
PARENTAL, PEER, AND TEACHER SUPPORT AS PREDICTORS OF ACADEMIC ENGAGEMENT AND ACHIEVEMENT; IMPLICATIONS FROM ECOLOGICAL SYSTEMS THEORY

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Abstract:

Background: Students' academic success is shaped not only by individual ability but also by the social environments in which they learn. Parental, peer, and teacher support have long been identified as key sources of influence, with each contributing differently to motivation, engagement, and achievement. Ecological systems theory emphasizes that these supports function within interconnected systems that shape learning outcomes. However, evidence on their relative influence remains mixed whose impact can vary across contexts. Academic engagement has been conceptualized as a pathway linking social support to achievement, yet its mediating role across different support sources requires further investigation.

Purpose/Aim: The study aimed to examine how parental, peer, and teacher support influence students' academic achievement directly and indirectly through academic engagement. This study further investigates whether engagement mediates the relationships between these sources of support and academic outcomes.

Methodology: A quantitative, cross-sectional design was employed, using structured questionnaires to collect data from secondary school students. A total of 457 responses were collected out of 624 distributed questionnaires, reflecting a high response rate.

Findings: Findings revealed that parental and teacher support significantly predicted academic engagement, which strongly influenced achievement. Mediation analysis confirmed that engagement mediated the effects of parental and teacher support on achievement. While peer support showed no significant direct or indirect effect on engagement or achievement.

Keywords: Parental Support, Peer Support, Teacher Support, Academic Engagement and Academic Achievement, Ecological Systems Theory

INTRODUCTION

The importance of academic engagement in shaping student performance is a widely acknowledged concept in education. Students face academic pressure and attention has been given to the factors that contribute to their involvement and success (Lynam et al., 2024). This increased attention to academic activity explains the need to determine the factors that can improve the involvement of students in learning processes (Brown et al., 2022). Scholars who have been able to base their studies on various theoretical points of view and empirical studies have been able to demonstrate that student performance is determined by a mixture of both internal and external factors. Internal factors are mostly associated with self-controlled and flexible psychological processes: the degree of student commitment to school, academic self-efficacy, and student perceptions of the balance between effort and ability (Arefian, 2022). These aspects mean the ability of the individual to mobilize motivation, persistence, and confidence, which are essential to long-term learning. Conversely, external factors are those that are facilitated by the wider sociocultural and ecological context such as role of families, schools, and cultural norms, which are not under the direct control of the individual (Zhou & Xiong, 2025). Such external factors have the potential to either facilitate or limit the growth of students hence the significance of enabling structures and resources in the environment.

This dual perspective is consistent with Bronfenbrenner's ecological systems theory (1977), which positions the child at the center of interconnected layers of influence, ranging from immediate family and school contexts to the wider community and societal institutions. The theory emphasizes that development is not an isolated process but rather the outcome of reciprocal interactions between the individual and their environment over time. A growing body of research affirms this framework by demonstrating that children's development is deeply embedded in social interactions, and that their educational and personal outcomes are shaped through ongoing engagement with significant others across these settings (Stodden et al., 2023). Achievement can be viewed not only as the result of

personal attributes but also as the product of a complex interplay between individual agency and contextual opportunities (Sjølie et al., 2022). Recognizing this interplay allows educators and policymakers to design interventions that simultaneously strengthen students' psychological resources while fostering supportive external environments that nurture growth and resilience.

It is well recognized that students' academic achievement is shaped not only by their own level of engagement but also by the roles of significant individuals in their social environment, such as parents, teachers, and peers (Nunes et al., 2025). These individuals provide guidance, feedback, and encouragement, which can either foster or hinder students' learning processes. In the present study, we focused on how students perceive support from these sources' parents, teachers, and peers and how such perceptions, together with their own engagement in school, may influence academic outcomes. Perceived support is particularly important because students' interpretations of encouragement often determine how effectively they respond to it. Student engagement, in line with the existing literature, was conceptualized as a multidimensional construct consisting of affective, behavioral, and cognitive dimensions (Appleton et al., 2008; Xu et al., 2022). Each of these components captures a different aspect of students' connection with learning, from emotional attachment to school, to active participation in classroom activities, to the mental investment in academic tasks.

