outside of school, such as advocating for them, communicating with school staff, and being actively present in school activities (Epstein, 1992). In general, parental involvement refers to the effort's parents undertake to assist their children's learning during

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their school years (Avvisati et al., 2010). In developing countries, demographic factors such as household income, educational attainment, limited credentials, and local traditions can stymie parental involvement, crucially affecting children's academic achievements (Smith & Antoniavoigt, 2021).

Research shows that collaboration among parents, families, and communities are associated with improved academic performance in children and play their part to highlight the dropout ratio (National Education Association, 2008). The strength of the student-teacher bond entirely mediated the relationship between parental participation and teachers› assessments of the child›s academic performance (Boonk et al., 2018).

Research on parenting styles identified communication, supervision, and parental expectations as significant parts of parental participation, with communication being the most important predictor. The study found that the way parents vent academic motivation to their children has a substantial impact on academic outcomes. It also highlighted a substantial link between parental expectations and children's perceptions of these expectations, which linked to improved academic performance (Fan & Chen, 2001)

Early academic motivation in the early years refers to a student's excitement, as evidenced by their attitude, dedication, and attention to school subjects during the start of their educational journey (Wentzel et al., 2017). A motivated child is more likely to achieve academic achievement if they recognize the importance of education in all aspects of their lives, including school, employment, and community (Zaccoletti et al., 2020). The term "dropout rate" describes the proportion of students who do not finish a certain course at their school or college (Glennie et al., 2012). Dropout rates have a substantial long-term impact on students' education and job opportunities, as well as their social and economic well-being (Shahidul & Karim, 2015). Therefore, Academic motivation had a role in mediating the link between life satisfaction and learning burnout among university students (Chen et al., 2023).

A study revealed that how parents, as children's first coaches, assist them understand the social, emotional, cognitive, and physical world (Bornstein, 2015). The reasons behind the drop out of students from school have been widely studied due to the significant differences in education levels (Fan & Wolters, 2014).

Approximately 45% of college dropouts within the first two years can be attributed to students' perceptions of their academic performance. Poor performance reduces satisfaction and alters attitudes about post-college earnings (Stinebrickner & Stinebrickner, 2014). Improvements in performance indicators in subsequent years have been espy when dropout rates increase in institutions (Glennie et al., 2012). Research supports the idea that children benefit from their parents' engagement in school activities, particularly in improving academic outcomes (Fan & Wolters, 2014).

Two types of motivation are identified by Self-Determination Theory (SDT): extrinsic motivation and intrinsic motivation, which is motivated by the inherent pleasure of engaging in activities drive to achieve and self-satisfaction. Internal rewards and personal interest drive this type of motivation, which causes people to pursue tasks that they find inherently enjoyable or fulfilling (Ryan & Deci, 2001). A psychological condition characterized by a lack of interest to initiate or sustain goal-directed activities is known as amotivation (Ratelle et al., 2007).

The innate urge to study and explore for personal reasons is known as intrinsic motivation. Conversely, extrinsic motivation is driven by external standards and factors, such as rewards and regulations. According to the findings, intrinsic motivation was the most significant contributor to academic performance (Kocsis & Molnár., 2024)

Research conducted in Pakistan indicates that parents feel disempower by the educational system due to their lack of knowledge essential for active participation in their children's schooling (Tahir, 2016). Pakistan, a developing country with a literacy rate of 65%, should prioritize early parental counselling for academic motivation in both public and private institutions (Zubair et al., 2023). In Karachi, a major city in Pakistan, there are working parents, single parents, and parents with lack of education who confront time constraints and lack awareness about engaging with their children early on. Previous studies have highlighted the necessity for research on parental involvement and academic motivation in early childhood in low-literacy nations such as Pakistan (Naeem & Khan, 2023). Therefore, parental involvement substantially influences the academic success and dropout rates of students in the eyes of administrators and policymakers (Ross, 2016.) Researchers and educationist often study academic outcome and related factors to understand the reasons behind students' decision to leave the institution and to develop strategies to support students in completing their education. However, parental involvement was considered a major influencer regarding academic outcome (dropout/pass) among the boys' students of public sector colleges of district Bhakkar, Punjab Pakistan. Therefore, it was inappropriate to ignore the

factor of motivation among the students by showing their personal resilience/interest towards academic. Resultantly, mediating variable (academic motivation) was taken to determine the mediating role in association between parental involvement and academic outcome.

