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Understanding the Role of Self-Efficacy in Mediating the Relationship Between Peer Support and School Engagement

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A B S T R A C T

This study aimed to investigate the mediating role of self-efficacy in the relationship between peer support and school engagement among high school students in Canada. A descriptive correlational research design was used to examine the proposed relationships. The sample included 440 Canadian high school students selected using the Krejcie and Morgan sample size table. Participants completed three standardized instruments: the Peer Support subscale of the Child and Adolescent Social Support Scale (CASSS), the Self-Efficacy Questionnaire for Children (SEQ-C), and the School Engagement Scale (SES). Data were analyzed using SPSS-27 for descriptive statistics and Pearson correlation, and AMOS-21 for Structural Equation Modeling (SEM) to test the mediating effect of self-efficacy. Descriptive statistics showed high levels of peer support (M = 4.41, SD = 0.57), self-efficacy (M = 3.88, SD = 0.63), and school engagement (M = 4.12, SD = 0.52). Pearson correlations indicated significant positive associations between peer support and self-efficacy ($r = .47$, $p < .001$), peer support and school engagement ($r = .51$, $p < .001$), and self-efficacy and school engagement ($r = .62$, $p < .001$). The SEM results showed good model fit ($\chi^2/df = 1.93$, CFI = 0.96, RMSEA = 0.046), and confirmed that self-efficacy significantly mediated the relationship between peer support and school engagement. The total effect of peer support on school engagement was significant ($\beta = 0.56$, $p < .001$), with both direct ($\beta = 0.31$, $p < .001$) and indirect effects through self-efficacy ($\beta = 0.25$, $p < .001$). The findings highlight the crucial role of self-efficacy as a psychological mechanism through which peer support enhances school engagement. These results emphasize the importance of fostering peer-connected environments and developing students' self-beliefs to improve engagement outcomes in educational settings.

Keywords: *Peer support, self-efficacy, school engagement, adolescents*

1. Introduction

School engagement is a vital construct in the field of educational psychology, reflecting the degree to which students are behaviorally, emotionally, and cognitively involved in their learning process. Engaged students are more likely to achieve academic success, form positive relationships in school, and maintain motivation for lifelong learning. Conversely, lack of engagement is often associated with school dropout, emotional distress, and underachievement. With growing concerns over student disengagement, particularly among adolescents, researchers have increasingly turned their attention to the social and psychological factors that shape students' engagement in academic contexts. Among these, peer support and self-efficacy have emerged as key variables that interact dynamically to influence school engagement outcomes (Hu & Talib, 2023; Zhu et al., 2025).

Peer relationships are central to adolescents' social development and significantly influence their educational experiences. Peer support, in particular, plays a fundamental role in shaping students' attitudes toward school and their overall engagement. Adolescents who perceive their peers as supportive tend to feel more accepted, experience lower levels of academic stress, and show greater motivation to participate in school activities (Nie & Tsai, 2025; Zhang et al., 2024). Such support not only fulfills their need for belonging but also contributes to emotional regulation and resilience in the face of academic challenges (Woreta, 2024; Zou et al., 2023). According to Zhu et al. (Zhu et al., 2025), positive peer interactions can foster a sense of shared responsibility and encourage cooperative learning, both of which contribute to sustained behavioral and cognitive engagement.

The mechanisms through which peer support enhances school engagement are complex and often mediated by individual-level psychological factors. Self-efficacy—defined as a person's belief in their ability to perform specific tasks successfully—is one such mediator that has gained substantial empirical attention. Self-efficacy influences how students approach academic tasks, cope with challenges, and sustain effort in the face of difficulties. Students with higher self-efficacy are more likely to set ambitious goals, use effective learning strategies, and recover from setbacks, which in turn reinforces their engagement in school (Hidayatullah et al., 2024; Lathabhavan & Griffiths, 2023). As Lee and Chung (Lee & Chung, 2025) emphasize, self-efficacy not only predicts individual academic performance but also serves as a bridge between social context and internal motivation, highlighting its mediating role between interpersonal support and engagement.

Empirical research supports the idea that self-efficacy mediates the relationship between peer support and school engagement. For instance, Zou et al. (Zou et al., 2023) demonstrated that peer support enhances self-efficacy, which subsequently predicts greater adherence to learning goals. Similarly, Song (Song, 2024) showed that both teacher and peer support indirectly influenced learner engagement through the enhancement of academic self-efficacy. These findings suggest that the social environment contributes to internal psychological resources, which then promote positive academic behaviors. In a related study, Shao and Kang (Shao & Kang, 2022) identified self-efficacy and academic resilience as mediators in the link between peer relationships and learning engagement, further confirming the mediating role of self-beliefs in educational settings.