Although a substantial body of research has examined the role of socializing agents such as parents, teachers, and peers as key sources of influence on students' academic achievement (Núñez-Regueiro et al., 2025; Olana et al., 2022; Bardach et al., 2023), much of this work tends to focus on these agents in isolation. This approach overlooks the reality that students are simultaneously embedded in multiple relationships, and the combined effect of these supports may be greater than the sum of their parts. This narrow focus limits our understanding of how multiple support systems may interact to shape learning outcomes in more complex ways. Interactions between family, school, and peer contexts may reinforce or contradict one another, producing outcomes that cannot be captured when studied separately. Similarly, previous studies have highlighted student engagement as a mediating factor in the relationship between support and achievement (Tao et al., 2022; Liu et al., 2023; Tomaszewski et al., 2022). Mediation is important because it explains not only whether support matters, but also how it translates into concrete academic outcomes. Engagement has often been treated as a single overarching construct, yet its multidimensional nature suggests that different types of support may influence affective, behavioral, and cognitive engagement in distinct ways. For instance, teacher support may foster behavioral participation, while parental support may be more strongly tied to emotional commitment, and peers may shape cognitive motivation through collaboration and competition. Despite these insights, relatively few studies have explored the extent to which all three forms of support parental, teacher, and peer collectively shape the three dimensions of engagement and, in turn, academic achievement within one integrated framework. Addressing this gap is critical because an integrated model provides a more realistic picture of the educational process, where support systems and engagement dimensions operate together.

LITERATURE REVIEW

Theoretical Foundation

A theoretical foundation for the proposed model can be built on the idea that student learning is shaped through a dynamic interplay between individual engagement and the broader social environment. Academic engagement, conceptualized as behavioral, emotional, and cognitive involvement in learning, is described as a way through which external supports influence achievement (Appleton et al., 2008; Xu et al., 2022). Engagement as a mechanism that translates encouragement, guidance, and feedback into sustained effort and performance. An ecological systems theory by Bronfenbrenner (1977) can be used to support the explanation of this process because it highlights the idea that students grow in contextually interdependent layers of influence such as family, school, and peer settings. Instead of operating independently, these systems are interactive and supportive of one another to form a network of support that has the potential to build resilience and academic achievement (Butler et al., 2022). Proximal socializing agents are parents, teachers and peers whose contacts with the student directly influence their readiness to be involved in academic activities.

Previous studies indicate that the assistance of such agents is crucial not only in the provision of resources but also in the development of motivation, sense of belonging, and the perceived competence (Sulimani-Aidan & Melkman, 2022), but support does not ensure success. The way its influence is filtered is by the level of engagement the students have which determines how the external encouragement is converted into meaningful learning results (Perry et al., 2010). This intermediating nature of engagement brings out the relevance of the interrelation of the two sources of psychological and social structures on one platform. The current model acknowledges that academic achievement is a product of an integrative process, in which parental, teacher, and peer support are brought together to promote student engagement, which further promotes performance. This view builds on the previous studies by accepting the connectedness of various support systems and their ability to support success by engaging in long-term interaction (Wentzel, 2012; Danielsen et al., 2010).

