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The Influence of Social Support on Academic Engagement among Higher Vocational College Students in Chengdu, China

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Abstract

This study explored the influence of social support on academic engagement among higher vocational college students in Chengdu, China, aiming to understand the mechanisms through which social support enhances students' learning engagement. A quantitative research approach was employed, involving a structured questionnaire distributed to 533 students. Structural equation modeling (SEM) and bootstrap analysis were used to test the hypothesized relationships.

The results showed that social support significantly improved academic engagement ($\beta = 0.58$, $p < 0.001$). In addition, academic self-efficacy ($\beta = 0.46$, $p < 0.001$) and self-regulated learning ($\beta = 0.39$, $p < 0.001$) were found to play significant mediating roles in this relationship. The sequential mediation effect of academic self-efficacy and self-regulated learning was also supported ($\beta = 0.18$, $p < 0.01$), indicating that social support enhances academic engagement through a chain mechanism of psychological and behavioral factors.

The findings suggest that social support not only directly promotes students' academic engagement but also indirectly influences it by strengthening students' confidence and learning strategies. These results imply that educators should pay greater attention to creating supportive learning environments and fostering students' self-efficacy and self-regulated learning abilities. Future research should consider longitudinal designs and broader samples to further validate the stability and generalizability of these findings.

Keywords*: Social support, Academic engagement, Academic self-efficacy, Self-regulated learning, Higher vocational students, China*

1. Introduction

In recent years, academic engagement has become a central topic in educational research, as it is closely associated with students' academic achievement, persistence, and overall development. Academic engagement refers to students' active involvement in learning activities, including behavioral, emotional, and cognitive dimensions (Bond et al., 2020). Particularly in higher vocational education, where students are expected to develop both practical skills and theoretical knowledge, maintaining a high level of academic engagement is essential. However, many vocational college students

experience low motivation, limited learning strategies, and weak persistence, which negatively affect their engagement in learning activities (Li, 2021).

Social support has been widely recognized as a critical external factor influencing students' learning engagement. It includes emotional, informational, and instrumental support provided by teachers, peers, and family members (Malecki & Demaray, 2019). Recent studies have demonstrated that social support can significantly enhance students' academic engagement by improving their emotional well-being and learning motivation (Wang & Eccles, 2021). In the context of Chinese vocational education, where students often face academic pressure and skill-based challenges, social support plays an even more important role in facilitating positive learning behaviors (Zhang, 2022).

In addition to external support, internal psychological factors are crucial in explaining how social support translates into academic engagement. Academic self-efficacy, defined as students' confidence in their ability to accomplish academic tasks, has been found to significantly influence learning motivation and performance (Honicke & Broadbent, 2019). Students with higher self-efficacy are more likely to persist in challenging tasks and adopt effective learning strategies. Furthermore, self-regulated learning refers to students' ability to plan, monitor, and evaluate their own learning processes, which is essential for sustaining long-term academic engagement (Panadero, 2017; updated applications discussed in Zheng, 2023).

Recent research has begun to explore the mediating roles of psychological and behavioral factors in the relationship between social support and academic engagement. For instance, studies have found that social support can enhance academic engagement indirectly through self-efficacy and self-regulated learning (Liu et al., 2022; Chen & Zhang, 2024). However, limited research has examined the sequential mechanism linking social support, academic self-efficacy, and self-regulated learning, especially in the context of higher vocational college students in China.

Therefore, this study aims to investigate the influence of social support on academic engagement among higher vocational college students in Chengdu, China, and to examine the mediating roles of academic self-efficacy and self-regulated learning. By addressing this research gap, the study seeks to provide empirical evidence and practical implications for improving teaching management and promoting student engagement in vocational education.

2. Research Objectives

1. To examine the relationship between perceived social support (from family, peers, and significant others) and academic engagement among students in higher vocational education.
2. To investigate the relationships between perceived social support and students' academic self-efficacy and self-regulated learning.
3. To analyze the relationships among academic self-efficacy, self-regulated learning, and academic engagement in higher vocational education.
4. To examine the mediating roles of academic self-efficacy and self-regulated learning in the relationship between perceived social support and academic engagement, including their sequential mediating effect.

3. Research Questions

1. What is the relationship between perceived social support (from family, peers, and significant others) and academic engagement among students in higher vocational education?
2. How is perceived social support related to students' academic self-efficacy and self-regulated learning?
3. What are the relationships among academic self-efficacy, self-regulated learning, and academic engagement in higher vocational education?
4. Do academic self-efficacy and self-regulated learning mediate the relationship between perceived social support and academic engagement, and do they form a sequential mediating pathway through which perceived social support influences academic engagement?