The objectives of this study are to investigate whether academic motivation mediates the association between parental involvement and student academic outcomes (Dropout/Pass). Additionally, the study aims to determine the nature of mediation (whether complementary or competitive) between the predictor variable (parental involvement), the mediator (academic motivation), and the outcome (Dropout/Pass). Furthermore, the study seeks to evaluate the significant differences between dropout and pass students in terms of parental involvement and academic motivation.

On the basis of above objectives and literature following hypothesis were developed, H_1: Academic motivation mediates the relationship between parental involvement and academic outcomes (Dropout/Pass). H_2: Academic motivation mediates the relationship between parental involvement and academic outcomes (Dropout/Pass) in a complementary manner. H_3: Pass students score significantly higher in parental involvement compared to dropout students. H_4: Pass students score significantly higher in academic motivation compared to dropout students.

The significance of the study lies in its emphasis on the critical role parents play in their children's academic achievement. For students, it highlights the importance of parental involvement and academic motivation in achieving educational success and preventing dropout

MATERIALS & METHODS

Cross-sectional research design provides the easy way to approach and collect the responses on the provided questionnaire. The quantitative approach in this study enables the examination of numerical data to disclose tendencies and associations between variables. The population comprised of the total 2802 number of students appeared in annual intermediate (part-I) examination 2023 from the public sector colleges (boys) of district Bhakkar, Punjab, Pakistan. Taro Yamane formula for the determination of sample size was used and randomly got the total 350 number of students {Dropout 127 (36.29%) & Pass 223 (63.71%)} with the age group of (17-20) years (Yamane, 1973). Validated version of adopted scales for parental involvement scale (five-point Likert-type), and academic motivation scale- college version (seven-point Likert-type) was used to get the responses from the students (Gürbüztürk & Şad, 2010) . Considering ethical considerations by keeping all other information confidential the researcher collected all information within the duration of November 2023 to December 2023 by using hard and soft form of the questionnaire. Reliability of the parental involvement questionnaire was checked by using Cronbach's Alpha (0.90) which was near to the reliability value of (0.91) used by (Raguindin et al., 2021). While the academic motivation reliability score was (0.82) which is near to the reliability value measured by Zurlo et al. in 2023 (>.70) falls in the category of excellent. Statistical operations such as descriptive statistics, independent t-test, Hayes Process, and Logistic regression with log-odds matric for binary outcome was used to analyze all the information for the purposeful results. Statistical Product for Service Solutions (SPSS) version 26 was used to perform the prescribed statistical operations for the analysis of the results.

RESULTS

Table 1 shows the detial of 350 participants. Where 127 (36.3%) students were dropout and 223 (63.7%)were pass in intermediate part-I exams results.

Table 1. Student Status

		Frequency	Percent
Status of Students	Dropout	127	36.3
	Pass	223	63.7
	Total	350	100.0

According to various studies, a sample size of 30 to 500 subjects is required for the application of parametric tests (Bacala et al., 2024; Ross, 2009). In Table 2, Statistical tests such as Kolmogorov Smirnov and Shapiro-Wilk considered as the most appropriate tool for the purpose of data normality (Razali & Wah, 2011). The value of significance of both test is greater than alpha level ($p > 0.05$) for the variable of parental involvement. Therefore, the value of Kolmogorov Smirnov ($p\ 0.29 > 0.05$) rejects the null hypothesis and show a normal distribution which provide a base to use the parametric test in the study.

Figure 1 shows Probability-Probability (PP) plot which is a graphical tool used in statistics to assess the goodness of fit of data in logistic regression model (Hosmer, Lemeshow & Sturdivant, 2013). A PP plot with 45-degree line is considered as a perfect as showing above for the variable of parental involvement as all points are closed

to the line, it indicates a good fit of the model to the data. This signifies that your model reliable, suitable and properly represents the link between predictors and binary outcomes.

