

Teachers' Caring Behaviors and Students' Learning Outcomes: The Mediating Role of Teacher Support in Chinese College Students

Chengnan Lin^{1,2}, Normaliza Abd Rahim^{1,3}

¹Faculty of Arts, Communication & Education, Kuala Lumpur University of Science and Technology, KLUST, 43000 Kajang, Selangor, Malaysia, ²Department of Physical Education, Guangxi University of Foreign Languages, Nanning 530222, Guangxi, China, ¹Faculty of Arts, Communication & Education, Kuala Lumpur University of Science and Technology, KLUST, 43000 Kajang, Selangor, Malaysia, ³School of Media and Communication, Faculty of Social Sciences & Leisure Management, Taylor's University, 46989, Subang Jaya, Malaysia

Email: drnormaliza@gmail.com

Corresponding Author Email: 242924824@s.klust.edu.my

DOI Link: <http://dx.doi.org/10.6007/IJARPED/v14-i4/27216>

Published Online: 29 December 2025

Abstract

This study aims to investigate the mechanism linking teachers' caring behaviors, teacher support, and college students' learning outcomes. In recent years, teachers' caring behaviors have been recognized as a crucial factor in enhancing students' learning motivation and academic performance; however, the pathway through which such caring behaviors influence learning outcomes via teacher support remains unclear in higher education contexts. Accordingly, the objectives of this study are: Examine the overall status of teachers' caring behaviors, learning outcomes, and teacher support; investigate the direct relationship between teachers' caring behaviors and students' learning outcomes; and assess the mediating role of teacher support between teachers' caring behaviors and learning outcomes. A quantitative research method was adopted, with a sample of 415 college students from 10 undergraduate institutions in Guangxi, China. The study employed validated measurement tools, including a teachers' caring behaviors scale, a teacher support questionnaire, and a self-assessment scale for learning outcomes. Data were collected through in-class testing and analyzed using SPSS 29.0 and the PROCESS macro. The research was framed within the Social Support Theory and Self-Determination Theory. The results indicate that the overall status of teachers' caring behaviors, students' learning outcomes, and teacher support in the Guangxi region's universities is relatively high. Teachers' caring behaviors significantly and positively predicted learning outcomes, with teacher support playing a partial mediating role. Emotional understanding, academic guidance, and structural support from teachers can enhance students' motivation and self-efficacy, thereby improving learning outcomes. This study provides empirical evidence for the teacher-student interaction mechanisms in higher education and highlights the key role of teacher support in promoting students' overall

development. Future research could further explore the dynamic influence mechanisms of teachers' caring and support behaviors across different disciplines and cultural contexts, deepening the understanding of the relationship between teachers' emotional behaviors and students' learning outcomes in higher education.

Keywords: Teachers' Caring Behaviors, Students' Learning Outcomes, Teacher Support, Mediating Role, Chinese College Students

Introduction

In recent years, teachers' caring behaviors have received increasing attention in higher education research and are regarded as a key factor influencing students' learning experiences and learning outcomes. Khanna et al. (2024) highlighted that teachers' caring behaviors can enhance teaching quality and student satisfaction in universities by fostering a positive learning atmosphere. Similarly, Ilhavenil and Aravindan (2023, 2024) demonstrated that teachers' caring behaviors not only reflect emotional investment but also promote students' moral and academic development through the mediating role of teacher commitment and responsibility. Overall, teachers' caring behaviors serve as a form of emotional support that stimulates student engagement, enhances self-efficacy and sense of belonging, and ultimately improves learning outcomes (Tao et al., 2022). In light of the ongoing shift toward learner-centered education, exploring how teachers' caring behaviors influence college students' learning outcomes holds both theoretical and practical significance.

Although teachers' caring behaviors are widely acknowledged to positively impact students' learning outcomes, in practice, university instructors often provide limited emotional and social support to students. Studies have shown that due to academic workload, research obligations, and institutional constraints, many teachers lack sustained motivation to address students' individual differences and psychological needs (Aldrup et al., 2022; Zhang & Zhang, 2024). This absence of care not only diminishes students' learning motivation and classroom participation but also indirectly undermines their academic performance (Affuso et al., 2023). Moreover, teacher support has been proposed as a potential mediating mechanism linking teachers' caring behaviors to learning outcomes, yet this pathway remains underexplored. Existing studies indicate that perceived teacher support significantly enhances students' engagement and academic achievement (Tao et al., 2022; Chiu et al., 2024); however, the mediating role of teacher support in the relationship between teachers' caring behaviors and college students' learning outcomes within higher education settings has not been sufficiently verified. Therefore, this study seeks to integrate these three constructs—teachers' caring behaviors, teacher support, and learning outcomes—by examining the mediating role of teacher support. The findings are expected to provide both theoretical insights and empirical evidence to improve teaching quality and student learning experiences in higher education.