The importance of understanding this mediating mechanism is underscored by broader educational and psychological theories. Social cognitive theory, for instance, posits that learning occurs within a social context and is influenced by the reciprocal interaction of behavior, environment, and personal factors. Within this framework, peer support represents an environmental factor that can influence personal beliefs (i.e., self-efficacy), which in turn shapes behavioral outcomes such as engagement (Li et al., 2023; Shao et al., 2024). This model helps to explain why students who feel encouraged and supported by their peers tend to believe more strongly in their own academic competence and show greater investment in school tasks.

Recent international studies have further illuminated these dynamics across various cultural and educational contexts. For example, Yang and Lian (Yang & Lian, 2025a) found that in Chinese high school students, perceived social support significantly predicted academic self-efficacy, which mediated the relationship between support and engagement. Likewise, Zhang and Qian (Zhang & Qian, 2024) showed that self-efficacy and engagement jointly mediated the effect of social support on academic performance among adolescents. These findings underscore the generalizability of the peer support–self-efficacy–engagement pathway and call for its investigation in other populations, such as Canadian adolescents.

While much of the existing research has focused on the direct effects of peer relationships and self-efficacy, few

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studies have integrated these constructs into a coherent mediation model with school engagement as the outcome. The lack of comprehensive structural modeling in this domain limits our understanding of the nuanced ways in which social and cognitive variables interact to influence academic outcomes. For instance, the work by Fu-hai et al. (Fu-hai et al., 2022) on technological self-efficacy and learning suggests that efficacy beliefs operate as central nodes in broader networks of influence, modulated by emotional and contextual factors. Applying this insight to the current domain, it becomes imperative to examine how self-efficacy functions within the triadic relationship involving peer support and engagement.

Furthermore, the influence of peer support may vary based on other moderators such as school climate, emotional regulation, and personal motivation. Meditamar (Meditamar, 2024) found that school climate significantly contributes to work engagement through the mediating role of teachers' self-efficacy, suggesting that both environmental and intrapersonal factors must be considered when studying student outcomes. Similarly, Hu and Talib (Hu & Talib, 2023) emphasized that peer and teacher relationships jointly contribute to student engagement, although their relative influence may differ across age groups and educational systems. In this context, investigating the mediating role of self-efficacy allows for a more refined understanding of how peer interactions translate into academic behaviors.

Other studies lend further support to this mediated relationship. For example, Guo (Guo, 2025) explored how work engagement among music teachers is influenced by turnover intentions, mediated by cognitive-emotional variables, reinforcing the broader relevance of engagement models across populations. In the context of adolescent learners, Shao et al. (Shao et al., 2024) demonstrated that motivation and engagement are intricately linked and that social relationships serve as foundational sources of motivation. Likewise, Liu et al. (Liu et al., 2023) identified a positive association between teacher support and learning engagement mediated by students' perceptions of the classroom climate and their own self-efficacy. These findings reinforce the conceptual validity of studying self-efficacy as a mediator between interpersonal factors and engagement.

The role of peer support and self-efficacy has also been recognized in recent interventions aiming to enhance academic engagement. Lombres (Lombres, 2024) showed that strengthening peer relationships can effectively boost science engagement in junior high students, particularly when mediated by academic self-efficacy. Similarly, Sokha (Sokha, 2024) illustrated how integrating contextual and behavioral factors into science instruction improved engagement through increased confidence and support. These intervention-based findings align with the correlational evidence and highlight the potential for school-based programs to enhance peer support and self-efficacy as mechanisms for promoting student engagement.

Given the theoretical background and existing empirical support, the present study aims to examine the mediating role of self-efficacy in the relationship between peer support and school engagement among Canadian adolescents.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a descriptive correlational design to examine the mediating role of self-efficacy in the relationship between peer support and school engagement among adolescents. The target population consisted of high school students in Canada. Using the Krejcie and Morgan (1970) sample size determination table, a sample of 440 students was deemed sufficient for the study, ensuring statistical power for correlational and structural modeling analyses. Participants were selected through stratified random sampling to ensure representation across different grades and school types. All participants provided informed consent, and parental permission was obtained for minors. Inclusion criteria required students to be currently enrolled in high school, aged between 14 and 18, and fluent in English to comprehend and respond accurately to the survey instruments. The data were collected anonymously through self-administered questionnaires distributed in classroom settings with the assistance of school staff to ensure consistency in data collection procedures.