Table 2. Normality Test of Parental Involvement

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	**Df**	**Sig.**	**Statistic**	**Df**	**Sig.**
Parental Involvement	0.14	350	0.20*	0.96	350	0.29

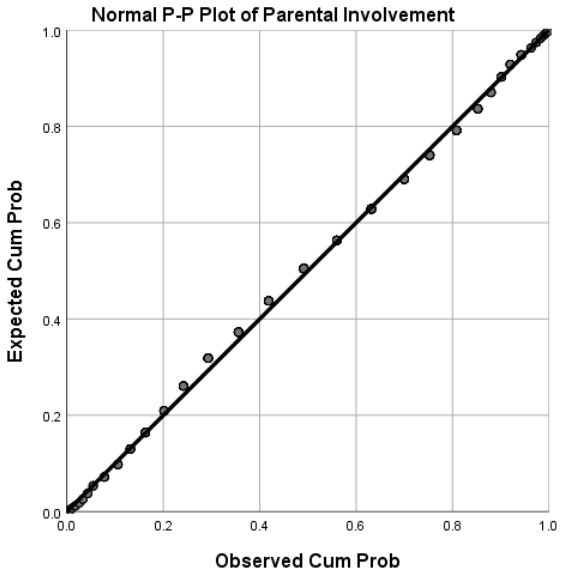

Figure 1. Normal P-P plot of Parental Involvment.

The table 3 shows the value of Kolmogorov Smirnov (p 0.30 > 0.05) reject the null hypothesis and show a normal distribution which provide a base to use the parametric test for the variable of academic motivation.

Table 3. Normality Test of Academic Motivation

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	**Df**	**Sig.**	**Statistic**	**df**	**Sig.**
Academic Motivation	0.22	350	0.20*	0.96	350	0.30

In Figure 2 P-P plot with 45-degree line is considered as a perfect as showing above for the variable of academic motivation as all points are closed to the line, it indicates a good fit of the model to the data. This signifies that your model properly represents the link between predictors and binary outcomes.

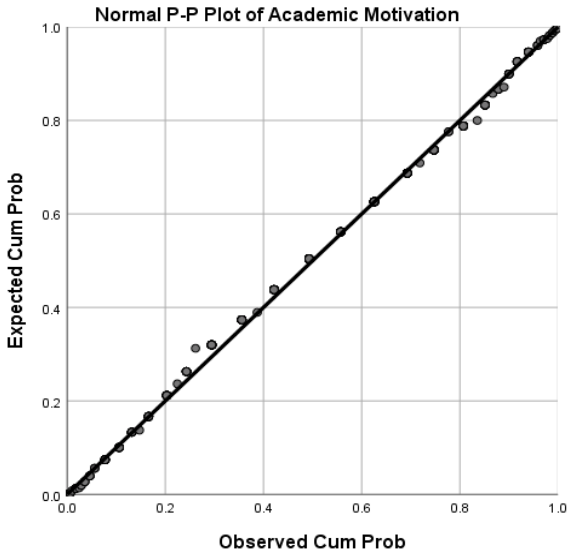

Figure 2. Normal P-P plot of Academic Motivation

Traversing Epstein's parental involvement model (2010) in figure 3 is considered as the most suitable for the assessment of parental involvement in the educational activities of their children (Alameda-Lawson, 2014). The model consists of six different institutional prospective related the involvement of parents for their children in educational attainment was used in this study.

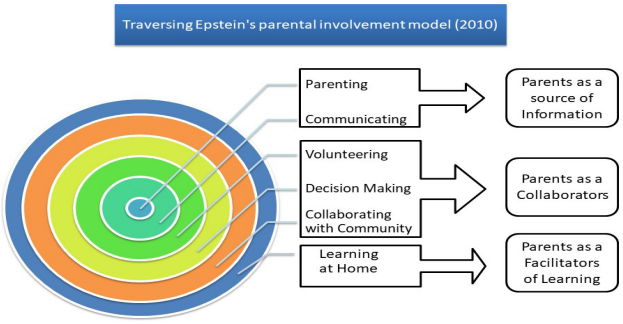

Figure 3. Traversing Epstein's parental involvement model (2010)

The Table 4 shows the different scores of the participants and levels in the variable of parental involvement. A five-point Likert-scale ranging from "Strongly Disagree to Strongly Agree" with 15 statements was utilized to collect answers. A pattern of scores developed by Gitonga, in 2023 was followed to interpret the data for the different scores and levels. The scores of parental involvements

were very low, majority (53.71%) of the participants record their low and below average parental involvement in the studies of their children on Epstein's model.