Literature Review

Teachers' Caring Behaviors and College Students' Learning Outcomes

Teachers' caring behaviors, as a significant factor in education, have been widely studied and shown to have a positive impact on students' learning outcomes. Affuso et al. (2023) suggest that through positive emotional support and care, teachers can effectively enhance students' academic self-efficacy, thereby improving their academic performance. Teachers' caring behaviors extend beyond academic guidance in the classroom to include emotional support,

which helps students build confidence and increase their academic engagement. Khanna et al. (2024) also highlight the crucial role of teachers' caring behaviors in students' academic achievement, particularly when teachers provide psychological and emotional support, enabling students to better cope with academic challenges and enhance their learning outcomes. This perspective has been validated in different cultural contexts, demonstrating the universal positive impact of teachers' caring behaviors in global educational environments.

Furthermore, the influence of teachers' caring behaviors is not limited to emotional support; scholars have found that such behaviors also indirectly enhance academic performance by promoting students' intrinsic motivation. Ilhavenil and Aravindan (2023) propose that teachers' caring behaviors can significantly increase students' classroom engagement, helping them develop a positive learning attitude, which in turn boosts their academic results. Guo et al. (2025) also indicate that teachers' caring behaviors influence students' academic self-efficacy, thus indirectly fostering their learning outcomes. Teachers' emotional support not only helps establish positive teacher-student relationships but also stimulates students' motivation, enhancing their academic achievement. Tao et al. (2022) further argue that the impact of teachers' caring behaviors on students' academic achievement is realized through increased student engagement and motivation, providing a mechanism that effectively explains how teachers' caring behaviors promote learning outcomes.

The impact of teachers' caring behaviors extends beyond directly improving students' learning outcomes; it also indirectly enhances academic achievement by fostering students' emotional well-being and academic involvement. Shao et al. (2025) found that teachers' caring behaviors not only directly enhance students' academic motivation but also indirectly promote their academic performance by improving students' emotional state and self-confidence. By addressing students' emotional needs, teachers help them cope with academic stress and challenges, thereby increasing their engagement and learning outcomes. Wu and Cai (2025) also point out that teachers' caring behaviors significantly enhance students' academic engagement by boosting self-efficacy and peer support, thereby facilitating improvements in learning outcomes. Thus, teachers' caring behaviors influence students' learning performance on multiple levels, making them a crucial factor in enhancing learning outcomes.

The Mediating Role of Teacher Support

Teacher support can indirectly promote academic performance by enhancing students' academic self-efficacy and learning motivation. Prananto et al. (2025), through a systematic literature review, found that teachers' emotional support plays a mediating role in students' academic success. By providing positive feedback and emotional support, teachers can strengthen students' self-efficacy, thereby improving their academic performance. Tao et al. (2022) noted that perceived teacher support significantly increases students' learning motivation and, through enhanced academic confidence and engagement, improves academic achievement. The research also found that teacher support influences students' academic performance through multiple pathways, including students' engagement, emotional support, and self-efficacy (Guo et al., 2025).

The mediating role of teacher support is not limited to emotional and academic support; it also enhances students' learning motivation through social support and peer interactions.

Shao et al. (2025) proposed that teachers' supportive behaviors promote students' academic achievement by strengthening their academic confidence and peer support networks. Teacher support not only stimulates students' interest in learning but also helps them find stronger motivation in academic tasks, especially when facing academic pressure. Aldrup et al. (2022) also showed that teachers' empathy and caring behaviors can enhance students' academic engagement and emotional well-being, further improving their academic performance. Teacher support not only directly impacts students' academic outcomes but also indirectly fosters learning effectiveness by improving their emotional states and psychological health. Zhang et al. (2025) pointed out in their study that the mediating role of teacher support not only enhances students' academic confidence but also increases students' investment in academic tasks, thereby driving improvements in academic performance.

Moreover, the mediating role of teacher support has been validated in different educational settings and disciplines. Wu and Cai (2025) found that teachers' emotional support significantly increases students' learning engagement through self-efficacy and peer support mechanisms, thus promoting students' academic performance through these mediating pathways. The mediating role of teacher support is also closely related to students' learning styles and the demands of different disciplines. Chiu et al. (2024) found in their research that teacher support plays an important mediating role in the relationship between academic motivation and academic achievement, particularly in technology-driven learning environments, where teachers' supportive behaviors significantly enhance students' learning outcomes. Therefore, the mediating role of teacher support not only affects students' academic outcomes but also has a profound impact on their learning attitudes, emotional states, and academic self-efficacy.

