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Article

The relationship between teachers' self-efficacy and classroom management practices in secondary schools

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Abstract: This study explores the intricate relationship between teacher self-efficacy and classroom management practices in secondary schools in the Mansehra district of Pakistan. Teacher self-efficacy, defined as the belief in one's ability to manage and influence classroom environments effectively, has been identified as a critical factor influencing both teaching performance and student outcomes. The research employed a mixed-method approach, gathering data from 62 teachers and 310 students using both online surveys (via Google Forms) and physical questionnaires to ensure a diverse and inclusive participant pool. Data analysis was conducted using two complementary tools: SPSS and Smart PLS. SPSS was used for descriptive statistics and inferential analyses, such as t-tests, chi-square tests, and measures of central tendency, to offer an overview of group differences and relationships between variables. Meanwhile, Smart PLS was employed for Partial Least Squares Structural Equation Modeling (PLS-SEM), a technique suited for complex models and smaller sample sizes. This method allowed for the analysis of both direct and indirect relationships between the study variables—teacher self-efficacy, teaching practices, and classroom management. The findings reveal a significant positive correlation between teacher self-efficacy and classroom management practices. Additionally, teaching practices were found to mediate this relationship, indicating that higher levels of self-efficacy not only directly improve classroom management but also enhance teaching performance, which in turn contributes to better-managed classrooms. These results suggest that interventions aimed at enhancing teacher self-efficacy can have far-reaching effects on educational outcomes. The study highlights the need for focused teacher development programs that foster self-efficacy, thereby improving classroom management, student engagement, and overall academic success.

Keywords: teacher self-efficacy; classroom management; teaching practices; SPSS; Smart PLS; educational outcomes; Pakistan

1. Introduction

Self-efficacy refers to a cognitive factor associated with individuals' health, well-being, and performance. Hussain et al. [1] quoted in their study the Bandura concept, which defines self-efficacy as *"a judgment of one's capability to accomplish a given level of performance".* The concept is related to other cognitive factors, such as self-concept and self-esteem, locus of control, and all parts of the individual's system of beliefs. In the cognitive-behavioral paradigm, in a stressful or demanding situation, an individual's system of beliefs generates rational or irrational beliefs about the event, leading to automatic thoughts [2].

Kuehn et al. [3] posit that individuals tend to accept these thoughts as valid without reflecting. These thoughts subsequently give rise to specific consequences,

including emotions, behaviors, and further thoughts. Therefore, the cognitive framework, shaped by life experiences during childhood and adolescence, plays a significant role in influencing our emotional and behavioral responses in challenging situations [4]. People who perceive themselves as ineffective often restrict their engagement and initiation in a task, perceiving the task's challenges as insurmountable [5]. Conversely, those who have confidence in their abilities will seek various methods to manage the situation and achieve the desired outcome [6]. Research has illustrated a substantial connection between the variables of efficacy and behavior. Studies have shown that therapy centered on self-efficacy aids individuals with phobias in conquering their fears and adopting appropriate behaviors [7]. In educational environments, educators with high self-efficacy anticipate success in classroom practices, encompassing effective teaching and proficient student management. One of the main variables in this study is classroom management practices, which include the methods and approaches teachers employ to enhance a positive learning environment for students [8]. This includes environmental management, which emphasizes the design of physical resources and their use [9]; behavioral management, which involves teachers establishing directions and discipline measures to avoid and address misconduct [10]; instructional management, which deals with ways to deliver content and sustain student engagement effectively [11]; interpersonal relationships, which address the growth of positive dynamics between teachers and students; and communication strategies to guarantee that educational goals are understood [12]. These elements are measured using certain indicators in our survey instrument, which records the variety of classroom management strategies instructors use and investigates how they affect learning environments. This outlook influences how they perceive achievements and setbacks, the benchmarks they establish, and their strategies for managing challenging instructional situations [13]. Robust self-efficacy beliefs serve as a buffer against stress and burnout, and a teacher's sense of self-efficacy, along with their job satisfaction, is intertwined with instructional methods and student performance [14]. The connection between beliefs and practice is thoroughly documented. Nevertheless, additional research is needed to explore the link between perceived self-efficacy and effective classroom management [15].