Table 4. Levels/ Scores of Parental Involvement

Weight	Range	Interpretation	Number	Percentage
1	1.00-1.49	Low/Poor	66	18.85%
2	1.50-2.49	Below average/ Fair	122	34.86%
3	2.50-3.49	Average/ Good	84	24.00%
4	3.50-4.00	Very High/ Very Good	78	22.29%

Mediation Analysis

Hayes' PROCESS mediation analysis is a powerful statistical tool for investigating and measuring the indirect effects of an independent variable on a dependent variable. This approach employs one or more mediator variables and is carried out using Model 4. This method, developed by Andrew F. Hayes, provides a comprehensive approach to understanding the mechanisms underlying observed relationships by breaking them down into direct and indirect pathways (Hayes, 2018). By using this analysis, researchers can determine the extent to which a mediator explains the relationship between the independent and the dependent variable, thus offering deeper insights into the causal processes at play.

Hayes Process mediation analysis is particularly valuable in social sciences, psychology, and behavioral research, where understanding complex interactions and intermediary effects is crucial for theory development and practical applications. Binary logistic regression using log-odds is a statistical approach for determining the association between one or more predictor and binary dependent variable. This technique estimates the probability that a given instance falls into one of the two categories of the dependent variable (Harrell & Harrell, 2015).

The relationship is expressed in terms of log-odds, which are the natural logarithm of the odds of the event occurring. The log-odds are linearly related to the independent variables, allowing for the calculation of odds ratios that indicate how changes in the predictors affect the likelihood of the event. By transforming the log-odds back into probabilities, binary logistic regression provides a straightforward way to interpret the effects of predictor variables on the outcome (Norton & Dowd, 2018). In Table 5 model is highly significant ($p < 0.01$) with an F-statistic of 1256.35, indicating that the predictor variable (Parental Involvement) significantly explains the variance in the outcome variable (Academic Motivation). The R-squared value of 0.78 means that approximately 78.31% of the variability in Academic Motivation can be explained by the predictor Parental Involvement. Parental Involvement coefficient is 0.99. This means that for each additional unit increase in Parental Involvement, Academic Motivation increases by approximately 0.99 units. The p-value for Parental Involvement is 0.00, indicating that this predictor is highly significant in explaining the variance in Academic Motivation. The 95% confidence interval for Parental Involvement [0.94, 1.05] does not include zero, confirming its significance.

Table 6 represents the results of a binary logistic regression analysis conducted using Hayes' PROCESS Model 4. The logistic regression analysis was used to predict the probability of a binary outcome (e.g., Dropout/Pass) based on one or more predictor variables. The coefficient for Parental Involvement is 3.13. This means that for each additional unit increase in Parental Involvement, the log-odds of passing increases by 3.13. The p-value for Parental Involvement is 0.00, indicating that the effect of Parental Involvement on the outcome is statistically significant. The 95% confidence interval for Parental Involvement (1.57, 4.68) does not include zero, further supporting its significance.

The coefficient for Academic Motivation is 2.36. This means that for each additional unit increase in Academic Motivation, the log-odds of passing increases by 2.36. The p-value for Academic Motivation is 0.00, indicating that the effect of Academic Motivation on the outcome is statistically significant. The 95% confidence interval for Academic Motivation (1.22, 3.51) does not include zero, further supporting its significance. The variable Parental involvement has a higher log-odds value (3.13) compared to Academic Motivation (2.36). Therefore, Parental Involvement shows a greater log-odds value with passing.

Table 7 shows direct effect of X on Y is 3.13, meaning that, holding Academic Motivation constant, a one-unit increase in X results in an increase of 3.13 units in Y. The effect is statistically significant ($p = 0.00$), and the confidence interval (1.57, 4.68) does not include zero, confirming its significance.

Table 5. Academic motivation mediates the relationship between parental involvement and academic outcomes (Dropout/Pass).

Model Summary						
R	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**
0.884	0.78	0.06	1256.35	1.00	348.00	0.00
Model						
	Coeff	**Se**	**T**	**P**	**LLCI**	**ULCI**
Constant	0.07	0.08	0.92	0.35	-0.08	0.23
Parental Involvement	**0.99**	0.02	35.44	**0.00**	0.94	1.05

Table 6. Parental involvement mediates the relationship between parental involvement and academic outcomes (Dropout/Pass).