2.2. Measures

2.2.1. School Engagement

To assess the dependent variable of school engagement, the School Engagement Scale (SES) developed by Fredricks, Blumenfeld, Friedel, and Paris in 2005 is employed. This widely used instrument captures the multidimensional nature of student engagement through three core subscales: behavioral engagement, emotional engagement, and cognitive engagement. The scale consists of 19 items, with responses rated on a 5-point Likert scale

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ranging from 1 (never) to 5 (always). Higher scores indicate greater levels of school engagement across the subdomains. The SES has demonstrated strong psychometric properties, with confirmatory factor analyses supporting its construct validity, and internal consistency reliability coefficients (Cronbach's alpha) ranging from 0.72 to 0.88 in various adolescent samples. Its widespread use in educational and psychological research underscores its validity and reliability in measuring engagement among middle and high school students (Gu & Gai, 2025; Jian-ping et al., 2024; Liu et al., 2024).

2.2.2. *Self-Efficacy*

Self-efficacy is measured using the Self-Efficacy Questionnaire for Children (SEQ-C) developed by Muris in 2001. This instrument assesses young individuals' perceived self-efficacy across three domains: academic, social, and emotional functioning. The SEQ-C includes 24 items, equally divided among the three subscales, with each item rated on a 5-point Likert scale from 1 (not at all) to 5 (very well). Higher total scores reflect stronger overall self-efficacy. The SEQ-C has been validated in numerous cross-cultural studies and age groups, showing good construct validity and internal consistency, with reported Cronbach's alpha values typically exceeding 0.80 for each subscale. Its domain-specific approach allows for a nuanced assessment of children's confidence in managing different areas of their lives (Ghavampour Hashimi et al., 2023; Mottaghi, 2024).

2.2.3. *Peer Support*

Peer support is evaluated using the Child and Adolescent Social Support Scale (CASSS) developed by Malecki and Demaray in 2002, specifically utilizing the Peer Support subscale. This tool measures students' perceptions of social support received from their peers in school settings. The full CASSS contains 60 items, but the peer support dimension comprises 12 items that assess aspects such as emotional support, informational assistance, and companionship. Responses are provided on a 6-point Likert scale ranging from 1 (never) to 6 (always), with higher scores indicating stronger perceived peer support. The CASSS has demonstrated excellent psychometric robustness, with high internal consistency (Cronbach's alpha values above 0.90 for the peer subscale) and substantial evidence for its content and construct validity in adolescent populations. Its precision and comprehensive design make it a suitable instrument for evaluating peer-related social support (Jiang et al., 2024; Murphy et al., 2024; Walker et al., 2024).

2.3. *Data Analysis*

Data analysis was conducted in two main stages. Initially, descriptive statistics including means, standard deviations, and frequency distributions were calculated to summarize the participants' demographic characteristics and responses to the study variables. To test the relationships between the variables, Pearson correlation coefficients were calculated using SPSS-27 to assess the linear associations between school engagement and each of the independent variables—peer support and self-efficacy. In the second stage of analysis, Structural Equation Modeling (SEM) was performed using AMOS-21 to examine the hypothesized mediating role of self-efficacy in the relationship between peer support and school engagement. Model fit was evaluated using standard indices including the chi-square statistic, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). The statistical significance of indirect effects was tested using bootstrapping procedures to determine the presence and strength of mediation. All statistical tests were conducted at a significance level of $p < .05$.

3. Findings and Results

The final sample consisted of 440 Canadian high school students, including 256 females (58.18%) and 184 males (41.82%), with participants' ages ranging from 14 to 18 years ($M = 16.12$, $SD = 1.21$). Regarding grade level, 102 students (23.18%) were in Grade 9, 115 students (26.14%) in Grade 10, 111 students (25.23%) in Grade 11, and 112 students (25.45%) in Grade 12. In terms of geographical distribution, 178 participants (40.45%) were from urban schools, 162 (36.82%) from suburban schools, and 100 (22.73%) from rural schools. Additionally, 392 students (89.09%) reported English as their first language, while 48 (10.91%) reported a different primary language spoken at home.

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Table 1

Means and Standard Deviations of Study Variables (N = 440)

Variable	Mean (M)	Standard Deviation (SD)
Peer Support	4.41	0.57
Self-Efficacy	3.88	0.63
School Engagement	4.12	0.52

Students reported relatively high levels of peer support (M = 4.41, SD = 0.57), self-efficacy (M = 3.88, SD = 0.63), and school engagement (M = 4.12, SD = 0.52). These descriptive statistics suggest that participants generally perceived positive social and psychological experiences in school settings (Table 1).