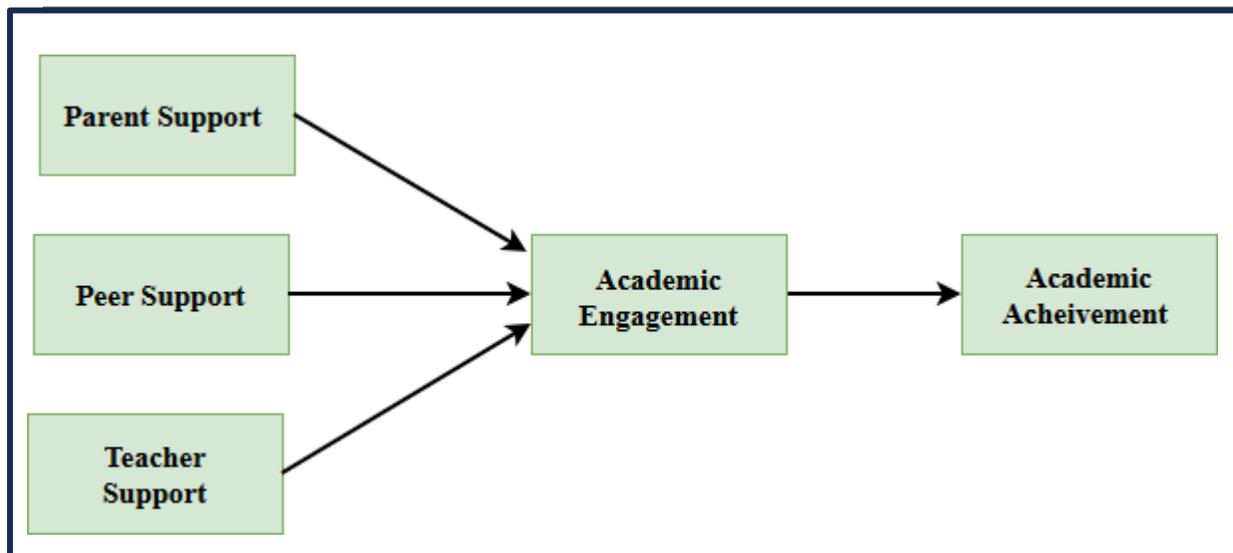


Figure 1: Research Model

Hypotheses Development

Parental support plays a crucial role in students' academic development by providing emotional and instrumental resources that strengthen their engagement in learning. Engagement, as behavioral, emotional, and cognitive investment, depends heavily on supportive home environments that build confidence and persistence (Li et al., 2023). Prior studies show that parental encouragement is positively related to emotional connection and classroom participation (Yang et al., 2023; Yang et al., 2022), with similar findings across cultures (Fan & Chen, 2022; Lam et al., 2012). Grounded in Bronfenbrenner's ecological systems theory (1977), parents as part of the microsystem directly influence everyday learning behaviors (Eccles et al., 2006). We argue that parental support strengthens engagement across emotional, behavioral, and cognitive domains.

H1: Parental support has a positive effect on academic engagement.

Peer support also plays a vital role in shaping engagement, as peers provide collaboration, encouragement, and belonging that motivate academic effort (Fredricks et al., 2004; Appleton et al., 2008). Studies link supportive peer interactions with school participation, persistence, and deeper cognitive involvement (Shao & Kang, 2022). Drawing on ecological systems theory, peers, as part of the microsystem, directly affect students' attitudes and willingness to engage (Bronfenbrenner, 1977; Eccles et al., 2006). We argue that peer support enhances students' focus and active participation.

H2: Peer support has a positive effect on academic engagement.

Teacher support directly shapes how students connect with school, as supportive teachers foster motivation, participation, and commitment (Han, 2021). Evidence shows that teacher encouragement predicts higher effort and emotional connection (Pekrun, 2021), while trust and respect in teacher-student relationships foster deeper engagement (Li & Lerner, 2013; Fan & Chen, 2022). In line with ecological systems theory, teachers in the microsystem provide both instructional and emotional resources that promote sustained learning (Bronfenbrenner, 1977; Eccles et al., 2006). We argue that teacher support strengthens behavioral, emotional, and cognitive engagement.

H3: Teacher support has a positive effect on academic engagement.

Academic engagement is a strong predictor of academic achievement, as it reflects students' behavioral, emotional, and cognitive investment in learning (Appleton et al., 2008; Xu et al., 2022). Engaged students demonstrate better attendance, self-regulation, and learning strategies, which directly enhance performance. Empirical evidence shows that higher engagement is associated with improved grades and persistence (Zhong et al., 2022), with comparable studies confirming its predictive value across contexts (Fan & Chen, 2022; Danielsen et al., 2010). Expectancy-value theory further supports this link, emphasizing that students achieve more when they value learning and anticipate success, both expressed through active engagement (Eccles et al., 2006). We argue that consistent participation, emotional connection, and cognitive effort make engagement a direct driver of achievement.