Model Summary						
L	**Model L**	**Df**	**p**	**McFadden**	**CoxSnell**	**Nagelkrk**
248.39	210.13	2.00	0.00	0.45	0.45	0.61
Model						
	Coeff	**Se**	**Z**	**P**	**LLCI**	**ULCI**
Constant	-14.81	1.70	-8.66	0.00	-18. 16	-11. 46
Parental Involvement	3.13	0.79	3.94	0.01	1.57	4.68
Academic Motivation	2.36	0.58	4.05	0.00	1.22	3.51

Log-odds metric

Table 7. Direct, and indirect effects

Effects	**Se**	**z**	**p**	**LLCI**	**ULCI**
3. 13	0.79	3.94	0.00	1. 57	4. 68
Indirect Effect (s) of X on Y					
		Effects	**BootSE**	**BooLLCI**	**BootULCI**
Financial Resources		2. 36	0.83	0.70	4.09

The indirect effect of X on Y through Academic Motivation is 2.36. This suggests that part of the effect of X on Y is mediated by Academic Motivation. The bootstrapped confidence interval (0.70 4.09) does not include zero, indicating that the indirect effect is statistically significant.

Total Effect= Direct Effect + Indirect Effect

Total Effect=3.1311+2.3675=5.4986

This represents the overall impact of X on Y, including both the direct influence and the indirect influence through the mediator Academic Motivation. H2: Academic motivation mediates the relationship between parental involvement and academic outcomes (Dropout/Pass) in a complementary manner. The medaition model in Figure 4 has partial mediation. This suggests that independent variable (X) have a direct effect on outcome variable and indirect effect in the presence of mediator (Academic Motivation), therefore, H_1 is accepted.

Complementary Mediation: This suggests that X has a positive direct effect on Y, and this effect is enhanced or strengthened by the positive indirect effect through the mediator (Khan et al., 2024). The mediator (Academic Motivation) complements the relationship between X and Y, enhancing the overall effect of X on Y. This interpretation aligns with both the direct and indirect effects being positive and significant, indicating a supportive relationship between X, Academic Motivation, and Y in influencing passing in the logistic regression model. There exists complementary

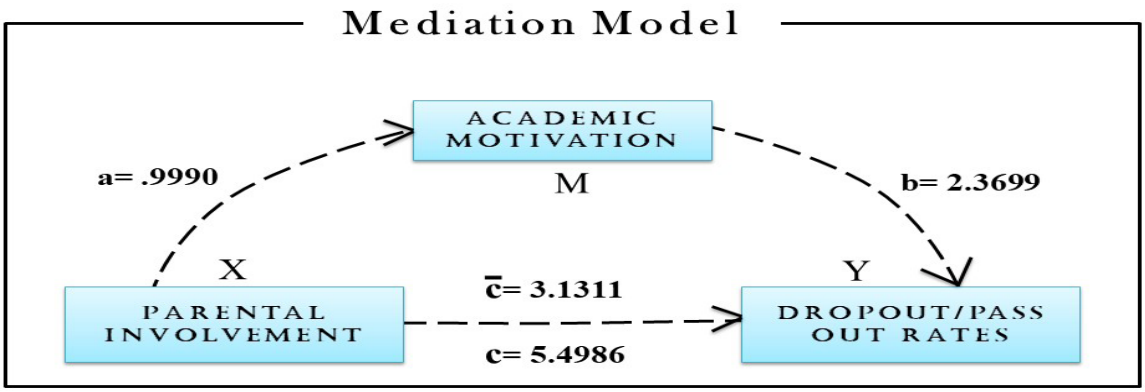

Figure 4. Mediation Model

mediation therefore, H_2 is accepted. Table 8 shows mean score of parental involvement for students who Dropout (2.44±0.27) is significantly lower than the mean score for students who Pass (3.07±0.40). There is a significant difference in parental involvement between students who Dropout and those who Pass. Higher parental involvement is associated with students who Pass, suggesting that parental involvement may play a crucial role in student success. The Figure 5 supports the t-test results, demonstrating a significant difference in parental involvement between students who Dropout (2.44 ± 0.27) and those who Pass (3.07 ± 0.40). The higher parental involvement among students who Pass suggests that parental involvement may be a critical factor in student success. Therefore, H_3 is accepted.