Building upon the above literature and theoretical foundation, the present study aims to systematically examine the interrelationships and underlying mechanisms among teachers' caring behaviors, teacher support, and college students' learning outcomes. Specifically, it focuses on the mediating pathway of teacher support between teachers' caring behaviors and learning outcomes and investigates how different dimensions of teacher support contribute to enhancing students' academic performance. Using empirical data, this study seeks to validate the effect of teachers' caring behaviors on teacher support and its subsequent impact on students' learning experiences and outcomes. Ultimately, the findings are expected to provide theoretical and practical insights for teacher professional development, the construction of student support systems, and the improvement of educational quality, thereby extending the application and relevance of teacher care and support theories in the context of higher education.

Research Objectives

The primary objective of this study is to examine how teachers' caring behaviors influence college students' learning outcomes in China through the mediating role of teacher support. Specifically, the study aims to:

RO1: Investigate the overall status of teachers' caring behaviors, learning outcomes, and teacher support.

RO2: Investigate the direct relationship between teachers' caring behaviors and students' learning outcomes.

RO3: Assess the mediating role of teacher support in the relationship between teachers' caring behaviors and learning outcomes.

By achieving these objectives, this study seeks to provide empirical evidence that clarifies the pivotal role of teacher support in shaping Chinese college students' academic outcomes. Moreover, it aims to offer theoretical and practical foundations for developing strategies that enhance students' learning outcomes through the strengthening of teacher support and the cultivation of caring teaching practices in higher education.

Research Hypothesis

Based on the research objectives, the following hypotheses are proposed:

H1: The overall status of teachers' caring behaviors, students' learning outcomes, and teacher support in undergraduate institutions in Guangxi is relatively high.

H2: There is a positive relationship between teachers' caring behaviors and students' learning outcomes.

H3: Teacher support mediates the relationship between teachers' caring behaviors and learning outcomes.

Methodology

This study employs a quantitative research method and a cross-sectional survey design to explore the relationship between teachers' caring behaviors, teacher support, and college students' learning outcomes, with a particular focus on testing the mediating effect of teacher support. The research is set within the context of higher education in China, selecting ten undergraduate universities from both eastern and southwestern regions (including both public and private institutions) to ensure the breadth and representativeness of the data. Data collection was conducted using a combination of online and offline questionnaires, with the primary subjects being undergraduate students from different academic years. SPSS software was used for data analysis, with descriptive statistics and correlation analysis used to verify the basic relationships between variables, and regression analysis employed to explore the direct and indirect effects of teachers' caring behaviors on learning outcomes. The theoretical framework is based on Social Support Theory and Self-Determination Theory, revealing how teachers' caring behaviors promote students' learning outcomes through teacher support.

The study was conducted in the Guangxi Zhuang Autonomous Region in southwestern China, covering ten undergraduate institutions. Among these, 5 are public universities, including Guangxi University, Guangxi Normal University, Guilin University of Technology, Guangxi University of Science and Technology, and Guangxi University of Finance and Economics; and 5 are private universities, including Nanning University, Guangxi University of Foreign Languages, Nanning Institute of Technology, Guilin University of Information Technology, and Guangxi University of Science and Technology. The multi-ethnic background and educational cultural differences of the Guangxi region provide a rich sociocultural context for studying teachers' caring behaviors and teacher support. The study employed three validated scales to measure the research variables: the Teachers' Caring Behaviors scale, which was revised by Lei Hao (2014) and localized for physical education contexts, covering three dimensions—responsibility, supportiveness, and inclusiveness. This scale consists of 18 items, with responsibility spanning items 1–7, supportiveness from items 8–13, and inclusiveness from items 14–18. The Teacher Support scale, developed by Yi Zhenfang (2023), includes three

dimensions: learning support, ability support, and emotional support. It consists of 19 items, with learning support covering items 1–9, ability support from items 10–13, and emotional support from items 14–19. The Learning Outcomes scale, based on the study by Zhang Xue (2024), assesses students' teaching satisfaction and self-reported satisfaction, comprising 11 items, with teaching satisfaction spanning items 1–7 and self-reported satisfaction from items 8–11. All scales employed a five-point Likert scale, with higher scores indicating stronger perceived support or outcomes. Using a stratified cluster sampling method, the study collected 415 valid questionnaires from ten universities in Guangxi, ensuring diversity and representativeness in the sample. The data collection process strictly adhered to ethical guidelines to ensure the scientific rigor and reliability of the study. Data analysis was performed using SPSS 29.0, with Pearson correlation analysis and the PROCESS Macro model used to test the mediating effect of teacher support, ensuring the reliability and scientific validity of the results.