4. Literature Review

1. Social support and academic engagement

Perceived social support has been consistently identified as a key contextual factor influencing students' academic engagement. Empirical studies suggest that support from family, peers, and significant others enhances students' emotional well-being and motivation, thereby promoting active participation in learning activities (Wang & Eccles, 2021). Within the Job Demands–Resources framework, social support functions as a critical resource that sustains students' vigor, dedication, and absorption in academic tasks (Bakker & Demerouti, 2017).

2. Social support and academic self-efficacy

A substantial body of research indicates that perceived social support positively predicts academic self-efficacy. According to Social Cognitive Theory, supportive interactions provide encouragement and feedback that strengthen students' beliefs in their academic capabilities (Bandura, 1997). Empirical evidence confirms that students who perceive higher levels of support tend to report stronger confidence, greater persistence, and more adaptive responses to academic challenges (Honicke & Broadbent, 2019; Chen et al., 2021).

3. Social support and self-regulated learning

Recent studies highlight the role of social support in facilitating self-regulated learning. Supportive environments provide informational guidance, feedback, and collaborative opportunities that help students develop and apply effective learning strategies (Broadbent & Poon, 2015; Jansen et al., 2019). In this sense, social support not only enhances motivation but also contributes directly to students' ability to plan, monitor, and regulate their learning processes.

4. Academic self-efficacy and self-regulated learning

Academic self-efficacy has been widely recognized as a critical antecedent of self-regulated learning. Students who believe in their capability to succeed are more likely to engage in planning, monitoring, and strategy use during learning (Zimmerman, 2000; Panadero, 2017). Empirical research consistently shows that self-efficacy is one of the strongest predictors of students' use of cognitive and metacognitive strategies (Dent & Koenka, 2016).

5. Academic self-efficacy and academic engagement

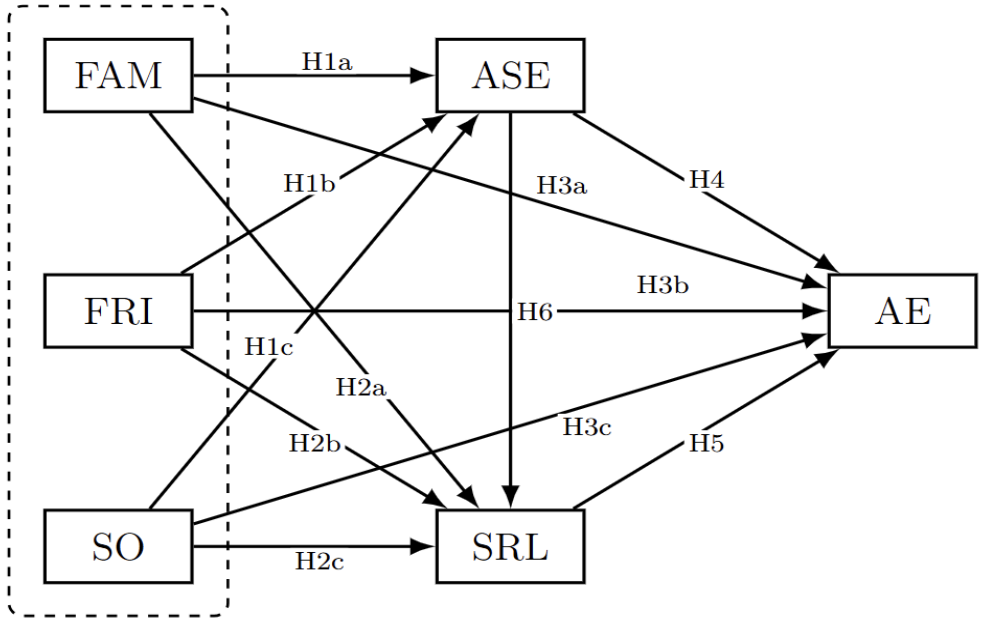
Academic self-efficacy plays a central role in promoting academic engagement by influencing students' effort, persistence, and emotional investment. Students with higher efficacy beliefs are more likely to remain engaged in learning tasks, even when facing difficulties (Salanova et al., 2010). This relationship has been consistently supported across different educational contexts.

6. Self-regulated learning and academic engagement

Self-regulated learning is considered a proximal determinant of academic engagement, as it directly reflects students' ability to manage their learning processes. Students who actively regulate their cognition and behavior tend to demonstrate higher levels of concentration, persistence, and involvement in learning activities (Fredricks et al., 2004; Broadbent & Poon, 2015). This suggests that self-regulation serves as a key mechanism linking motivation to sustained engagement.

7. Mediation and sequential mechanism

Although prior studies have examined the relationships among social support, self-efficacy, self-regulated learning, and engagement, most research focuses on direct or single mediation effects. Limited attention has been given to the sequential mechanism through which social support influences academic engagement via internal psychological and behavioral processes (Liu et al., 2022; Chen & Zhang, 2024). This highlights the need for an integrated model that captures the transformation from contextual resources to engagement outcomes.