Prior to conducting the main analyses, the assumptions for Pearson correlation and Structural Equation Modeling (SEM) were examined and met. The assumption of normality was confirmed by inspecting skewness and kurtosis values, which fell within the acceptable range of ±1.5 for all variables (e.g., school engagement: skewness = –0.21, kurtosis = 0.48; self-efficacy: skewness = –0.09, kurtosis = 0.71). Linearity was assessed through scatterplots, which showed linear relationships between peer support, self-efficacy, and school engagement. The absence of multicollinearity was supported by tolerance values above 0.70 and Variance Inflation Factor (VIF) values below 1.45. For SEM, the sample size exceeded the minimum required ratio of 10:1 for observed variables, ensuring adequate power. Additionally, Mahalanobis distance values were examined to detect multivariate outliers, and no extreme cases were found beyond the critical chi-square value ($\chi^2(3) = 16.27$, $p < .001$), confirming the data's suitability for multivariate analysis.

Table 2

Pearson Correlation Coefficients Between Study Variables (N = 440)

Variable	1	2	3
1. Peer Support	—		
2. Self-Efficacy	.47** (p < .001)	—	
3. School Engagement	.51** (p < .001)	.62** (p < .001)	—

As shown in Table 2, peer support was positively correlated with self-efficacy ($r = .47$, $p < .001$) and school engagement ($r = .51$, $p < .001$). In addition, self-efficacy showed a strong positive correlation with school engagement ($r = .62$, $p < .001$). These results indicate significant associations between all key variables, supporting the assumptions of the mediation model.

Table 3

Fit Indices for the Structural Equation Model

Fit Index	Value	Criterion
χ^2	142.63	—
df	74	—
χ^2/df	1.93	< 3.00
GFI	0.94	> 0.90
AGFI	0.91	> 0.90
CFI	0.96	> 0.95
TLI	0.95	> 0.95
RMSEA	0.046	< 0.06

The SEM analysis yielded acceptable model fit indices. The chi-square value was 142.63 with 74 degrees of freedom, resulting in a χ^2/df ratio of 1.93. Other indices also indicated good model fit: GFI = 0.94, AGFI = 0.91, CFI = 0.96, TLI = 0.95, and RMSEA = 0.046. These values confirm that the proposed mediation model fits the data well (Table 3).

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Table 4

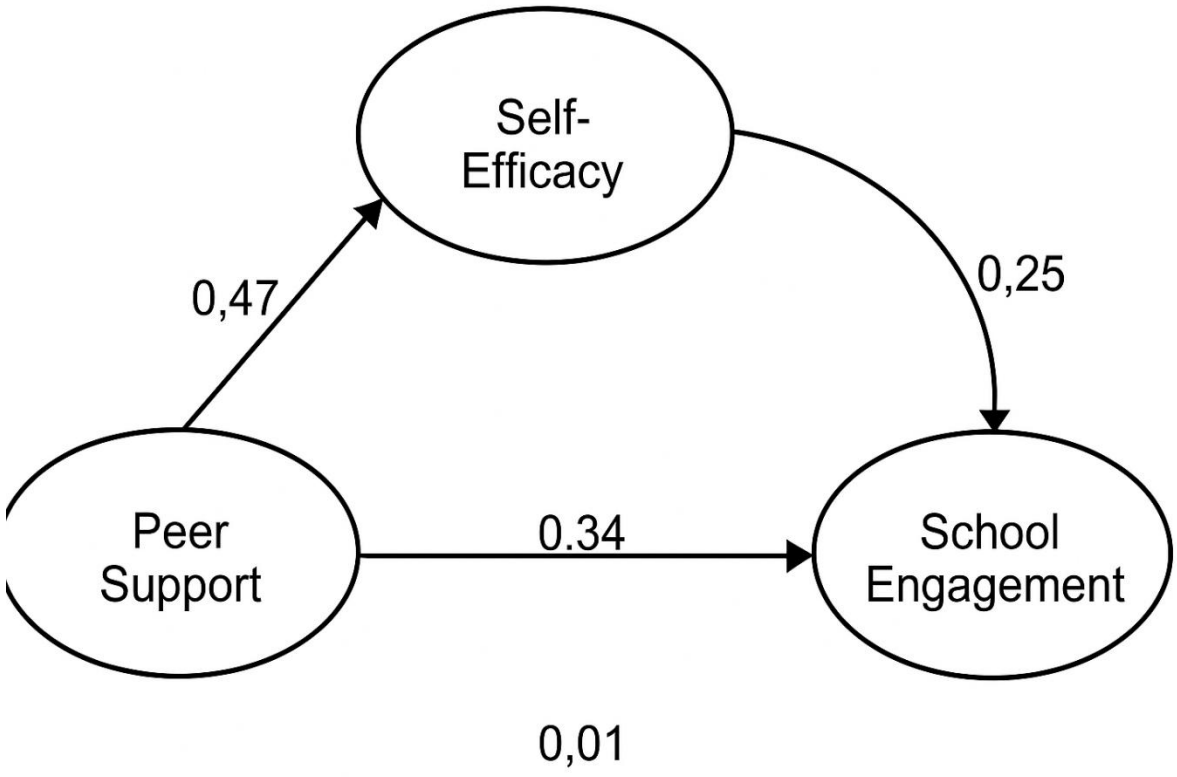
Total, Direct, and Indirect Effects of Variables in the Structural Model