Results and Discussion

Demography

Table 1 presents the demographic distribution of the 415 respondents, indicating that the overall sample structure was balanced and representative. In terms of gender composition, males accounted for 52.8% and females for 47.2%, suggesting a near-equitable distribution that allowed for a comprehensive reflection of gender-related differences among college students. Regarding academic year, sophomores and juniors comprised the majority—27.7% and 30.8%, respectively—indicating that participants were primarily mid- to upper-year students, whose perceptions of teachers' caring behaviors and attitudes toward learning were likely more developed, thereby enhancing data reliability. Concerning school type, 61.9% of participants were from public universities and 38.1% from private ones, providing a balanced foundation for comparing institutional differences in teacher support and teaching management. With respect to learning motivation, most students cited “health and fitness improvement” (36.9%) and “credit requirements” (34.0%) as their primary reasons for participation, while only 24.6% were driven by a “strong interest in sports,” suggesting that academic and health-related motives outweighed intrinsic interest. Overall, the demographic structure was appropriate for supporting subsequent analyses of the relationships among teachers' caring behaviors, teacher support, and learning outcomes.

Table 1

Demographics Profile of the Respondents (n = 415)

Profile	Description	Frequency	Percentage
Gender	Male	219	52.8%
	Female	196	47.2%
Age	Freshmen	86	20.7%
	Sophomores	115	27.7%
	Juniors	128	30.8%
School Type	Seniors	86	20.7%
	Public Universities	257	61.9%
	Private Universities	158	38.1%
Physical Education Motivation	Credit Requirements	141	34.0%
	Health and Fitness	153	36.9%
	Strong Interest in Sports	102	24.6%
	Other	20	4.8%

The descriptive statistics for the three variables—teachers' caring behaviors, learning outcomes, and teacher support—are presented in Table 2.

Table 2

Descriptive Analysis Results

Variable	M	SD	Min	Max	Skewness	Kurtosis
Teachers' Caring Behaviors	4.31	0.62	2.00	5.00	-0.12	-0.28
Learning Outcomes	4.13	0.58	2.00	5.00	-0.20	-0.31
Teacher Support	4.45	0.55	2.00	5.00	-0.15	-0.22

As shown in Table 2, the mean score for teachers' caring behaviors is 4.31, indicating that the majority of students have a relatively high evaluation of their teachers' caring behaviors, with an overall positive perception. The standard deviation is 0.62, meaning there is some variability in students' ratings, suggesting that while most students perceive their teachers as caring, a portion still report lower evaluations. The minimum score is 2.00, and the maximum is 5.00, indicating a wide range of perceptions from low to high. The skewness value is -0.12, which is close to 0, suggesting a fairly symmetric distribution, with a slight left skew, indicating that most students feel a strong sense of teacher care, although a few students report lower levels. The kurtosis value is -0.28, below 3, suggesting a relatively flat distribution, with most students' ratings concentrated in the higher score range. Therefore, the distribution of teachers' caring behaviors is approximately normal.

The mean score for learning outcomes is 4.13, reflecting that most students perform at a relatively high academic level. The standard deviation is 0.58, indicating some variation in academic performance, as while most students perform well, there are still some with lower academic outcomes. The minimum score is 2.00, and the maximum is 5.00, showing a broad range of academic performance among students. The skewness value is -0.20, close to 0, suggesting a relatively symmetric distribution with a slight left skew, meaning that most students have higher academic results, although a small number of students have lower performance. The kurtosis value is -0.31, below 3, indicating a flatter distribution, with most students' performance concentrated in the higher range. Thus, the distribution of learning outcomes is approximately normal.

The mean score for teacher support is 4.45, indicating that most students perceive their teachers as providing sufficient support in academic guidance, emotional care, and learning support, with a generally high evaluation. The standard deviation is 0.55, showing some variability in students' perceptions of teacher support. While most students perceive strong support, a small number report lower levels of support. The minimum score is 2.00, and the maximum is 5.00, indicating a wide range of evaluations of teacher support. The skewness value is -0.15, close to 0, suggesting that the distribution of teacher support perceptions is fairly symmetric, with a slight left skew, meaning that most students perceive teachers' support as strong, although a small number may feel less supported. The kurtosis value is -0.22, below 3, indicating a flatter distribution, with most students perceiving teacher support as strong. Therefore, the distribution of teacher support is approximately normal.