H7: FAM/FRI/SO → ASE → AE
H8: FAM/FRI/SO → SRL → AE
H9: FAM/FRI/SO → ASE → SRL → AE

Figure 1: Hypothesized structural model (H1a–H9).

5. Research Hypotheses

Based on the theoretical framework and empirical literature reviewed above, the present study proposes a series of hypotheses regarding the relationships among perceived social support, academic self-efficacy, self-regulated learning, and academic engagement.

First, perceived social support is expected to directly predict academic engagement.

H1a: Family support is positively associated with academic engagement.

H1b: Friend support is positively associated with academic engagement.

H1c: Significant other support is positively associated with academic engagement.

Second, perceived social support is expected to influence students' internal learning resources, including academic self-efficacy and self-regulated learning.

H2a: Family support is positively associated with academic self-efficacy.

H2b: Friend support is positively associated with academic self-efficacy.

H2c: Significant other support is positively associated with academic self-efficacy.

H3a: Family support is positively associated with self-regulated learning.

H3b: Friend support is positively associated with self-regulated learning.

H3c: Significant other support is positively associated with self-regulated learning.

Third, academic self-efficacy and self-regulated learning are expected to play important roles in sustaining academic engagement.

H4: Academic self-efficacy is positively associated with self-regulated learning.

H5: Academic self-efficacy is positively associated with academic engagement.

H6: Self-regulated learning is positively associated with academic engagement.

Finally, the study proposes mediation and sequential mediation mechanisms through which perceived social support influences academic engagement.

H7a: Academic self-efficacy mediates the relationship between family support and academic engagement.

H7b: Academic self-efficacy mediates the relationship between friend support and academic engagement.

H7c: Academic self-efficacy mediates the relationship between significant other support and academic engagement.

H8a: Self-regulated learning mediates the relationship between family support and academic engagement.

H8b: Self-regulated learning mediates the relationship between friend support and academic engagement.

H8c: Self-regulated learning mediates the relationship between significant other support and academic engagement.

H9a: Academic self-efficacy and self-regulated learning sequentially mediate the relationship between family support and academic engagement.

H9b: Academic self-efficacy and self-regulated learning sequentially mediate the relationship between friend support and academic engagement.

H9c: Academic self-efficacy and self-regulated learning sequentially mediate the relationship between significant other support and academic engagement.

6. Methodology

6.1 Research Design

This study adopts a quantitative research design using a cross-sectional survey method to examine the relationships among perceived social support, academic self-efficacy, self-regulated learning, and academic engagement among students in higher vocational education.

Guided by Social Cognitive Theory, the Job Demands–Resources model, and Conservation of Resources theory, the study proposes a structural model incorporating both direct and indirect relationships among the variables. In particular, the study tests a sequential mediation model in which perceived social support influences academic engagement through academic self-efficacy and self-regulated learning.

A structured self-report questionnaire was used to collect data, and Structural Equation Modeling (SEM) was employed to test the hypothesized relationships. This design enables the simultaneous estimation of multiple relationships among latent variables and is appropriate for examining mediation and sequential mediation effects.

6.2 Population and Sample

The target population of this study consists of full-time higher vocational college students in Chengdu, Sichuan Province, China. The accessible population was drawn from Urban Vocational College of Sichuan, a comprehensive institution with approximately 26,000 enrolled students across multiple academic disciplines.

A multi-stage sampling strategy was employed to ensure representativeness. First, purposive sampling was used to select the research site. Second, stratified sampling was conducted within the institution to ensure balanced representation across grade levels (first-year, second-year, and third-year students) and academic programs (STEM and non-STEM fields).

To determine an appropriate sample size, the study referred to the sampling table proposed by Krejcie and Morgan (1970), which suggests that a minimum of 379 respondents is required for a population of this size at a 95% confidence level. To improve statistical robustness and account for invalid responses, more than 400 questionnaires were targeted for collection.

6.3 Instruments

This study employed a structured self-report questionnaire to measure the four core constructs: Perceived Social Support, Academic Self-Efficacy, Self-Regulated Learning, and Academic Engagement. All instruments were adapted from well-established scales with strong psychometric properties in previous research.

Perceived Social Support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS), which includes three dimensions: Family Support, Friend Support, and Support from Significant Others. Academic Self-Efficacy was measured using the Academic Efficacy subscale of the Patterns of Adaptive Learning Scales (PALS). Self-Regulated Learning was assessed using the revised Self-Regulated Learning Ability Questionnaire. Academic Engagement was measured using the Utrecht Work Engagement Scale–Student Version (UWES-S).

All scales were administered using Likert-type response formats, and validated Chinese versions were adopted to ensure linguistic and cultural appropriateness.

The detailed structure and items of each measurement scale are presented in Tables 1 to 4.

Table 1 : Multidimensional Scale of Perceived Social Support (MSPSS)

Dimension	Item
Family Support	1. My family really cares about me. 2. My family is very concerned about me. 3. My family is willing to help me whenever I need. 4. I can get the emotional support I need from my family members.