Path	B	S.E.	Beta	p
Peer Support → Self-Efficacy	0.43	0.06	0.47	< .001
Self-Efficacy → School Engagement	0.49	0.05	0.54	< .001
Peer Support → School Engagement	0.27	0.07	0.31	< .001
Peer Support → Self-Efficacy → School Engagement (Indirect)	0.21	0.04	0.25	< .001
Peer Support → School Engagement (Total)	0.48	—	0.56	< .001

Table 4 displays the path coefficients from the SEM model. Peer support significantly predicted self-efficacy (B = 0.43, p < .001), and self-efficacy significantly predicted school engagement (B = 0.49, p < .001). Peer support also had a direct effect on school engagement (B = 0.27, p < .001), and an indirect effect via self-efficacy (B = 0.21, p < .001), yielding a total effect of 0.48. These results confirm the hypothesized partial mediation, with self-efficacy acting as a significant intermediary between peer support and school engagement.

Figure 1

Model with Beta Coefficients



4. Discussion and Conclusion

The present study explored the mediating role of self-efficacy in the relationship between peer support and school engagement among Canadian high school students. Using a descriptive correlational design with both Pearson correlation and Structural Equation Modeling (SEM), the results confirmed the hypothesized relationships. Peer support was significantly and positively associated with school engagement. Self-efficacy also showed a significant positive relationship with both peer support and school engagement. Most importantly, the mediation analysis revealed that self-efficacy partially mediated the relationship between peer support and school engagement, suggesting

that adolescents who perceive strong support from their peers are more likely to develop higher self-efficacy, which in turn enhances their engagement in school activities.

These findings align with a growing body of literature emphasizing the importance of peer interactions in shaping academic behavior and psychological functioning in adolescents. As demonstrated in earlier studies, peer support serves as a critical social resource that enhances adolescents' motivation and emotional well-being, both of which are key contributors to school engagement (Nie & Tsai, 2025; Zhu et al., 2025). Adolescents who receive consistent emotional and academic encouragement from their peers often feel more confident in their abilities and are more likely to participate in classroom activities, maintain attention, and invest effort in learning tasks (Zhang & Qian, 2024; Zou et al., 2023). The strong direct link between peer support and engagement observed in this study supports prior research which demonstrated that positive peer relationships foster a collaborative learning environment and reinforce a sense of belonging within the school setting (Hu & Talib, 2023; Lombres, 2024).

The significant positive relationship between self-efficacy and school engagement is also consistent with previous findings. Students with high levels of self-efficacy are more likely to believe in their ability to perform well academically, persist in the face of difficulties, and adopt effective learning strategies, all of which contribute to greater engagement (Hidayatullah et al., 2024; Lathabhavan & Griffiths, 2023). These students tend to demonstrate higher levels of intrinsic motivation and self-regulated learning behaviors, making them more resilient and proactive in academic environments. In support of this, Shao and Kang (Shao & Kang, 2022) showed that self-efficacy and academic resilience serve as mediators in the relationship between peer relations and learning engagement, confirming the centrality of self-efficacy in the academic engagement process.

Furthermore, the mediation analysis in this study provides empirical evidence for the role of self-efficacy as a psychological mechanism through which peer support influences engagement. This is in line with the conceptual models proposed in social cognitive theory, where environmental factors like peer support affect behavior through cognitive constructs such as self-efficacy. Song (Song, 2024) also found that social support from both teachers and peers predicted student engagement via the mediating role of self-efficacy. Similarly, Zhang and Qian (Zhang & Qian, 2024) observed that the relationship between social support and academic performance was fully mediated by self-efficacy and learning engagement, further validating the findings of the present study. These results underscore the complex but predictable chain of influence whereby relational support bolsters self-beliefs, which in turn catalyze behavioral and emotional commitment to school.