Teachers' Caring Behaviors and Students' Learning Outcomes

This study employed Hayes' (2013) PROCESS macro Model 4 in SPSS 29.0 to examine the relationship between teachers' caring behaviors (independent variable) and college students' learning outcomes (dependent variable). The analysis results indicate that teachers' caring behaviors have a significant direct impact on students' learning outcomes (path $c' = 0.181$, $p < .001$), suggesting that when teachers demonstrate greater care and emotional investment in their teaching, students' learning outcomes are significantly enhanced. Specifically, teachers' caring behaviors, through respect, empathy, and understanding, strengthen teacher-student interactions, boost students' learning motivation and engagement, and thereby improve academic performance.

In the total effect analysis, the influence of teachers' caring behaviors on students' learning outcomes was found to be a significant positive relationship (path $c = 0.284$, $p < .001$). This indicates that teachers' caring behaviors not only have a direct significant effect on students' learning outcomes but also exhibit a strong overall effect. These findings confirm the important role of teachers' caring behaviors in teaching, particularly in enhancing students' academic performance.

Table 3

Model Coefficients for the Simple Mediation Model

Path	Coefficient (β)	SE	t / Z	95% CI	p
a: Teachers' Caring Behaviors → Teacher Support	0.341	0.043	7.93	[0.257, 0.425]	<.001
b: Teacher Support → Learning Outcomes	0.301	0.039	7.72	[0.224, 0.378]	<.001
c: Total Effect (direct + indirect)	0.284	0.050	5.68	[0.186, 0.382]	<.001
c': Direct Effect (controlling for M)	0.181	0.046	3.93	[0.090, 0.272]	<.001

Based on the data presented in Table 3, teachers' caring behaviors have a significant effect on teacher support, with a coefficient of 0.341 for path a, a standard error of 0.043, a t-value of 7.93, and a p-value less than 0.001, indicating a significant positive relationship between teachers' caring behaviors and teacher support. The emotional investment of teachers significantly enhances students' perception of teacher support, thus promoting their learning performance.

The significant impact of teacher support on learning outcomes was also verified. The coefficient for path b is 0.301, the standard error is 0.039, the t-value is 7.72, and the p-value is less than 0.001, showing a significant positive relationship between teacher support and learning outcomes. The 95% confidence interval is [0.224, 0.378], which does not include zero, indicating that teachers' supportive behaviors can effectively enhance students' learning outcomes. Teacher support in academic guidance, emotional care, and learning structures plays an important role in students' academic achievement. Particularly in situations where academic demands and learning pressures are high, teacher support can alleviate students' anxiety, enhance their learning motivation and engagement, and thus promote improvements in learning outcomes. Therefore, teacher support, as a key factor in education,

plays a crucial role in students' learning outcomes. Teachers' supportive behaviors significantly contribute to students' academic performance, especially under high academic demands and learning pressure, as they effectively increase students' learning motivation and engagement, thereby enhancing learning outcomes.

Mediating Role of Teacher Support

Further analysis indicates that teacher support significantly mediates the relationship between teachers' caring behaviors and learning outcomes. The coefficient for path a is 0.341 ($p < .001$), suggesting that teachers' caring behaviors have a significant positive predictive effect on teacher support. Specifically, when teachers demonstrate greater emotional care in the classroom, students experience stronger perceptions of support from their teachers. The predictive effect of teacher support on students' learning outcomes is also significant, with the coefficient for path b being 0.301 ($p < .001$), indicating that when students receive academic guidance, emotional care, and structural support from their teachers, their learning performance improves significantly.

Table 4

Indirect Effect of Teacher Support on the Relationship Between Teachers' Caring Behaviors and Students' Learning Outcomes

Effect Type	Effect Size (β)	SE	95% CI (Bias-Corrected)
Total Effect (c)	0.284	0.050	[0.186, 0.382]
Direct Effect (c')	0.181	0.046	[0.090, 0.272]
Indirect Effect (ab)	0.103	—	[0.066, 0.152]

The results in Table 4 show that the indirect effect significance test, based on 5000 bootstrap resamples, reveals that the coefficient for path c is 0.284, with a standard error of 0.050, a t-value of 5.68, and a p-value less than 0.001, indicating a significant total effect of teachers' caring behaviors on learning outcomes. The coefficient for path c' is 0.181, with a standard error of 0.046, a t-value of 3.93, and a p-value less than 0.001, suggesting that, even after controlling for the effect of teacher support, teachers' caring behaviors still have a direct positive impact on learning outcomes. Meanwhile, the indirect effect (ab) is 0.103, with a 95% confidence interval of [0.066, 0.152], which does not contain zero, confirming the significance of the mediation effect. These findings validate the theoretical hypothesis that teacher support mediates the relationship between teachers' caring behaviors and students' learning outcomes. By providing emotional, cognitive, and structural support, teachers not only enhance students' engagement and academic confidence but also further promote improvements in their learning performance.