H4: Academic engagement has a positive effect on academic achievement.

Student achievement is rarely the result of isolated influences; rather, it emerges from the continuous interplay between social supports and individual effort. Parental, peer, and teacher support each provide crucial resources emotional encouragement, academic guidance, and a sense of belonging that shape how students experience school. Yet these external supports alone do not automatically translate into higher achievement. Their effectiveness depends on how students internalize them and transform them into sustained effort, motivation, and persistence in learning activities. This process is best captured through the construct of academic engagement. Engagement represents the immediate

expression of how students respond to and act upon the support they receive. When parents show encouragement, students may feel more emotionally connected to school; when peers provide collaboration, students may become more cognitively invested; and when teachers demonstrate care, students may increase their behavioral participation (Yang et al., 2023; Jin et al., 2022; Zhang et al., 2012). These responses highlight that social support shapes achievement indirectly by fostering the energy and commitment necessary for success.

The logic of this relationship is consistent with Bronfenbrenner's ecological systems theory (1977), which emphasizes that individual outcomes are shaped by ongoing reciprocal interactions within immediate contexts. Family, peer, and school systems create conditions that nurture or constrain engagement, and it is through this engagement that the broader ecological influences manifest in concrete academic performance (Eccles et al., 2006). Thus, achievement reflects not only the availability of supportive contexts but also students' active participation within them. From this perspective, engagement becomes the central mechanism that carries the effects of parental, peer, and teacher support forward into tangible academic outcomes. Without engagement, even the most supportive environments may fail to translate into higher achievement. With it, however, the resources embedded in these relationships are activated and transformed into persistence, focus, and improved performance.

Academic engagement mediates H5: between parent support and academic achievement, H6: peer support and academic achievement, H7: teacher support and academic achievement.

METHODOLOGY:

The proposed model of the relationship between parental, teacher, and peer support and academic engagement and achievement was tested with the help of a quantitative and cross-sectional survey design. The students of secondary and higher secondary schools in Pakistan constituted the population of this study. This sample was chosen due to the fact that the constructs of interest parental support, teacher support, peer support and academic engagement are most applicable at the adolescence stage of development since at this stage, social factors have a strong influence on academic performance. Students in this stage also face critical academic transitions that have long-term implications for educational achievement, making them an appropriate population for testing the study model. The sample was drawn from urban and semi-urban areas such as Lahore, Faisalabad, and Multan, where schools are concentrated, and where diverse institutional contexts (public and private) made the findings more widely applicable. A stratified random sampling technique was used to ensure representation across institutional types and grade levels. Stratification was considered suitable because schooling experiences in Pakistan vary significantly between public and private systems, and including both strengthened the generalizability of the results. The sample size was determined following the item to response theory, with 30 questionnaire items requiring a minimum of 300 respondents (10:1 ratio). To address potential nonresponse, 450 questionnaires were distributed, of which 345 valid responses were returned, yielding an effective response rate of 76%. This sample size was adequate for conducting item response theory analyses and structural equation modeling. Data was analyzed using SPSS and Smart PLS.