The study also aligns with cross-cultural findings from various educational contexts. For example, Yang and Lian (Yang & Lian, 2025a) reported that perceived social support was positively related to academic self-efficacy and learning engagement among Chinese adolescents, echoing the current findings within the Canadian context. Similarly, research by Wang et al. (Wang et al., 2024) on adolescent athletes confirmed that peer support increased engagement through improvements in self-efficacy and mental toughness, illustrating the generalizability of this mediation model across different domains of adolescent development. The current results also resonate with the findings of Li et al. (Li et al., 2023), who emphasized the importance of interpersonal relationships and self-affirmation in enhancing student engagement, pointing again to the relevance of self-perceptions shaped by social interactions.

Moreover, these findings contribute to an evolving understanding of how supportive social environments within schools can cultivate internal psychological resources that promote engagement. Research by Lee and Chung (Lee & Chung, 2025) emphasized that adolescent relationships with peers and teachers significantly impact academic engagement, mediated by constructs such as self-esteem and grit. The current study complements this by isolating self-efficacy as a standalone mediator and by focusing exclusively on peer support, highlighting the value of horizontal (peer-to-peer) relationships in contrast to the more commonly studied vertical (teacher-student) ones. Also, the findings are strengthened by the use of SEM, which enables a more nuanced examination of indirect effects and confirms the robustness of the mediation model observed in previous correlational studies (Guo, 2025; Shao et al., 2024).

In the broader educational literature, the findings also reflect similar mechanisms reported in teacher-related engagement research. For instance, Liu et al. (Liu et al., 2023) and Yang and Lian (Yang & Lian, 2025b) both found that teacher support enhances learning engagement through increased student self-efficacy, suggesting that whether the support is peer-based or teacher-based, its influence is often filtered through students' self-beliefs. Likewise, Sokha (Sokha, 2024) demonstrated that contextual, personal, and

behavioral factors collectively impact teacher engagement, implying that these patterns may operate across different roles and levels within educational systems. The present study thus adds to this conversation by providing concrete evidence for the student-level application of such mechanisms.

Furthermore, the current results resonate with research emphasizing school climate and its influence on psychological and behavioral outcomes. Meditamar (Meditamar, 2024) showed that a positive school climate indirectly enhances job satisfaction and engagement in teachers through self-efficacy, mirroring the pathway identified in students within this study. The concept of self-efficacy as a central mediator thus appears to hold across age groups and roles, underlining its theoretical importance in understanding engagement-related outcomes.

Despite its contributions, this study has several limitations. First, the cross-sectional design prevents any causal inferences regarding the directionality of the observed relationships. Longitudinal data would be necessary to confirm the temporal sequence implied by the mediation model. Second, all data were collected through self-report questionnaires, which may be subject to social desirability bias or inaccurate self-perceptions. Including teacher evaluations or peer assessments in future research could enhance the validity of findings. Third, the sample was limited to high school students in Canada, which may restrict the generalizability of the results to different age groups or cultural contexts. Finally, while the study focused on peer support and self-efficacy, other relevant variables—such as emotional regulation, teacher support, or school connectedness—were not included and may provide additional explanatory power.

Future studies should consider longitudinal or experimental designs to better examine the causal mechanisms underlying the relationship between peer support, self-efficacy, and school engagement. It would also be valuable to explore whether the mediation model holds across different age groups, such as middle school or university students, and across diverse cultural or socioeconomic settings. Future research could incorporate additional mediators or moderators—such as motivation, resilience, or classroom climate—to develop a more comprehensive model of student engagement. Finally, researchers might employ mixed-methods designs to integrate qualitative insights into how students experience peer support and how it translates into their sense of efficacy and engagement.