Summary of Results

The results of this study indicate that the overall level of teachers' caring behaviors, students' learning outcomes, and teacher support in undergraduate universities in Guangxi are relatively high, confirming Hypothesis H1 (H1: The overall status of teachers' caring behaviors, students' learning outcomes, and teacher support in undergraduate institutions in Guangxi is relatively high). This demonstrates the significant role of the care and support shown by teachers in the teaching process in improving students' academic performance. The findings suggest that teachers not only provide academic guidance but also foster students' learning motivation and self-confidence through emotional support, encouragement, and

understanding (Liu et al., 2025). This phenomenon aligns with the Social Support Theory (Cohen & Wills, 1985), which emphasizes that emotional support from the social support system can effectively alleviate pressure and enhance coping abilities, thereby promoting psychological well-being and behavioral performance. Teachers' caring behaviors, through providing emotional support, help students cope with academic stress, ultimately improving their learning outcomes (Prananto et al., 2025). Teachers' supportive behaviors enhance students' self-efficacy, encouraging more active participation in academic tasks, thereby improving academic performance (Li & Xue, 2023). The high levels of learning outcomes are closely linked to the high levels of teachers' caring behaviors and teacher support. The study shows that teachers' emotional support not only boosts students' learning motivation but also promotes improvements in academic performance by enhancing students' emotional well-being (Tao et al., 2022). Teachers' caring behaviors, by providing emotional support and academic guidance, help students maintain a positive attitude when facing academic challenges. In line with this, Aldrup et al. (2022) pointed out that teachers' empathy and caring behaviors enhance the interaction between teachers and students, thereby increasing students' academic engagement and learning motivation. Furthermore, teachers' supportive behaviors contribute to students' academic achievement by helping them build self-confidence and enhancing their academic self-efficacy (Shoukat et al., 2024). The high levels of teachers' caring behaviors and teacher support indicate that schools and teachers are increasingly recognizing the importance of balancing emotional support with academic guidance. This comprehensive support provides students with a positive learning environment. By addressing students' emotional needs and academic performance, teachers enhance students' learning motivation and facilitate their academic success (Shao et al., 2025). Guo et al. (2025) found that teachers' emotional support indirectly improves students' academic outcomes by boosting their academic self-efficacy. In the educational process, teachers' comprehensive support not only helps students cope with academic challenges but also strengthens their self-confidence and learning motivation, helping them overcome difficulties in their studies. Therefore, the high levels of teachers' caring behaviors and teacher support provide students with a favorable learning environment, enhancing their learning motivation and, in turn, promoting improvements in academic performance.

The results of this study indicate that teachers' caring behaviors have a significant positive impact on college students' learning outcomes, confirming Hypothesis H2 (H2: There is a positive relationship between teachers' caring behaviors and students' learning outcomes). According to Social Support Theory, teachers' caring behaviors, as a form of social support, play a crucial role in influencing students' emotional and academic performance. By providing emotional support and academic guidance, teachers help students reduce academic stress, enhance their self-confidence, and strengthen their academic self-efficacy, thereby improving their academic outcomes (Affuso et al., 2023). In this study, teachers' caring behaviors were identified as a key support factor in the learning process, with the results showing that a high level of teachers' caring behaviors directly influences students' learning outcomes. This finding is consistent with the research by Khanna et al. (2024) and Ilhavenil and Aravindan (2023), both of which suggest that emotional support from teachers enhances students' emotional well-being, improves teacher-student relationships, and further promotes academic achievement. In particular, in educational settings, teachers' emotional support is viewed as a buffer for students when facing academic challenges, helping to increase their learning motivation (Tao et al., 2022). Social Support Theory emphasizes that the quality and

source of support are crucial for students' development. Teachers' caring behaviors, by fulfilling students' emotional needs, enhance their learning motivation and enable them to maintain a positive mindset throughout the learning process. This aligns with the studies by Wu and Cai (2025) and Zhang et al. (2025), both of which highlight that emotional and academic support from teachers can significantly boost students' motivation and academic performance. In this study, teachers' caring behaviors provided comprehensive support to students, not only improving their academic abilities but also fostering a sense of emotional security, which contributed to enhanced academic performance. Through this holistic support, teachers' caring behaviors not only increased students' academic engagement but also enhanced their ability to adapt to academic challenges. Social Support Theory provides a theoretical foundation for understanding the role of teachers' caring behaviors in students' academic performance, emphasizing the importance of teachers' caring behaviors as a form of support.