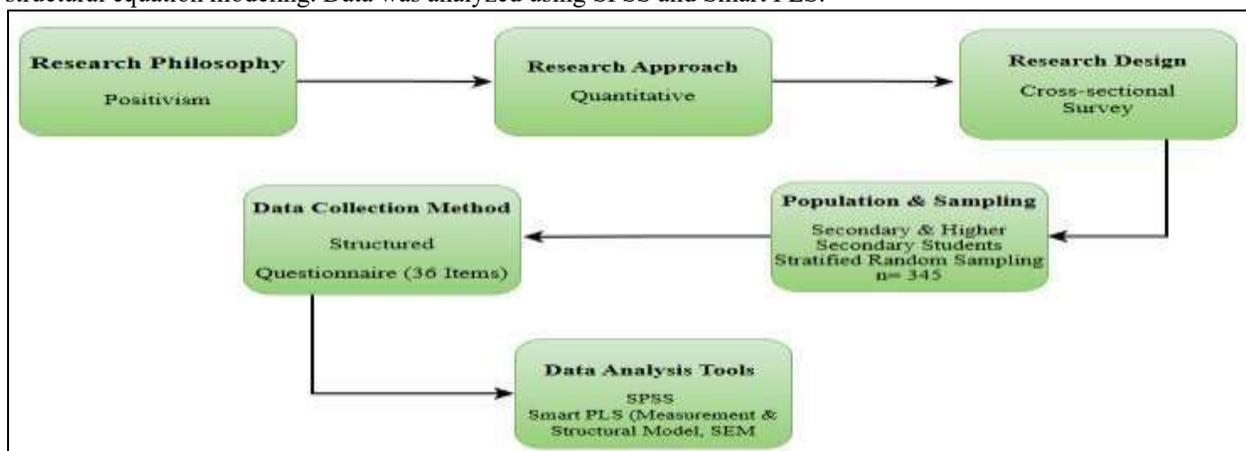


Figure 2: Research Design of the Study

Measurements:

The research used a structured questionnaire of 36 items that were created to assess parental support, teacher support, peer support, academic engagement, and academic achievement. Everything was modified based on the existing scales used in previous studies to guarantee content validity and rated on a seven-point Likert scale (strongly disagree, 1; strongly agree, 7). Items of parental support and peer support were taken in the study by Jelas et al. (2016) that have been extensively used in the field of educational research whereas teacher support items were taken in the study by Ryzin et al. (2009). The academic engagement was assessed by 9 items based on the (Schaufeli et al., 2006). Academic

performance was measured using 4 items that had been used in previous researches on the performance of students (Maqableh et al., 2021).

Data analysis:

Table 1: Reliability and Validity Statistics

Variables	Items	Indicators	Factor Loadings
Academic Engagement	AENG1	Cronbach's alpha= 0.905 CR= 0.906 AVE= 0.679 R ² = 0.431	0.813
	AENG2		0.816
	AENG3		0.809
	AENG4		0.856
	AENG5		0.852
	AENG6		0.797
Academic Achievement	AP1	Cronbach's alpha= 0.830 CR= 0.842 AVE= 0.663 R ² = 0.191	0.740
	AP2		0.839
	AP3		0.839
	AP4		0.836
Peer Support	PEES1	Cronbach's alpha= 0.934 CR= 0.923 AVE= 0.854	0.849
	PEES2		0.956
	PEES3		0.963
Parental Support	PS1	Cronbach's alpha= 0.941 CR= 0.944 AVE= 0.774	0.868
	PS2		0.912
	PS3		0.873
	PS4		0.909
	PS5		0.849
	PS6		0.865
Teacher Support	TP1	Cronbach's alpha= 0.953 CR= 0.957 AVE= 0.751	0.888
	TP2		0.869
	TP3		0.855
	TP4		0.828
	TP5		0.866
	TP6		0.891
	TP7		0.820
	TP8		0.912

A Cronbach alpha with a value greater than 0.70 is typically regarded as the minimum acceptable level of internal consistency in measurement assessment, i.e. that items used to measure a construct are greatly correlated and capture the same underlying construct (Hair et al., 2022). All the constructs in this study met this standard which means that scales are stable and consistent. Similarly, the composite reliability (CR) values being above 0.70 demonstrate that the constructs are free from random measurement error and reliably capture the intended concepts across items. Average variance extracted (AVE) values above 0.50 further confirm convergent validity, as each construct accounts for more than half of the variance in its observed indicators, thereby reducing concerns of poor representation or weak measurement (Fornell & Larcker, 1981). High factor loadings, with most items loading above 0.80, suggest that individual items strongly represent their latent variables, strengthening the scale's construct validity.

In terms of explanatory power, the R² value for academic achievement (0.191) indicates that academic engagement explains about 19.1% of its variance, while academic engagement itself is explained by external supports at 43.1%. These values reflect moderate predictive power in line with PLS-SEM guidelines (Hair et al., 2022). The significant contributions of parental and teacher support to engagement reinforce Bronfenbrenner's ecological systems theory, which posits that student development is influenced by both personal effort and the immediate social environment (Bronfenbrenner, 1977; Eccles et al., 2006). This highlights that engagement acts as the key mechanism through which external supports are transformed into academic achievement.