To improve school engagement, educational practitioners should prioritize the development of peer support structures within the classroom and the broader school environment. Peer mentoring programs, cooperative learning strategies, and group-based projects can foster interpersonal bonds and encourage mutual academic support among students. Teachers and school counselors should also focus on enhancing students' self-efficacy through feedback, goal-setting, and opportunities for mastery experiences. School policies and curricula should be designed to cultivate both supportive peer environments and individual self-belief, as both are critical in promoting sustained engagement and academic success.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

References

Fu-hai, A. N., Xi, L., Yu, J., & Zhang, M. (2022). Relationship Between Technology Acceptance and Self-Directed Learning: Mediation Role of Positive Emotions and Technological Self-

Efficacy. *Sustainability*, *14*(16), 10390. https://doi.org/10.3390/su141610390

Ghavampour Hashimi, S. M., Mohammad Zadeh Admalayi, R. A., & Bagheri Kaboudkala, M. (2023). The effectiveness of cognitive-behavioral therapy on behavioral inhibition and self-efficacy in children with specific learning disorders. *Journal of Psychology and Cognitive Psychiatry*, *10*(3), 54-67. https://doi.org/10.32598/shenakht.10.3.54

Gu, T., & Gai, X. (2025). Impact of Personal Values on School Engagement Among Chinese Adolescents: Mediating Effects of Achievement Goals. *Behavioral Sciences*, *15*(1), 76. https://doi.org/10.3390/bs15010076

Guo, Y. (2025). Impact of Turnover Intention on Work Engagement Among Primary and Secondary School Music Teachers: A Moderated Mediation Approach. *Journal of Ecohumanism*, *4*(1). https://doi.org/10.62754/joe.v4i1.6075

Hidayatullah, A., Abidin, R., & Muqit, A. (2024). Motivation and Behavioral Engagement: The Mediating Role of Mathematics Self-Efficacy in Primary Education. *Journal on Efficiency and Responsibility in Education and Science*, *17*(3), 237-246. https://doi.org/10.7160/eriesj.2024.170306

Hu, Y., & Talib, M. A. (2023). Student Engagement and Its Association With Peer Relation and Teacher-Student Relation: A Systematic Review. *Educational Administration Theory and Practice Journal*, *29*(4), 35-49. https://doi.org/10.52152/kuey.v29i4.763

Jian-ping, G., Roslan, S., Geok, S. K., & Zaremohzzabieh, Z. (2024). An Experimental Study on the Impact of Positive Education on School Engagement and Psychological Well-Being Among Boarding School Students in China. *Journal of Ecohumanism*, *3*(8). https://doi.org/10.62754/joe.v3i8.5227

Jiang, Z., Chu, X., Yuan, W., Song, Y., Lin, Z., Liu, Y., Chen, Z., Li, G. N., Huang, X., & Wen, J. (2024). The role of peer support in promoting mental health of Chinese adolescents. *China CDC weekly*, *6*(29), 723-726. https://doi.org/10.46234/ccdcw2024.163

Lathabhavan, R., & Griffiths, M. D. (2023). Antecedents and Job Outcomes From a Self-Efficacy Perspective While Working From Home Among Professionals During the COVID-19 Pandemic. *International Journal of Manpower*, *45*(2), 217-236. https://doi.org/10.1108/ijm-04-2022-0185

Lee, M., & Chung, H. (2025). The Structural Relationship Between Adolescents' Relationships With Teachers and Peers and Academic Engagement: Focusing on the Mediating Effects of Self-Esteem and Grit. *Korean Assoc Learner-Centered Curric Instr*, *25*(1), 35-52. https://doi.org/10.22251/jlcci.2025.25.1.35

Li, L., Yu, J., & Zhang, Y. (2023). The Impact of Interpersonal Relationships on Students' Learning Engagement - The Mediating Role of Self-Affirmation. *Frontiers in Educational Research*, *6*(12). https://doi.org/10.25236/fer.2023.061221

Liu, B., Gai, X., Wang, G., Wang, S. C., & Li, D. (2024). Parenting Styles and Adolescents' School Engagement: The Mediating Role of Future Orientation. *Children and Youth Services Review*, *163*, 107732. https://doi.org/10.1016/j.childyouth.2024.107732

Liu, B., Xu, L., Luo, X., & Shui-lin, L. U. (2023). Research on the Relationship Between Teacher Support and Learning Engagement in Chinese High School Information Technology Courses. *International Journal of Information and Communication Technology Education*, *19*(1), 1-21. https://doi.org/10.4018/ijicte.322025

Lombres, G. (2024). Academic Self-Efficacy and Engagement in Learning Science of Junior High School Students: The Mediating Role of Peer Relationship. *Pijhss*. https://doi.org/10.69651/pijhss030413

Meditamar, M. O. (2024). Does School Climate Matter for Job Satisfaction? The Mediating Role of Teachers' Self-Efficacy and Work Engagement. *Jurnal Pedagogi Dan Pembelajaran*, *7*(3), 416-428. https://doi.org/10.23887/jp2.v7i3.81079