Dimension	Item
Friend Support	5. I have several friends who really care about me. 6. My friends are willing to help me. 7. I can talk about my problems with my friends. 8. I can get the support I need from my friends.
Support from Significant Others	9. There is a special person who is concerned about my well-being. 10. I can share my important matters with a special person. 11. This special person is very supportive of me. 12. I can get emotional support from this special person.

Table 2 : Academic Self-Efficacy Scale

Dimension	Item
Academic Self-Efficacy	1. I am certain I can master the skills taught in class. 2. I am certain I can figure out how to do the most difficult class work. 3. I can do almost all the work in the class if I do not give up. 4. Even if the work is hard, I can learn it. 5. I can do even the hardest work in this class if I try.

Table 3 : Structure and Items of the Self-Regulated Learning Scale

Construct	Item Content
Self-Regulated Learning	1. After the teacher teaches a lesson, I can start my homework without difficulty. 2. Even if there are other interesting things to do, I will still prioritize my homework. 3. Even with many distractions around, I can maintain my concentration during class. 4. Even if I have no interest in the assignment, I motivate myself to complete it. 5. I formulate a specific plan to complete my assignments. 6. I memorize the information provided in textbooks or experiments. 7. I actively organize my learning tasks. 8. When I need to complete an unfamiliar task, I find and use appropriate tools. 9. In my course learning, I set specific goals for myself. 10. I refer to previously set goals to measure the progress I have made. 11. If I find my study methods are not working, I improve or adjust my methods. 12. I accurately record the scores or grades I have obtained so far. 13. I select a study environment free from distractions. 14. I seek help from peers who can provide me with important feedback. 15. When assignments have time limits, I can handle my time effectively.

Table 4 : Chinese Version of the Academic Engagement Scale (UWES-S-17)

Dimension	Items
Vigor	1. When I get up in the morning, I look forward to studying. 2. I feel bursting with energy while studying. 3. Even when studying is difficult, I do not give up easily and can persist. 4. I can study for long periods without needing a break. 5. Even when mentally tired, I can quickly recover while studying. 6. While studying, I feel strong and full of energy.
Dedication	7. I find my studies challenging. 8. Studying inspires me. 9. I am enthusiastic about my studies. 10. I am proud of my studies. 11. I find my studies purposeful and meaningful.
Absorption	12. I forget everything around me when studying. 13. Time passes quickly when I study. 14. I am fully concentrated on studying. 15. It is difficult for me to detach from my studies. 16. I am immersed in my studies. 17. I feel happy when I am fully engaged in studying.

7. Reliability and Validity

To ensure the quality of the measurement instruments used in this study, both reliability and validity were systematically evaluated. Reliability refers to the internal consistency of the measurement scales, while validity reflects the extent to which the instruments accurately measure the intended constructs.

In this study, internal consistency reliability was assessed using Cronbach's alpha coefficients. Convergent validity was evaluated by examining composite reliability (CR) and average variance extracted (AVE). According to commonly accepted criteria, Cronbach's alpha and CR values above 0.70 indicate satisfactory reliability, while AVE values exceeding 0.50 suggest adequate convergent validity.

In addition, discriminant validity was assessed using the Fornell–Larcker criterion, which compares the square roots of AVE values with the inter-construct correlation coefficients. Discriminant validity is considered acceptable when the square root of AVE for each construct is greater than its correlations with other constructs.

The results of reliability and convergent validity are presented in Table 5, and the results of discriminant validity are shown in Table 6.

Table 5 : KMO and Bartlett's Test Results (Pilot Study, N = 50)

Scale	KMO Measure	Bartlett's Test (Sig.)
Perceived Social Support	0.688	0
Academic Self-Efficacy	0.887	0
Self-Regulated Learning	0.922	0
Academic Engagement	0.905	0

Internal consistency reliability was then assessed using Cronbach's alpha coefficients for each scale. The reliability results based on the pilot sample are reported in Table 6.

Table 6 : Reliability Statistics for the Pilot Study N=50

Scale	Number of Items	Cronbach's α
Perceived Social Support	12	0.802
Academic Self-Efficacy	5	0.900
Self-Regulated Learning	15	0.961
Academic Engagement	17	0.938

8. Data Collection

Data for this study were collected using a structured online questionnaire administered through the Wenjuanxing platform, which is widely used for academic surveys in China. The data collection process was conducted during the middle of the academic semester to ensure that students' learning conditions were relatively stable and to minimize potential biases associated with transitional or examination periods.

Participants were invited to complete the questionnaire voluntarily through official class communication channels. Before accessing the questionnaire, respondents were provided with an informed consent statement that explained the purpose of the study and assured them of anonymity and confidentiality. Only those who agreed to participate were allowed to proceed with the survey.