Table 2: HTMT Ratio

Variables	1	2	3	4	5
Academic Engagement					

Academic Achievement	0.494				
Peer Support	0.041	0.097			
Parental Support	0.611	0.529	0.093		
Teacher Support	0.619	0.460	0.129	0.576	

The HTMT ratio values in the table 2 are all well below the conservative threshold of 0.85, which indicates strong discriminant validity among the constructs (Henseler et al., 2015). This means that academic engagement, achievement, and the different sources of support (parental, peer, and teacher) are empirically distinct and not overlapping in measurement. The highest HTMT value (0.619 between teacher support and engagement) is still within acceptable limits, indicating that peer support is relatively independent in this context.

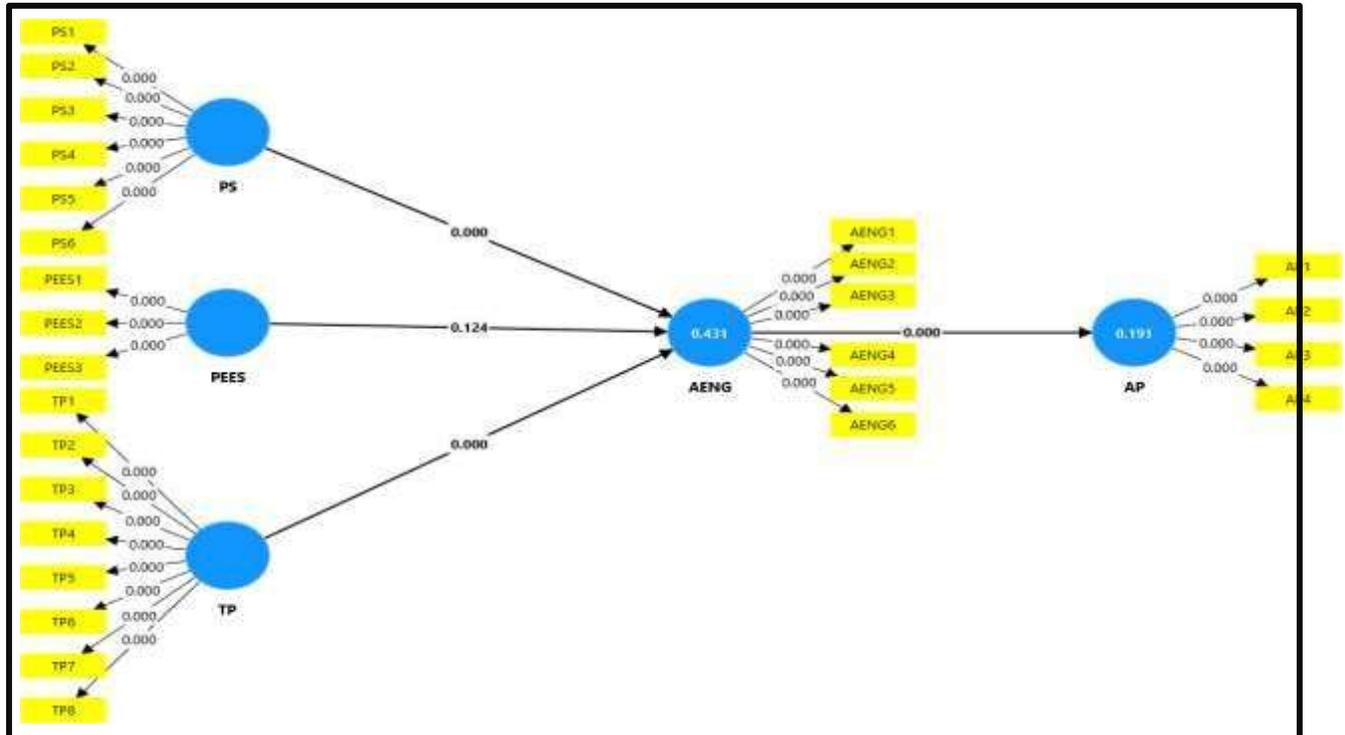


Figure 3: Structural Equation Modelling

Table 3: Model Fitness Indicators

	Saturated model	Estimated model
SRMR	0.055	0.075
d_ ULS	1.164	2.147
d_ G	0.746	0.768
Chi-square	1459.493	1491.993
NFI	0.825	0.821