Numerous research studies examining the relationship between teacher self-efficacy and classroom management have been conducted in different countries. The literature suggests that researchers have devoted less attention to the interplay between teaching practices and experience with these variables, especially in emerging nations such as Pakistan, potentially offering new and valuable insights. Furthermore, the present research focuses on the following hypotheses:

H1: Teacher self-efficacy positively influences classroom management.

H2: Teacher performance positively influences classroom management.

H3: Teacher self-efficacy positively influences teacher performance.

H4: Teacher self-efficacy influences classroom management indirectly through teacher performance.

2. Research framework

According to Gulistan et al. [16], classroom management (CM) refers to the

effective and efficient use of all resources available in the classroom setting to meet the teaching and learning process's goals and objectives. It is a technique used by teachers to ensure that classroom lessons operate smoothly despite disruptive student behavior [17]. Classroom management also entails avoiding student disturbance [18]. Classroom management is a set of skills and procedures that the teacher uses in the classroom to keep the students organized, focused, alert, orderly, on task, and academically productive [19]. Many studies show that teachers' actions in the classroom are more significant than all school administrators' other arrangements [20]. There is a wide range of teaching and learning materials for teachers. Some writers focus on the individual traits of the teacher; others stress their roles and skill sets. It is essential to create the right atmosphere in the classroom. To accomplish this task, the teacher must practice class management based on constructive and productive relationships with the students [21].

The connection between teacher self-efficacy and the classroom management of higher secondary schools in Pakistan remains an area with limited research. To fill this gap, our current study aims to comprehensively explore the influence of these concepts within a unified framework. Our research framework scrutinizes the correlation between teacher self-efficacy, classroom management, and the mediating role of teaching practice (see **Figure 1**). While some prior studies have suggested that teachers with high self-efficacy exhibit stronger coping skills, the intricate relationship between teaching self-efficacy, teaching practice, and classroom management necessitates further investigation. Therefore, our present study strives to probe teacher self-efficacy with teaching practice as an additional construct intertwined with classroom management. Previous literature has established a strong link between self-efficacy and classroom management.

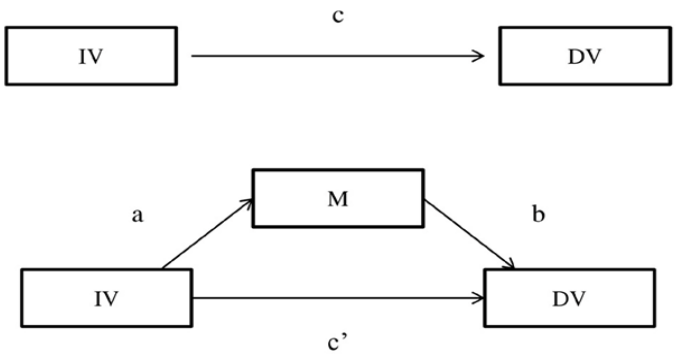

Figure 1. Mediation Model. IV = Independent Variable; DV = Dependent Variable; M = Mediator. Path a = Direct relationship between IV and M; Path b = Direct relationship between DV and M; Path c = Direct relationship between IV and DV; Path c' = Indirect mediation effect of IV on DV through M.