To ensure the quality of the collected data, several control measures were implemented. The questionnaire required responses to all items, thereby minimizing missing data. In addition, responses with excessively short completion times or obvious response patterns (e.g., identical answers across items) were identified and removed during the data screening process.

9. Data Analysis

Data analysis in this study was conducted using SPSS 26.0 and AMOS 24.0. The analysis process followed a systematic procedure to ensure consistency with the research objectives and theoretical framework.

First, descriptive statistics were computed to summarize the basic characteristics of the data, including mean values and standard deviations. Correlation analysis was then conducted to examine the relationships among the study variables.

Second, confirmatory factor analysis (CFA) was performed to evaluate the measurement model, including the assessment of reliability and validity of the constructs.

Third, structural equation modeling (SEM) was employed to examine the hypothesized relationships among Perceived Social Support, Academic Self-Efficacy, Self-Regulated Learning, and Academic Engagement. Model fit was evaluated using multiple goodness-of-fit indices, including χ^2/df, CFI, TLI, and RMSEA.

Finally, mediation and sequential mediation effects were examined using a bootstrap method with resampling procedures to estimate indirect effects and confidence intervals.

The statistical results of these analyses are presented in Chapter 4, including descriptive statistics, correlation analysis, structural model testing, and mediation analysis.

10. Results

1. Descriptive Statistics

Table 7 presents the demographic characteristics of the sample (N = 533). The gender distribution is relatively balanced, with 46.34% male and 53.66% female participants. In terms of academic level, Year 1 students account for the largest proportion (36.02%), followed by Year 3 (32.83%) and Year 2 (31.14%), indicating that the sample adequately represents different stages of study. Additionally, the distribution of major type is nearly equal, with 50.09% from STEM and 49.91% from non-STEM fields. Overall, the balanced composition across gender, grade, and academic discipline enhances the representativeness of the sample and supports the reliability of subsequent analyses.

Table 7 : Demographic Characteristics of the Sample (N = 533)

Variable	Category	N	%
Gender	Male	247	46.34
	Female	286	53.66
Grade	Year 1	192	36.02
	Year 2	166	31.14
	Year 3	175	32.83
Major Type	STEM	267	50.09
	Non-STEM	266	49.91

2. Descriptive Statistics and Correlation Analysis

Table 8 presents the descriptive statistics of the key variables. All mean values are above 3.0, indicating moderate to relatively high levels of perceived social support, academic self-efficacy, self-regulated learning, and academic engagement. Among them, support from significant others (SO) shows the highest mean, suggesting stronger perceived support from important individuals. The standard deviations indicate acceptable variability, supporting the suitability of the data for further analysis. The measurement model demonstrated satisfactory validity and reliability, supporting further analysis according to the research objectives.

Table 8 Descriptive Statistics of Key Variables

Variable	N	Minimum	Maximum	Mean	SD
FAM	533	1.00	5	3.332	0.956
FRI	533	1.25	5	3.312	0.996
SO	533	1.00	5	3.358	0.982
ASE	533	1.20	5	3.304	0.964
SRL	533	1.60	5	3.313	0.979
AE	533	1.53	5	3.348	0.945

3. Measurement Model Assessment

Figure 1 presents the confirmatory factor analysis (CFA) model, illustrating the measurement relationships between latent constructs and their observed indicators. Perceived social support is represented by three dimensions, family (SS_FAM), friends (SS_FRI), and significant others (SS_SO), each measured by four items. Academic self-efficacy (ASE_C) is measured by five items, self-regulated learning (SRL_C) by three items, and academic engagement (AE_C) by three dimensions including vigor, dedication, and absorption. The model also shows correlations among all latent variables, indicating the theoretical relationships to be tested. Overall, the structure reflects a clear and theoretically grounded measurement model suitable for further validation.