The study further validated the partial mediating effect of teacher support in the relationship between teachers' caring behaviors and students' learning outcomes, thus validating Hypothesis H3 (H3: Teacher support mediates the relationship between teachers' caring behaviors and learning outcomes). In this study, teacher support is defined as the academic and emotional support behaviors provided by teachers, which enhance students' learning motivation and self-efficacy by satisfying their basic psychological needs, thereby promoting improvements in academic outcomes (Shao et al., 2025; Tao et al., 2022). From the perspective of Social Support Theory, teacher support, as a form of social support, alleviates students' academic stress and enhances their coping abilities by providing emotional and academic support, thereby facilitating the improvement of learning outcomes (Affuso et al., 2023). By increasing students' emotional security and academic self-confidence, teacher support allows students to engage more actively in their learning and exhibit higher learning motivation. Self-Determination Theory (Deci & Ryan, 1985) further explains how teacher support enhances students' intrinsic motivation. This theory emphasizes that meeting students' needs for autonomy, competence, and relatedness helps foster intrinsic motivation and effectively promotes learning motivation. When students perceive teacher support, they exhibit higher learning motivation because such support enhances their sense of control and self-confidence in academic tasks (Guo et al., 2025). Teacher support not only improves students' emotional engagement and academic involvement, thus enhancing their self-efficacy, but also strengthens their adaptability and coping abilities in the face of academic challenges by providing feedback and encouragement (Wu & Cai, 2025). Therefore, teacher support plays a crucial mediating role between teachers' caring behaviors and academic outcomes. In this study, teachers' caring behaviors further increased students' learning motivation and academic involvement by enhancing their perception of teacher support, which in turn promoted improvements in academic performance. This mediating effect aligns with the integration of Self-Determination Theory and Social Support Theory, suggesting that teachers' caring behaviors, by enhancing both emotional and academic support for students, help meet their basic psychological needs, thereby facilitating academic achievement (Guo et al., 2025; Zhang et al., 2025). The mediating role of teacher support emphasizes the dual importance of emotional support and academic guidance in the educational process, suggesting that in educational practice, we should focus on the interactive role of teachers' caring behaviors and teacher support to enhance students' academic achievement and learning motivation.

Conclusion

This study, drawing on a sample of college students from undergraduate institutions in Guangxi, systematically examined the relationships among teachers' caring behaviors, teacher support, and college students' learning outcomes, and yielded the following major findings. First, college students reported relatively high overall levels of perceived teachers' caring behaviors, teacher support, and learning outcomes, indicating that teachers' emotional engagement and supportive practices in instructional contexts have become important factors shaping students' learning experiences. Second, teachers' caring behaviors were found to have a significant positive predictive effect on college students' learning outcomes, suggesting that teachers' expressions of respect, understanding, and care in teaching effectively enhance students' learning engagement and academic performance. Third, teacher support played a significant mediating role in the relationship between teachers' caring behaviors and learning outcomes, indicating that teachers' caring behaviors not only directly promote students' learning outcomes but also indirectly enhance learning outcomes by strengthening students' perceptions of teacher support. The findings provide a theoretical basis for educational practice, emphasizing the crucial role of teachers in promoting students' academic achievements and psychological development. This research is particularly beneficial for educators, school administrators, and higher education policymakers, especially in the highly competitive and psychologically stressful environment of higher education, where emotional and academic support from teachers not only helps students achieve better academic performance but also boosts their self-confidence and learning motivation. Therefore, teachers should focus on balancing emotional and academic support to foster the holistic development of students. Future research could further explore the moderating effects of teachers' personal traits (such as emotional intelligence and teaching experience) on the effectiveness of teachers' caring behaviors and support, and examine how teacher training can enhance their caring behaviors and supportive teaching capabilities, thereby more effectively promoting students' academic achievements and psychological well-being.

Acknowledgement

The authors would like to express their sincere appreciation to Kuala Lumpur University of Science and Technology (KLUST) for the support and resources provided throughout the completion of this research. Special thanks are also extended to all individuals who contributed their time, guidance, and expertise in facilitating this study.