The model fit indices show acceptable values for PLS-SEM. The SRMR values (0.055 for the saturated model and 0.075 for the estimated model) are below the recommended cut-off of 0.08, indicating a good fit between the observed and predicted data (Hu & Bentler, 1999). The d_ ULS and d_ G values are close between the saturated and estimated models, suggesting consistency in model approximation. The chi-square difference is small, which supports stability of the model. Finally, the NFI values (0.825 and 0.821) exceed the 0.80 threshold, reflecting a reasonably good fit, though slightly below the ideal 0.90 benchmark.

Table 4: Direct Hypotheses Testing

Hypotheses	Original sample	Standard deviation	T statistics	P values
H1: PS -> AENG	0.356	0.053	6.664	0.000
H2: PEES -> AENG	-0.068	0.044	1.540	0.124
H3: TP -> AENG	0.396	0.047	8.347	0.000
H4: AENG -> AP	0.437	0.057	7.649	0.000

Note: Parental Support, Academic Engagement, Peer Support, Teacher Support Academic Performance

The structural results show that academic engagement has a strong and significant positive effect on academic achievement ($\beta = 0.437, p < 0.001$), confirming its central role in student performance. Parental support ($\beta = 0.356, p < 0.001$) and teacher support ($\beta = 0.396, p < 0.001$) both significantly enhance academic engagement, highlighting the importance of family and school environments. In contrast, peer support has a negative but non-significant effect on engagement ($\beta = -0.068, p = 0.124$), suggesting that peers may not play a decisive role in fostering engagement in this context.

Table 5: Mediation effect

Hypotheses	Original sample	Standard deviation	T statistics	P values	2.5% 97.5%
H5: PS -> AENG -> AP	0.155	0.035	4.429	0.000	0.093 0.232
H6: TP -> AENG -> AP	0.173	0.032	5.449	0.000	0.115 0.239
H7: PEES -> AENG -> AP	-0.030	0.019	1.535	0.125	-0.063 0.013

Note: Parental Support, Academic Engagement, Peer Support, Teacher Support Academic Performance

The mediation results indicate that academic engagement significantly mediates the effects of parental support ($\beta = 0.155, p < 0.001$) and teacher support ($\beta = 0.173, p < 0.001$) on academic achievement, as the confidence intervals do not include zero. This shows that both forms of support improve achievement indirectly by fostering higher engagement. In contrast, the mediation pathway for peer support is non-significant ($\beta = -0.030, p = 0.125$), suggesting that peer influence does not translate into achievement through engagement in this context.

DISCUSSION:

The results of this study provide strong evidence that academic engagement operates as a key mechanism through which different sources of social support influence student achievement. The hypotheses supported prove that both the parental and teacher support are important to promote the engagement that consequently leads to the academic success. These results are consistent with the ecological systems theory that focuses on the interaction of various agents of socialization in the formation of developmental and academic trajectories in students (Bronfenbrenner, 1977; Eccles et al., 2006).

The fact that parental support has a significant impact on academic engagement proves that the family continues to play a key role in the learning process of students. The resources are not only provided by parents but also expectations, encouragement, and emotional assurance are communicated, which helps students build the persistence and motivation necessary to engage in active learning (Li et al., 2023; Yang et al., 2023). Earlier research has pointed out that children whose parents are supportive tend to put effort into it, become resilient, and become behaviorally engaged (Sulimani-Aidan and Melkman, 2022). Family direction, in cultural contexts where it can be very significant, is even more of an influence in the direction of student engagement and future academic trajectories (Butler et al., 2022). The existing evidence supports the idea that family-oriented interventions, like parental training courses or home-school partnership programs, can be helpful to increase student engagement and the following academic success.