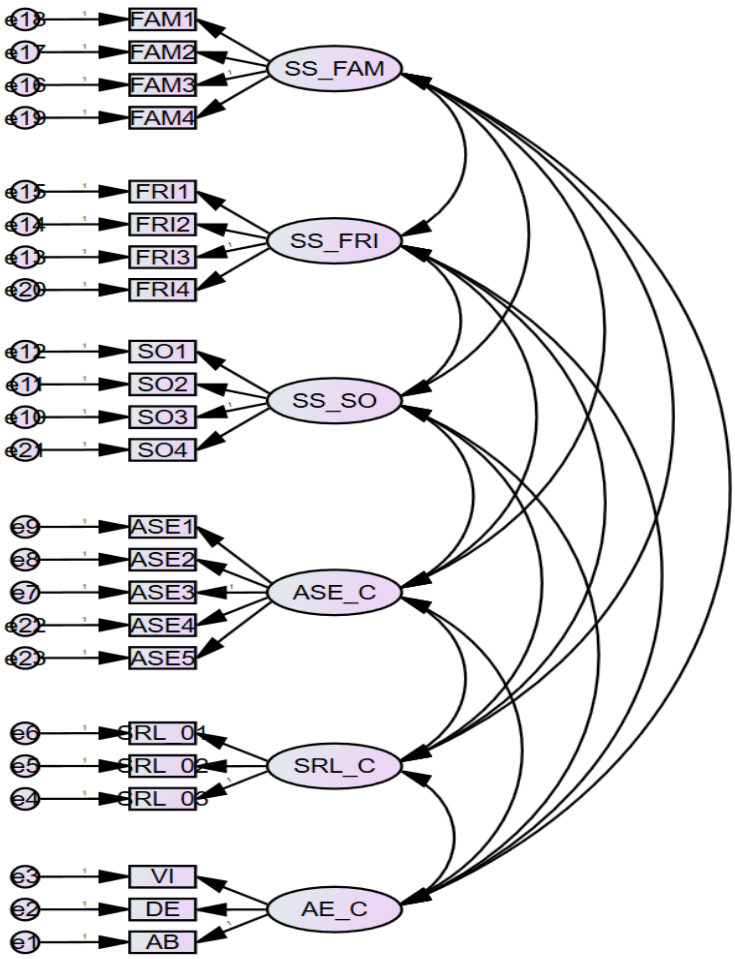


Figure 1 : Confirmatory Factor Analysis Model

Table 9 presents the measurement model fit indices. The results indicate an excellent model fit, with $\chi^2/df = 1.032$, which is well below the recommended threshold of 3. The p-value (0.357) is non-significant, suggesting a good fit between the model and the data. Additionally, the CFI and TLI values are both 0.999, exceeding the acceptable standard of 0.90, while the RMSEA value of 0.008 is far below the threshold of 0.08. Overall, these indices demonstrate that the measurement model has a very good fit and is suitable for further structural analysis.

Table 9 : Measurement Model Fit Indices

Fit Index	Value
χ^2	221.984
df	215
χ^2/df	1.032
p-value	0.357
CFI	0.999
TLI	0.999
RMSEA	0.008

4. Structural Model Assessment

Figure 2 presents the structural equation model illustrating the relationships among perceived social support, academic self-efficacy, self-regulated learning, and academic engagement among higher vocational college students.

Research Objective 1: To examine the relationship between perceived social support (from family, peers, and significant others) and academic engagement among students in higher vocational education.

The structural model results indicate that family support, friend support, and significant other support all have significant positive effects on academic engagement. These findings suggest that students who perceive stronger emotional and interpersonal support are more likely to demonstrate higher levels of academic involvement, persistence, and enthusiasm in learning activities. Therefore, H1a, H1b, and H1c were supported.

Research Objective 2: To investigate the relationships between perceived social support and students' academic self-efficacy and self-regulated learning.

The findings demonstrate that perceived social support significantly predicts both academic self-efficacy and self-regulated learning. Specifically, family support, friend support, and support from significant others positively influence students' confidence in completing academic tasks as well as their ability to regulate and manage their learning behaviors effectively. Therefore, H2a–H2c and H3a–H3c were supported.

Research Objective 3: To analyze the relationships among academic self-efficacy, self-regulated learning, and academic engagement in higher vocational education.

The structural model further reveals that academic self-efficacy positively influences both self-regulated learning and academic engagement. In addition, self-regulated learning also has a significant positive effect on academic engagement. These findings indicate that students with stronger academic confidence are more likely to adopt effective learning strategies and maintain active participation in academic activities. Therefore, H4, H5, and H6 were supported.

Research Objective 4: To examine the mediating roles of academic self-efficacy and self-regulated learning in the relationship between perceived social support and academic engagement, including their sequential mediating effect.

The mediation analysis confirms that academic self-efficacy and self-regulated learning significantly mediate the relationship between perceived social support and academic engagement. In addition to their independent mediating effects, the sequential mediation pathway from perceived social support to academic self-efficacy, then to self-regulated learning, and finally to academic engagement was also statistically supported. These findings indicate that supportive social environments enhance students' academic

confidence, which subsequently strengthens self-regulated learning behaviors and ultimately promotes academic engagement. Therefore, H7a–H7c, H8a–H8c, and H9a–H9c were supported.

The structural model provides empirical support for the proposed theoretical framework and confirms the important direct and indirect relationships among perceived social support, academic self-efficacy, self-regulated learning, and academic engagement.