3. Participants and procedure

This study included sixty-two class teachers, 36 male and 26 female, along with 310 students from secondary schools in the Mansehra district of Pakistan; see **Figure 2**. The student group consisted of 180 males and 130 females. Breaking it down by age, there were 115 students at age 14, with 63 males and 52 females. The number

rose to 136 students at age 15, including 70 males and 66 females. However, participation dropped at age 16, with only 59 students, 47 males and 12 females; see **Figure 3**. A simple random sampling method was employed to ensure each participant had an equal chance of being selected, thus minimizing bias. The Mansehra district in Pakistan was selected for this study due to its unique cultural and educational landscape. The students' ages ranged from 14 to 16 years, reflecting a balanced distribution across various developmental stages relevant to this study, as presented in **Table 1**. Including a broad age range adds reliability and depth to the findings, as the age differences could influence their perspectives on the research topic. Data were collected from secondary school teachers and students online and face-to-face to accommodate varying access levels and preferences. Google Forms was utilized for digital responses, selected for its user-friendly interface and effective reach across a diverse respondent group. Additionally, physical questionnaires were distributed directly in schools to engage those without reliable internet access, thus broadening participation and enhancing the inclusivity of the feedback gathered. This mixed-method approach was crucial in providing a comprehensive view of the educational dynamics from both student and teacher perspectives. By integrating Google Forms with direct questionnaire distribution, the study successfully captured a broad range of viewpoints, enriching the data set for more detailed analysis. Regarding the response rate, 70 questionnaires were distributed to teachers, with 62 returned, resulting in an 88.6% response rate. For the students, 350 questionnaires were distributed, with 310 responses collected, indicating an 88.6% response rate. This high level of participation contributes to the robustness of the study's findings.

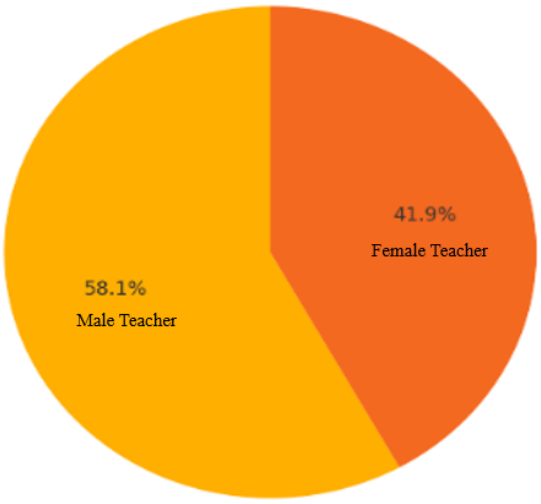

Figure 2. Teacher demographics.

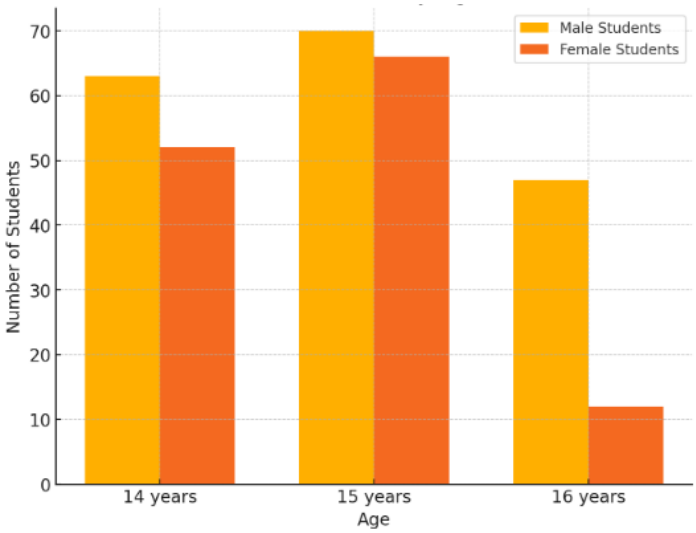

Figure 3. Students' demographics.

Measures

Teacher sense of self-efficacy and practices scale: This study on teachers' self-efficacy utilized ten statements developed by Duffin et al. [22]. The statements were rated on a five-point Likert scale, ranging from one ("Never") to four ("Always"). Sample statements included, for instance, the ability to maintain a friendly classroom environment, to minimize interruptions, and to adapt behavior for improved situations. The scale employed in this research demonstrated validity and satisfactory internal consistency, as indicated by a Cronbach's alpha value of 0.857.