Academic engagement was not significantly linked with peer support. This is in contrast to research that has found that peers can have a positive effect on motivation, cooperation, and persistence in learning (Fredricks et al., 2004; Shao and Kang, 2022). There is a possibility that some of the peers will offer academic encouragement; others will encourage distractions and social activities incompatible with school attendance. The insignificance effect in this study implies that peer relations in the sampled environment might have acquired more in terms of social belonging than academic cooperation. Cultural and institutional structures often prioritize the authority of parents and teachers over peers in guiding academic choices, which may diminish the salience of peer support in academic domains (Nunes et al., 2023). This outcome highlights the need for future research to differentiate between academically oriented peer support and socially oriented peer support, as their impacts on engagement may vary considerably.

Teacher support was found to have the strongest influence on engagement, highlighting the primary of teachers of motivation and classroom participation. This is consistent with previous evidence showing that teacher encouragement, feedback, and classroom climate directly predict students' emotional, cognitive, and behavioral involvement in learning (Han, 2021; Pekrun, 2021). Teachers structure learning environments, provide scaffolding, and cultivate a sense of belonging that helps students sustain focus and effort (Liu et al., 2023; Tomaszewski et al., 2022). The magnitude of the teacher, engagement path in this study aligns with research suggesting that positive student-teacher relationships can increase against disengagement and foster academic resilience (Tao et al., 2022). Academic engagement is a strong predictor of achievement, confirm that engaged students not only attend and participate more but also employ deeper learning strategies that enhance academic performance (Appleton et al., 2008; Xu et al., 2022). This supports the argument that engagement is the behavioral manifestation of underlying motivation, making it a critical mediator between external supports and actual performance. In this study, academic engagement mediated the relationship between both parental and teacher support and achievement, further validating the role of engagement as the driver of academic outcomes (Jelas et al., 2016; Tao et al., 2022). By contrast, the indirect effect of peer support through engagement was not significant, which reflects the earlier relationship which shows the absence of a direct peer, engagement relationship.

Theoretical contributions

This study offers several theoretical contributions by understanding of how different forms of social support influence student achievement through academic engagement. It strengthens the application of ecological systems theory by empirically confirming that both parental and teacher support significantly shape engagement, which then translates into higher achievement. While ecological theory emphasizes the combined impact of multiple socializing agents, the present findings clarify that the relative strength of these agents differs, with teachers and parents exerting stronger effects than peers in this context. This extends existing theory by highlighting that ecological influences are not uniform but contingent on cultural, institutional, and contextual factors. The study contributes to engagement research by reinforcing its role as a central mediating construct. Prior work has conceptualized engagement as a bridge between external support and academic performance, but much of the evidence has been scattered. By showing consistent mediation in the parental and teacher pathways, this study provides integrated support for engagement as the mechanism that translates external encouragement into tangible achievement outcomes. This strengthens theoretical models that position engagement as both a motivational and behavioral construct central to academic success. The non-significant role of peer support offers a critical theoretical insight. While previous research often emphasizes positive peer effects, the prevailing findings indicate that peer support not always enhance engagement or achievement. This challenges assumptions of uniform peer influence and suggests that theoretical frameworks must account for the quality and orientation of peer relationships. The current study provides a more differentiated understanding of how peer dynamics operate within ecological systems.

Limitations and future Research directions

This study has several limitations that should be acknowledged. The study was conducted within a specific cultural and institutional context, which may limit the generalizability of findings. The non-significant role of peer support may reflect contextual dynamics rather than universal patterns. Future research should therefore adopt longitudinal and mixed-method designs to capture the dynamic interplay between support systems and engagement over time. Studies could also disaggregate peer support into academic and non-academic forms to clarify when peer relationships foster or hinder learning. Cross-cultural comparisons would help identify how contextual and cultural factors shape the relative influence of parents, teachers, and peers. Exploring moderating variables such as gender, socioeconomic status, or school type could further enrich understanding of how support systems operate differently across student groups. This Peer support findings the need for future research to differentiate between academically oriented peer support and socially oriented peer support, as their impacts on engagement may vary considerably.

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