Mottaghi, R. (2024). The effectiveness of parenting education based on acceptance and commitment on self-efficacy and parent-child relationship in young mothers. *Journal of nursing education*, *13*(1), 58-67. https://www.magiran.com/paper/2711007

Murphy, R., Huggard, L., Fitzgerald, A., Hennessy, E., & Booth, A. (2024). A systematic scoping review of peer support interventions in integrated primary youth mental health care. *Journal of Community Psychology*, *52*(1), 154-180. https://doi.org/10.1002/jcop.23090

Nie, T.-Y., & Tsai, K.-C. (2025). Perceived Social Support and Art Engagement in Extracurricular Visual Arts Activities for Primary School Students: The Mediating Role of Drawing Self-Efficacy. *Journal of Ecohumanism*, *4*(1). https://doi.org/10.62754/joe.v4i1.6012

Shao, Y., & Kang, S. (2022). The Association Between Peer Relationship and Learning Engagement Among Adolescents: The Chain Mediating Roles of Self-Efficacy and Academic Resilience. *Frontiers in psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.938756

Shao, Y., Kang, S., Lu, Q., Zhang, C., & Li, R. (2024). How Peer Relationships Affect Academic Achievement Among Junior High School Students: The Chain Mediating Roles of Learning Motivation and Learning Engagement. *BMC psychology*, *12*(1). https://doi.org/10.1186/s40359-024-01780-z

Sokha, K. (2024). Examine the Impact of Contextual, Personal, and Behavioral Factors on High School Teachers' Engagement in Teaching Science Using an Integrated STEM Approach. *International Journal of Science and Mathematics Education*, *22*(8), 1857-1883. https://doi.org/10.1007/s10763-024-10447-5

Song, Y. (2024). Sustainable Growth of Learner Engagement and Well-Being Through Social (Teacher and Peer) Support: The Mediator Role of Self-Efficacy. *European Journal of Education*, *59*(4). https://doi.org/10.1111/ejed.12791

Walker, J. S., Klodnick, V. V., LaPelusa, B., Blajeski, S. M., Freedman, A. R., & Marble, S. (2024). A theory of change for one-on-one peer support for older adolescents and young adults. *Children and Youth Services Review*, *157*, 1-8. https://doi.org/10.1016/j.childyouth.2023.107386

Wang, P., Shi, C., Chen, J., Wang, Z., Gao, X., Fan, Y., & Mao, Y. (2024). The Effect of Social Support on Adolescent Athletes Engagement: Self-Efficacy and Mental Toughness of the Chain Mediated Effects. https://doi.org/10.21203/rs.3.rs-3839312/v1

Woreta, G. T. (2024). Predictors of Academic Engagement of High School Students: Academic Socialization and Motivational Beliefs. *Frontiers in psychology*, *15*. https://doi.org/10.3389/fpsyg.2024.1347163

Yang, L., & Lian, L. H. (2025a). The Influence of Perceive Teacher Support on High School Students' Learning Engagement in China. *International Journal of Evaluation and Research in Education (Ijere)*, *14*(1), 575. https://doi.org/10.11591/ijere.v14i1.29898

Yang, L., & Lian, L. H. (2025b). Perceive Social Support, Academic Self-Efficacy, and Learning Engagement Among High School Students in China. *International Journal of Evaluation and Research in Education (Ijere)*, *14*(1), 629. https://doi.org/10.11591/ijere.v14i1.31029

Zhang, X., & Qian, W. (2024). The Effect of Social Support on Academic Performance Among Adolescents: The Chain

Mediating Roles of Self-Efficacy and Learning Engagement. *PLoS One*, *19*(12), e0311597. https://doi.org/10.1371/journal.pone.0311597

Zhang, Y., Hu, Y., & Yu, M. (2024). Exploring Emotional Support and Engagement in Adolescent EFL Learning: The Mediating Role of Emotion Regulation Strategies. *Language Teaching Research*. https://doi.org/10.1177/13621688241266184

Zhu, M., Yao, X. a., & Talib, M. A. (2025). Fostering Learning Engagement: The Impact of Different Interpersonal Relationships From the Perspective of Positive Youth Development. *Frontiers in psychology*, *15*. https://doi.org/10.3389/fpsyg.2024.1419588

Zou, Y., Liu, S., Guo, S., Zhao, Q., & Cai, Y. (2023). Peer Support and Exercise Adherence in Adolescents: The Chain-Mediated Effects of Self-Efficacy and Self-Regulation. *Children*, *10*(2), 401. https://doi.org/10.3390/children10020401

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