Classroom management practices: The scale developed by Willower et al. measures Pupil Control Ideology (PCI) [23]. It consists of a 10-item Likert-type scale with responses ranging from "Never" to "Always". This tool assesses a teacher's approach on an ideological spectrum from custodial (more controlling) to humanistic (less controlling). The adapted scale in this study showed good validity and internal consistency, with a Cronbach's alpha of 0.779.

4. Data analysis

In this study, both SPSS and Smart PLS were employed to ensure a thorough and multifaceted analysis of the data. Each tool was selected for its unique strengths and compatibility with the different phases of the research. SPSS was employed for descriptive statistics and basic inferential analyses, such as t-tests, chi-square tests, and the calculation of percentages and means. SPSS was chosen for its ease of use and effectiveness in handling large datasets, providing a clear overview of data distributions and relationships [24]. It also enabled us to compute statistical tests to examine group differences and relationships between variables, ensuring the robustness of our initial findings [24]. On the other hand, Smart PLS was utilized primarily for conducting Partial Least Squares Structural Equation Modeling (PLS-SEM). This technique is ideal for exploring complex models, especially those involving mediating variables, as it allows for the analysis of direct and indirect relationships [25]. PLS-SEM was chosen because it is well-suited for predictive research and can handle smaller sample sizes effectively. Using Smart PLS, we were

able to model the relationships between teacher self-efficacy, classroom management, and teacher practices while also estimating the indirect effects through bootstrapping. This tool is particularly valuable for theory development and refining models in educational research [25]. This dual approach allowed for a comprehensive and reliable analysis, ensuring both depth and accuracy in interpreting the data.

Table 1. Reliability and validity.

Factor	Items	Factor loading	Cronbach's Alpha	Composite Reliability	AVE
Teacher Self-Efficacy (TSE)	TSE1	0.739	0.836	0.817	0.550
	TSE2	0.693			
	TSE3	0.646			
	TSE4	0.648			
	TSE5	0.616			
Teaching Practices (TP)	TP1	0.652	0.801	0.803	0.502
	TP2	0.687			
	TP3	0.719			
	TP4	0.59			
	TP5	0.697			
Classroom Management (CM)	CM1	0.664	0.657	0.802	0.586
	CM2	0.746			
	CM3	0.789			
	CM4	0.701			

4.1. Measurement models

In this study, researchers utilized Smart PLS 4 statistical software to conduct confirmatory factor analysis during the initial data analysis stage. Notably, structural equation modeling (PLS-SEM) was employed, which is known for its lower sensitivity to sample size and distribution assumptions compared to covariance-based structural equation modeling (CB-SEM). Several measurement indicators were considered to evaluate the constructs' reliability, including Cronbach's alpha, factor loading, and composite reliability. The threshold of 0.07 for factor loadings, often cited in exploratory studies, was derived from empirical recommendations suggesting that loadings above this value significantly contribute to construct reliability. However, this threshold is not universally fixed and may vary based on the study's context and complexity [26]. The average variance extracted (AVE) index, utilized to measure convergent validity, exceeded the commonly accepted threshold of 0.50, confirming that the scales used in this study demonstrated adequate discriminant validity. This threshold is well-supported in the literature, as outlined by Cheung et al. [27].