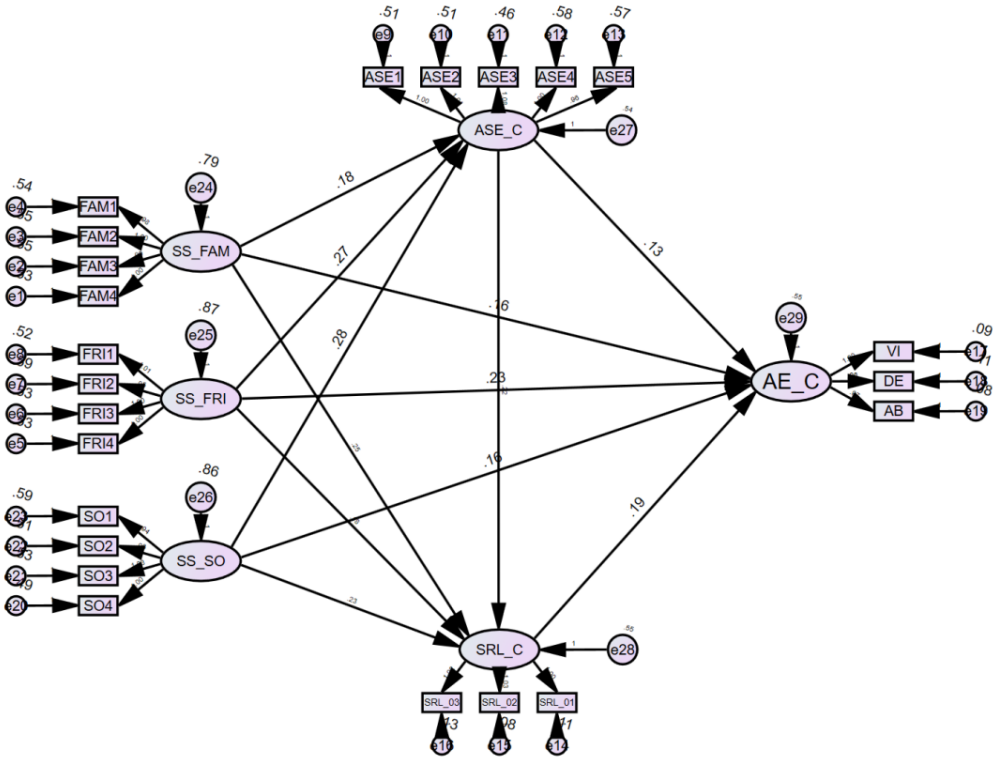


Figure 2 : Structural Equation Model

5. Summary of Hypothesis Testing

Table 10 summarizes the results of hypothesis testing based on the proposed research objectives and structural relationships. The findings indicate that all proposed hypotheses (H1–H9) were statistically supported. Perceived social support, including family support, friend support, and support from significant others, demonstrated significant positive effects on academic engagement, academic self-efficacy, and self-regulated learning. Furthermore, academic self-efficacy significantly predicted both self-regulated learning and academic engagement, while self-regulated learning also positively influenced academic engagement.

The mediation analysis further confirmed that academic self-efficacy and self-regulated learning play significant mediating roles in the relationship between perceived social support and academic engagement. Moreover, the sequential mediation effects were also supported, indicating that perceived social support enhances academic self-efficacy, which subsequently promotes self-regulated learning and ultimately strengthens academic

engagement. The findings provide substantial empirical evidence supporting the proposed theoretical model and the relationships among the study variables.

Table 10 : Summary of Hypothesis Testing

Hypothesis	Structural Path	Result
H1a	Family Support → Academic Engagement	Supported
H1b	Friend Support → Academic Engagement	Supported
H1c	Significant Other Support → Academic Engagement	Supported
H2a	Family Support → Academic Self-Efficacy	Supported
H2b	Friend Support → Academic Self-Efficacy	Supported
H2c	Significant Other Support → Academic Self-Efficacy	Supported
H3a	Family Support → Self-Regulated Learning	Supported
H3b	Friend Support → Self-Regulated Learning	Supported
H3c	Significant Other Support → Self-Regulated Learning	Supported
H4	Academic Self-Efficacy → Self-Regulated Learning	Supported
H5	Academic Self-Efficacy → Academic Engagement	Supported
H6	Self-Regulated Learning → Academic Engagement	Supported
H7a	Family Support → ASE → AE	Supported
H7b	Friend Support → ASE → AE	Supported
H7c	Significant Other Support → ASE → AE	Supported
H8a	Family Support → SRL → AE	Supported
H8b	Friend Support → SRL → AE	Supported
H8c	Significant Other Support → SRL → AE	Supported
H9a	Family Support → ASE → SRL → AE	Supported
H9b	Friend Support → ASE → SRL → AE	Supported
H9c	Significant Other Support → ASE → SRL → AE	Supported

11. Conclusion

1. Relationship between Perceived Social Support and Academic Engagement

Perceived social support from family, peers, and significant others has a significant positive relationship with academic engagement among students in higher vocational education. Students who receive higher levels of emotional, informational, and instrumental support are more likely to demonstrate greater enthusiasm, dedication, and active participation in learning activities.