References

- Affuso, G., Zannone, A., Esposito, C., Pannone, M., Miranda, M. C., De Angelis, G., ... & Bacchini, D. (2023). The effects of teacher support, parental monitoring, motivation and self-efficacy on academic performance over time. *European Journal of Psychology of Education, 38*(1), 1-23.
- Aldrup, K., Carstensen, B., & Klusmann, U. (2022). Is empathy the key to effective teaching? A systematic review of its association with teacher-student interactions and student outcomes. *Educational Psychology Review, 34*(3), 1177-1216.
- Atta, M. H. R., Hammad, H. A. H., & Elzohairy, N. W. (2024). The role of empathy in the relationship between emotional support and caring behavior towards patients among intern nursing students. *Bmc Nursing, 23*(1), 443.
- Chiu, T. K., Moorhouse, B. L., Chai, C. S., & Ismailov, M. (2024). Teacher support and student motivation to learn with Artificial Intelligence (AI) based chatbot. *Interactive Learning Environments, 32*(7), 3240-3256.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological bulletin, 98*(2), 310-357.
- Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of research in personality, 19*(2), 109-134.
- Guo, W., Wang, J., Li, N., & Wang, L. (2025). The impact of teacher emotional support on learning engagement among college students mediated by academic self-efficacy and academic resilience. *Scientific Reports, 15*(1), 1-12.
- Ilhavenil, N., & Aravindan, K. L. (2023). Modelling teachers' caring behaviour through the lens of high school students. *Journal of Moral Education, 52*(2), 139-156.
- Ilhavenil, N., & Aravindan, K. L. (2024). Teacher commitment a mediator to teachers' caring behaviour. *Cogent Education, 11*(1), 2366073.
- Khanna, M., Jacob, I., & Chopra, A. (2024). Marketing of higher education institutes through the creation of positive learning experiences—analyzing the role of teachers' caring behaviors. *Journal of Marketing for Higher Education, 34*(1), 116-135.
- Kusmawan, A., Rahman, R., Anis, N., & Arifudin, O. (2025). The relationship between teacher involvement in curriculum development and student learning outcomes. *International Journal of Educatio Elementaria and Psychologia, 2*(1), 1-12.
- Li, J., & Xue, E. (2023). Dynamic interaction between student learning behaviour and learning environment: Meta-analysis of student engagement and its influencing factors. *Behavioral Sciences, 13*(1), 59.
- Liu, Y., Cho, G., & Liu, X. (2025). The influence of positive parenting and positive teacher-student relationships on learning engagement of Korean middle school students—the mediating role of grit. *BMC psychology, 13*(1), 411.
- Lubis, L. H., Febriani, B., Yana, R. F., Azhar, A., & Darajat, M. (2023). The use of learning media and its effect on improving the quality of student learning outcomes. *International Journal Of Education, Social Studies, And Management (IJESSM), 3*(2), 7-14.
- Prananto, K., Cahyadi, S., Lubis, F. Y., & Hinduan, Z. R. (2025). Perceived teacher support and student engagement among higher education students—a systematic literature review. *BMC psychology, 13*(1), 1-22.
- Shao, Y., Feng, Y., Zhao, X., Liu, G., & Zhang, L. (2025). Teacher support and secondary school students' learning engagement: A moderated mediation model. *Scientific Reports, 15*(1), 1-12.

- Shoukat, R., Ismayil, I., Huang, Q., Oubibi, M., Younas, M., & Munir, R. (2024). A comparative analysis of blended learning and traditional instruction: Effects on academic motivation and learning outcomes. *PloS one*, *19*(3), 1-18.
- Tao, Y., Meng, Y., Gao, Z., & Yang, X. (2022). Perceived teacher support, student engagement, and academic achievement: A meta-analysis. *Educational Psychology*, *42*(4), 401-420.
- Ventista, O. M., & Brown, C. (2023). Teachers' professional learning and its impact on students' learning outcomes: Findings from a systematic review. *Social Sciences & Humanities Open*, *8*(1), 100565.
- Wu, M., & Cai, J. (2025). The impact of teachers' caring behavior on EFL learners' academic engagement: the chain mediating role of self-efficacy and peer support. *BMC psychology*, *13*, 728.
- Zhang, J., & Zhang, Z. (2024). AI in teacher education: Unlocking new dimensions in teaching support, inclusive learning, and digital literacy. *Journal of Computer Assisted Learning*, *40*(4), 1871-1885.
- Zhang, Z., Wang, Y., Deng, W., Ma, X., & Qi, C. (2025). The impact of teacher care on teacher-student relationship: evidence from cross-sectional and longitudinal data. *Frontiers in Psychology*, *16*, 1-9.