For additional details regarding other indicators' reliability and threshold values, **Table 1** presents data on the reliability and validity of measures used to assess teacher self-efficacy, teaching practices, and classroom management. Each factor is broken down into several items, with associated factor loadings, Cronbach's Alpha, composite reliability, and average variance extracted (AVE) listed. For Teacher Self-Efficacy (TSE), there are five items (TSE1 through TSE5) with factor loadings ranging from

0.616 to 0.739, indicating moderate to good individual item reliability. The Cronbach's Alpha for TSE is 0.836, suggesting a high level of internal consistency among the items. Composite reliability is also robust at 0.817. The AVE is 0.550, which meets the threshold of 0.5, indicating that, on average, the factor explains more than half of the variance in its items. Teaching Practices (TP) comprises five items (TP1 through TP5) with factor loadings between 0.590 and 0.719. These loadings suggest that the items are reasonably good indicators of the underlying factor. The Cronbach's Alpha for this factor is 0.801, reflecting good internal consistency. Composite reliability is similarly strong at 0.803, and the AVE is 0.502, just above the acceptable threshold, signifying adequate convergent validity. Lastly, the Classroom Management (CM) factor includes four items (CM1 through CM4), with factor loadings ranging from 0.664 to 0.789, showing good reliability for the items. The Cronbach's Alpha is slightly lower at 0.657, which is on the lower end but still acceptable for internal consistency. The composite reliability for CM is very good at 0.802, and the AVE is 0.586, indicating a solid level of average explained variance. It is suggested that the constructs of teacher self-efficacy, teaching practices, and classroom management are measured with instruments that are both reliable and valid, based on the reported statistics. These metrics indicate that the measures are consistent and accurately capture the constructs they are intended to measure.

Table 2. Teacher's self-efficacy with reference to their classroom management practices.

Statement	Response frequency					x^2	*p*
	N	R	S	O	A		
I can keep classroom environment friendly	0%	0%	2%	67%	31%	40.871	0.000
I can keep the classroom free from interruption	0%	0%	6%	73%	21%	44.935	0.000
I can change/modify the behavior to improve the situation	0%	0%	13%	66%	21%	30.613	0.000
I can easily make good relationship with my students	0%	0%	03%	29%	68%	39.226	0.00
I can easily manage my time during the class	0%	0%	05%	48%	47%	22.677	0.000
I can make my lesson planning interesting for students	0%	0%	05%	56%	39%	25.581	0.000
I can successfully change non serious attitude of students towards learning	0%	0%	09%	65%	26%	29.548	0.000
I make sure that every student has an opportunity to ask questions for understanding the topic	0%	0%	02%	52%	46%	28.290	0.000
I can easily encourage students to take part in classroom activities	0%	0%	08%	53%	38%	19.774	0.000
I can remain cool during the lesson / class	0%	0%	06%	63%	31%	29.839	0.000

Table 2 presents data on teachers' self-efficacy in managing classroom practices. It shows that a significant majority of teachers believe they can keep a friendly classroom environment, with 67% agreeing and 31% strongly agreeing. This confidence extends to keeping the classroom free from interruptions, where 73% agreed and 21% strongly agreed. Teachers also feel capable of modifying behavior to improve situations, with 66% agreeing and 21% strongly agreeing. The data reveals a high sense of self-efficacy in building relationships with students, as 68% strongly agreed and 29% agreed. Time management during class also reflects confidence, with 47% strongly agreeing and 48% agreeing. Similarly, teachers feel competent in making lesson plans engaging, with 56% agreeing and 39% strongly agreeing.

When addressing non-serious attitudes toward learning, 65% of the teachers

agreed they could successfully change students' behaviors, while 26% strongly agreed. Teachers also ensure opportunities for students to ask questions, with 52% agreeing and 46% strongly agreeing. Additionally, 53% of teachers agreed that they could encourage students to participate in classroom activities, and 38% strongly agreed.

Finally, a notable 63% of teachers agreed they could remain calm during lessons, with 31% strongly agreeing, further reinforcing the overall high levels of teacher self-efficacy in managing classroom dynamics. The *p*-values for all statements are significant at .000, indicating the statistical importance of these findings.

Table 3. Students' perception about their teacher's classroom management practices.