The Table 9 shows mean score of academic motivation for students who Dropout (2.43±0.30) is significantly lower than the mean score for students who Pass (3.18±0.43). There is a significant difference in academic motivation between students who Dropout and those who Pass. Higher academic motivation is associated with students who Pass, suggesting that academic motivation may play a crucial role in student success.

The Figure 6 supports the t-test results, demonstrating a significant difference in academic motivation between students who Dropout (2.43±0.30) and those who Pass (3.18±0.43). The higher academic motivation among students who Pass suggests that academic motivation may be a critical factor in student success. Therefore, H_4 is accepted.

Table 8. H_3: Pass students score significantly higher in the variable of parental involvement compared to Dropout students.

	Descriptive Statistics				Levene's Test for Equality of Variances		t-test for Equality of Means	
	Status	**N**	**Mean**	**Std. Deviation**	**F**	**Sig.**	**Sig. (2-tailed)**	**Mean Diff.**
Parental Involvement	Dropout	127	2.44	0.27	6.36	0.01	0.00	-0.63
	Pass	223	3.07	0.40			0.00	-0.63

Table 9. H_4: Pass students score significantly higher in the variable of academic motivation compared to Dropout students.

	Descriptive Statistics				Levene's Test for Equality of Variances		t-test for Equality of Means	
	Status	**N**	**Mean**	**Std. Deviation**	**F**	**Sig.**	**Sig. (2-tailed)**	**Mean Diff.**
Academic Motivation	Dropout	127	2.43	0.30	1.58	0.20	0.00	-0.75
	Pass	223	3.18	0.43			0.00	-0.75

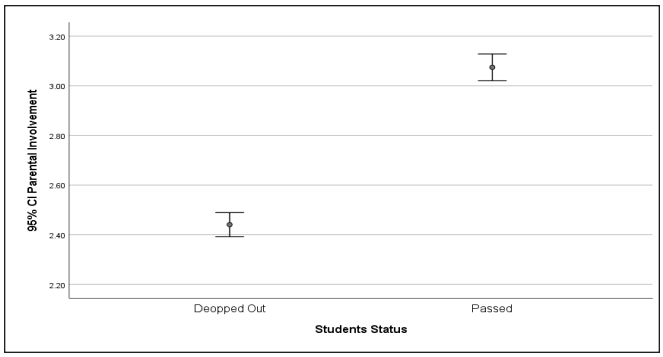

Figure 5. t-test results of Parental Involvment.

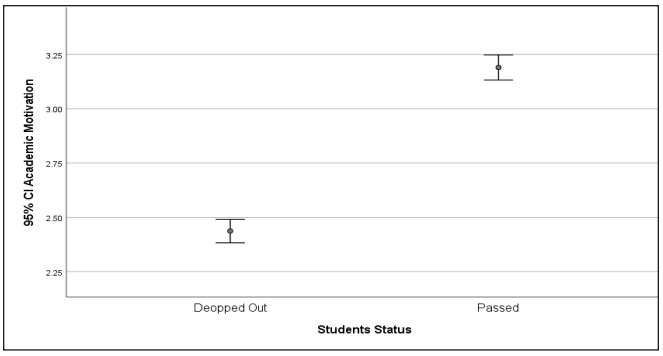

Figure 6. t-test results of Academic Motivation.

DISCUSSION

A normally distributed data was statistically analyzed through Statistical Package for Social Sciences version-26. A significant and positive association was observed among the variables of parental involvement, academic motivation and academic outcome. According to this study, academic motivation somewhat mediates the association between parental participation and students' academic results. Therefore, the academic motivation impacted academic outcome (β of passed out students higher than the dropout students) in the presence of parental involvement. Resultantly, complementary mediation was observed after the analysis. a higher and significant mean difference was observed between pass out and dropout students while comparing for the independent variable (Parental Involvement) and the mediating variable (Academic Motivation). This mean that passed students perceived more parental involvement than dropout students. Meanwhile, the passed students score higher in the variable of academic motivation as compared to the dropout students. It is concluded that parental involvement plays an important role in motivation and results of students either they passed or dropout.