2. Relationship between Perceived Social Support, Academic Self-Efficacy, and Self-Regulated Learning

Perceived social support is significantly and positively associated with both academic self-efficacy and self-regulated learning. Supportive social environments enhance students' confidence in their academic abilities and promote the use of effective learning strategies, including goal setting, time management, and help-seeking behaviors.

3. Relationships among Academic Self-Efficacy, Self-Regulated Learning, and Academic Engagement

Academic self-efficacy and self-regulated learning are both positively related to academic engagement. Students with higher self-efficacy are more confident and persistent in completing academic tasks, while those with stronger self-regulated learning skills are better able to manage their learning processes, leading to higher levels of engagement.

4. Mediating Roles of Academic Self-Efficacy and Self-Regulated Learning

Academic self-efficacy and self-regulated learning play significant mediating roles in the relationship between perceived social support and academic engagement. In addition to their individual mediation effects, a significant sequential mediation effect is observed, indicating that perceived social support enhances academic self-efficacy, which in turn improves self-regulated learning, ultimately leading to increased academic engagement.

12. Discussion

1. Discussion of the Relationship between Perceived Social Support and Academic Engagement

The findings indicate that perceived social support significantly predicts academic engagement among higher vocational college students. This result is consistent with Wang and Eccles (2021), who emphasized that support from family, peers, and significant others enhances students' motivation and participation in learning activities. The findings also support the Job Demands–Resources framework proposed by Bakker and Demerouti (2017), suggesting that social support functions as an important external resource for sustaining students' engagement. Within higher vocational education, supportive interpersonal relationships may strengthen students' sense of belonging and learning motivation, thereby promoting greater academic involvement.

2. Discussion of the Relationships between Perceived Social Support, Academic Self-Efficacy, and Self-Regulated Learning

The results demonstrate significant positive relationships between perceived social support, academic self-efficacy, and self-regulated learning. These findings are consistent with Social Cognitive Theory, which proposes that supportive interactions enhance students' confidence in their academic abilities (Bandura, 1997). Similar findings were reported by Honicke and Broadbent (2019) and Chen et al. (2021), who found that students perceiving stronger social support tend to demonstrate greater academic confidence and persistence. The findings also support Broadbent and Poon (2015), indicating that supportive learning environments contribute to the development of effective self-regulated learning behaviors such as planning, monitoring, and time management.

3. Discussion of the Relationships among Academic Self-Efficacy, Self-Regulated Learning, and Academic Engagement

The significant relationships among academic self-efficacy, self-regulated learning, and academic engagement are consistent with previous studies in educational psychology. Honicke and Broadbent (2019) reported that students with stronger academic self-efficacy are more likely to persist in learning tasks and maintain active engagement. In addition, the findings support Fredricks et al. (2004) and Broadbent and Poon (2015), who identified self-regulated learning as an important predictor of academic engagement. The positive relationship between academic self-efficacy and self-regulated learning also supports the theoretical perspectives of Zimmerman (2000) and Panadero (2017), suggesting that students with stronger efficacy beliefs are more likely to apply effective learning strategies.

4. Discussion of the Mediating Roles of Academic Self-Efficacy and Self-Regulated Learning

The mediation analysis confirmed that academic self-efficacy and self-regulated learning significantly mediate the relationship between perceived social support and academic engagement. This finding is consistent with Liu et al. (2022) and Chen and Zhang (2024), who emphasized the importance of psychological and behavioral mechanisms in explaining how social support influences learning outcomes. The significant sequential mediation effect further supports the integrated learning motivation model proposed by Zimmerman (2020) and Yang et al. (2024), indicating that supportive social environments enhance students' academic self-efficacy, which subsequently strengthens self-regulated learning and ultimately promotes academic engagement.

13. Recommendations

1. Strengthening Social Support Systems

Educational institutions should actively strengthen social support systems by promoting collaboration among families, peers, and teachers. Schools can encourage family involvement in students' learning processes, foster peer support through group-based learning activities, and enhance teacher-student interaction. Creating a supportive learning environment can significantly improve students' sense of belonging and academic engagement.

2. Enhancing Academic Self-Efficacy

Teachers should implement strategies to enhance students' academic self-efficacy, such as providing timely positive feedback, setting achievable learning goals, and offering opportunities for successful learning experiences. By increasing students' confidence in their abilities, they are more likely to persist in academic tasks and demonstrate higher levels of engagement.

3. Promoting Self-Regulated Learning Skills

Institutions should integrate self-regulated learning training into the curriculum, focusing on skills such as goal setting, time management, and self-monitoring. Teachers can guide students to develop effective learning strategies and reflective practices, which will help students take greater control of their learning process and improve academic performance.

4. Designing Integrated Intervention Programs

Based on the findings of the sequential mediation effect, educational institutions should design integrated intervention programs that simultaneously enhance social support, academic self-efficacy, and self-regulated learning. Such comprehensive approaches can maximize their combined impact on academic engagement and lead to more sustainable improvements in students' learning outcomes.

14. References

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