Statement	Response frequency					Mean
	N	R	S	O	A	
Teacher keeps the classroom environment friendly	0%	0%	26%	61%	13%	3.87
Teacher keeps the classroom free from interruption	0%	0%	19%	69%	11%	3.90
Teacher changes /modify the behavior to improve the situation	0%	0%	29%	61%	10%	3.81
Teacher has a very good relationship with students	0%	0%	32%	68%	0%	4.05
Teacher easily manages time during the class	0%	03%	22%	43%	32%	4.02
Teacher makes lesson planning interesting for students	0%	03%	27%	40%	30%	3.94
Teacher successfully changes non-serious attitude of students towards learning	0%	0%	31%	56%	13%	3.82
Teacher gives equal opportunity to each student to participate during the class	0%	03%	19%	52%	26%	3.77
Teacher encourages the students to take part in classroom activities	0%	09%	26%	65%	0%	3.55
Teacher remains cool during the lesson /class	0%	03%	27%	65%	05%	3.69

Table 3 provides insights into students' perceptions of their teachers' classroom management practices. Students generally view their teachers as maintaining a friendly classroom environment, with 61% agreeing and 13% strongly agreeing, reflected in a mean score of 3.87. Most students also feel that their classrooms are free from interruptions, with 69% agreeing and 11% strongly agreeing, yielding a mean of 3.90. Students perceive that teachers can modify behavior to improve situations, with 61% agreeing and 10% strongly agreeing, resulting in a mean of 3.81. Regarding teacher-student relationships, students express a positive perception, with 68% agreeing and no one disagreeing, giving this aspect the highest mean of 4.05. Time management during class is another area where teachers are rated favorably, with 43% agreeing and 32% strongly agreeing, leading to a mean score of 4.02. Lesson planning is seen as interesting by students, with 40% agreeing and 30% strongly agreeing, reflected in a mean score of 3.94. Students also perceive that their teachers are successful in changing non-serious attitudes towards learning, with 56% agreeing and 13% strongly agreeing, resulting in a mean of 3.82. Equal opportunities for participation are observed by students, with 52% agreeing and 26% strongly agreeing, leading to a mean of 3.77. Encouragement for classroom participation is slightly lower in perception, with 65% agreeing and a mean of 3.55. Lastly, teachers' ability to remain calm during lessons is acknowledged, with 65% agreeing and 5% strongly agreeing, reflected in a mean score of 3.69. Overall, students tend to rate their teachers positively in managing classroom practices.

Table 4. Direct relations.

Direct Relations	Coefficients	Mean	Standard Deviation	T Statistics	P Values	Decisions
TSE → CM	0.342	0.34	0.056	6.156	0.000	Accepted
TP → CM	0.365	0.369	0.06	6.124	0.000	Accepted
TSE → TP	0.405	0.407	0.04	8.497	0.000	Accepted

4.2. Structural equation model

To test the hypotheses, the present study employed the bootstrapping feature of Smart PLS 4.0. The outcomes, which include direct relationships, coefficients, means, standard deviations, *t*-values, and *P*-values, are displayed in **Table 4**. In **Figure 4**, the Smart PLS 4.0 analysis results illustrate the relationships between teacher self-efficacy, teacher performance, and classroom management. This figure includes three main constructs, each depicted as a blue circle. Teacher self-efficacy is measured by five indicators (SE1 to SE5) with factor loadings ranging from 0.616 to 0.739. Teacher performance, measured by five indicators (TP1 to TP5), shows loadings between 0.590 and 0.719. Classroom management is indicated by four measurements (CRm1 to CRm4) with loadings from 0.664 to 0.789, suggesting strong reliability. The path coefficients connecting these constructs are significant: Teacher self-efficacy to teacher performance is 0.405 ($p < 0.04$), supporting the hypothesis that higher self-efficacy leads to improved teacher performance. The path from teacher performance to classroom management is 0.697 ($p < 0.00$), indicating that effective performance enhances classroom management. Additionally, teacher self-efficacy directly impacts classroom management with a coefficient of 0.342 ($p < 0.00$), confirming the direct positive influence of self-efficacy on classroom management. These findings validate the study's hypotheses, highlighting the mediating role of teacher performance and providing a detailed understanding of how each construct contributes to educational outcomes. The model thus underscores the critical interplay between teacher self-efficacy and performance in shaping effective classroom management.