According to the study, different types of parental involvement, such as socialization and emotional support, have a significant impact on adolescents' motivation and academic achievement (Hill & Tyson, 2009). A longitudinal study found that consistent parental support is crucial for maintaining students' motivation and improving their academic outcomes (Gonzalez et al., 2005). It was discovered that both direct involvement (e.g., helping with homework) and indirect involvement (e.g., setting high expectations) positively impact children's motivation and academic success (Fan & Chen, 2001). The researchers found a significant positive link between parental engagement students' intrinsic motivation, indicating that active parental engagement increase students' enthusiasm and interest in their academic pursuits (Marchant et al., 2001). The findings of the studies explain about the self-regulated and intrinsically motivated students wer significantly associated with improved academic performance and greater persistence in academic pursuits (Robbins et al., 2004; Elliot & Church, 1997; Pintrich & De Groot, 1990). Better academic outcomes are possible due to effective learning strategies and internal motivation regarding the academics (Zimmerman & Schunk, 2001).

A study was conducted among mathematics students found that high academic achievement encourages greater parental involvement, which in turn promotes academic success and brings about positive reinforcement (Silinskas & Kikas, 2019). The findings indicate that when their children excel academically, parents become more involved in discussions and provide academic support (Hill & Tyson, 2009). The study's findings demonstrated a positive association between student academic achievement and parental participation, which encourages greater exploration and involvement in children's academic pursuits (Pomerantz, Moorman & Litwack, 2007).

The study's findings demonstrate that students in urban schools with more parental participation are more academically motivated, which improves their academic achievements significantly (Jeynes, 2007). Using mediation analysis among 5th grade Spanish students, the researchers revealed that academic motivation mediates the association between parental participation and academic achievement. Improved academic performance are the result of improved academic motivation, which is driven by substantial involvement from parents (Rodríguez Martínez et al., 2017). The study found that in the presence of parental engagement, the educational level of parents actively moderates academic motivation in Karachi, Pakistan (Naeem & Khan, 2023). A study conducted in 2010 demonstrated that the combined mediating effects of academic motivation and self-regulation significantly improve academic outcomes in collaboration with parental involvement (Fan & Williams,

2010).

Delimitations

This study was carried out in Public Colleges (Boys) of district Bhakkar, (Punjab), Pakistan to get the responses on adopted questionnaire regarding parental involvement, academic motivation and with binary variable of academic outcome (Dropout and Pass) as an outcome variable.

CONCLUSION

This study highlights the significant roles of parental involvement and academic motivation in shaping academic outcomes among intermediate 1st-year students. The findings confirm that both factors contribute significantly to students' academic success, with parental involvement influencing academic motivation, which in turn impacts dropout rates and academic achievement. The results underscore the importance of fostering supportive environments that enhance parental engagement and promote intrinsic motivation among students.

Based on the findings, several key recommendations are suggested. Schools should implement programs and initiatives that encourage and support parental involvement in their children's education, such as workshops, parent-teacher meetings and associations, and regular communication channels (Naeem & Khan, 2023). Educationists and parents should focus on strategies that foster intrinsic motivation among students by providing meaningful learning experiences, goal-setting exercises, and recognition of achievements.

Early identification of students at risk of dropping out and providing tailored interventions addressing both academic and motivational factors is crucial. This could include mentoring programs, counseling services, and academic support. Additionally, policymakers should consider integrating measures to enhance parental involvement and academic motivation into educational policies to ensure sustained support across educational institutions and communities. For future directions, longitudinal studies would provide a deeper understanding of how parental involvement and academic motivation evolve over time and their sustained impact on academic outcomes. As this study focused on a specific cultural context (Bhakkar, Pakistan) and boys' public colleges, future research should explore how parental involvement and academic motivation vary across different cultural settings, socioeconomic backgrounds, and among opposite genders in private schools, colleges, and universities with larger sample sizes. Studies focusing on gender, locality, and races across educational systems and settings could provide insights into how varying educational policies and practices influence the relationships between parental involvement, academic motivation, and academic outcomes.

DECLARATION

Authors' Contribution Statement: Sardar Nasir Sohail Khan was responsible for the conceptualization and design of the study. Naseem Ullah contributed to data collection, analysis, and interpretation. Sofia Saba assisted in writing, editing, and reviewing the manuscript. All authors have read and approved the final version of the manuscript.

Ethical statement: This research adheres to the ethical guidelines established by the Committee on Publication Ethics (COPE). All procedures and methodologies used in this study comply with COPE standards, ensuring transparency, integrity, and respect for all participants involved.

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Conflict of Interest: The authors declare no conflict of interest.

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