Table 5. Indirect relations.

Indirect Relations	Coefficients	Mean	SD	T statistics	P values	Decisions
TSE → TP → CM	0.257	0.261	0.045	5.677	0	Accepted

The findings from the mediating analysis, as illustrated in **Table 5**, reveal a significant indirect effect of teacher self-efficacy on classroom management through its influence on teacher performance (coefficient: 0.257, t-statistics: 5.677, *p*-value: 0.000). This signifies that while teacher self-efficacy directly impacts classroom management, it also exerts an additional influence via its positive effect on teacher performance. In essence, teachers with higher levels of self-efficacy not only demonstrate enhanced classroom management practices directly but also exhibit improved performance in their teaching roles, which in turn contributes to more effective classroom management. This mediating relationship stands as a statistically verified and accepted phenomenon, shedding light on the complex interplay between these critical facets of effective teaching.

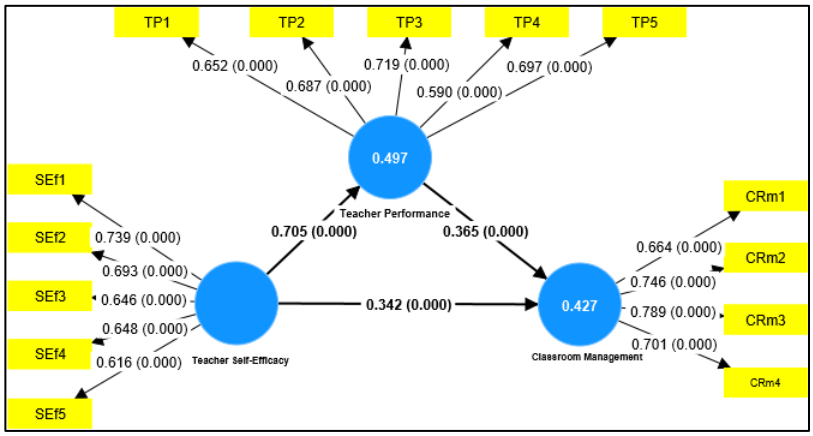

Figure 4. Structural relations between variables used in research model.

5. Discussion

This research aimed to explore the correlation between teacher self-confidence and their approaches to classroom management. The study uncovered a remarkable and statistically significant positive association between teachers who displayed high levels of self-confidence and their ability to maintain effective classroom management. These results are consistent with the outcomes documented in prior research by Burić and Kim [28], which suggested that teachers with high self-efficacy tend to be more adept at motivating and inspiring students while nurturing positive classroom relationships. Other research has also demonstrated that teachers with robust self-efficacy are better prepared to tackle student misbehavior and sustain an orderly educational setting [29]. The study provides a robust view of teacher self-efficacy and student perceptions regarding classroom management practices. Teachers exhibit strong self-efficacy, with most feeling confident in maintaining a friendly classroom environment, managing disruptions, and fostering positive relationships with students' findings supported by significant chi-square test results ($p < 0.000$). Correspondingly, students positively perceive their teachers' abilities, particularly in maintaining classroom decorum, managing time effectively, and engaging in meaningful interactions, with mean scores ranging from 3.55 to 4.05. The alignment between teacher confidence and student perceptions underscores the effectiveness of the teacher's classroom management strategies. Moreover, instructors with a strong sense of self-efficacy tend to dedicate more class time to academic pursuits while giving less priority to disciplinary matters [30]. Based on these findings, one can infer that teachers with heightened self-efficacy are less prone to resorting to disciplinary referrals for their students [31]. The research discovered that teachers who lack confidence may face difficulties in managing their classrooms and dealing with discipline issues, potentially leading to lower self-efficacy levels. In contrast, teachers with elevated self-efficacy are adept at inspiring students to participate in class and engage with their lessons actively [32].

The importance of teacher self-efficacy cannot be emphasized enough, as it profoundly impacts an educator's conduct in the classroom. Elevated self-efficacy encourages heightened teacher engagement within the educational setting, promoting favorable developmental trends. Teachers become more inclined to actively tackle

student obstacles using a variety of methods, ultimately enhancing their self-efficacy [33]. Classroom management is a critical skill that demonstrates a teacher's ability to maintain order, effectively control students, engage them in the learning process, and foster cooperation, ultimately striking a balance between various learning activities within the class [34].

Another significant discovery from this study emphasizes a noteworthy positive and substantial connection between teacher performance and classroom management. This outcome aligns with previous research that highlights the importance of teachers understanding their students' family and cultural backgrounds. By considering the cultural values of their learners and their family backgrounds, teachers can integrate them into their teaching and learning methods. The teacher's role is to tailor the learning and teaching process based on the dynamics within the classroom, school, and the broader community [16]. Teachers who exhibit the capacity to cultivate positive relationships with school administration achieve the desired levels of performance in classroom management. The way a teacher utilizes instructional materials, arranges seating, and collaborates with students serves as an inspiration for students in assessing their own ability to effectively oversee a classroom [35]. A survey involving 176 experienced teachers revealed that 72% of them believed their training and preparation in the realm of classroom management were insufficient. Moreover, school administrators consider classroom management strategies to be a vital skill for teachers [36]. Rani and Jain [37] emphasized the growing consensus on the necessity for enhanced teacher preparation in the field of classroom management.

6. Conclusion

In conclusion, this discussion has illuminated the vital relationship between teacher self-efficacy and classroom management practices. The findings underscore the significance of teachers possessing high levels of self-efficacy, as it is closely linked to their ability to effectively manage classrooms. Furthermore, teacher performance, encompassing an understanding of students' backgrounds and effective classroom management, plays a pivotal role in the overall educational experience. The study emphasizes the pressing need for enhanced teacher preparation in classroom management, as a substantial proportion of experienced teachers and school administrators have expressed concerns about the inadequacy of existing training in this area. This deficiency in teacher preparation has far-reaching implications for the quality of education and the learning environment in schools. In summary, this discussion underscores the importance of teacher self-efficacy and teacher performance in promoting effective classroom management and fostering a positive educational atmosphere. Addressing the gaps in teacher preparation in the realm of classroom management is essential to enhance the overall quality of education and support the professional growth of educators.

Limitations and future studies

This study has a couple of limitations. One limitation of this study is that it primarily relies on self-report data from teachers and students, potentially introducing response bias and social desirability effects. Additionally, the study employs a cross-

sectional design, restricting the ability to establish causation or examine the dynamic nature of teacher self-efficacy and classroom management practices over time. The research is geographically confined to the district of Mansehra, Pakistan, which could limit the generalizability of findings to different educational contexts. Furthermore, the mediation effect of teacher practices, as suggested in the study, is not definitively established without additional longitudinal or experimental data. While the study is illuminating, it also acknowledges that further research with larger and more diverse samples, alternative measurement methods, and a longitudinal perspective could provide a more comprehensive understanding of these critical educational aspects.

Author contributions: Conceptualization, AK and IZ; methodology, IZ; software, AK; validation, AK, IZ and YZ; formal analysis, AK; investigation, IZ; resources, AK; data curation, YZ; writing—original draft preparation, AK; writing—review and editing, IZ; visualization, AK; supervision, AK; project administration, IZ; funding acquisition, YZ. All authors have read and agreed to the published version of the manuscript.

Data accessibility and availability statement: The study includes the author's original work that could be found in the article or additional material. If more information is needed, interested parties can contact the corresponding authors.

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

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