

The Impact of Social Support on Academic Performance among International Students in Heilongjiang Province: The Mediating Role of Academic Self-Efficacy

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HOW TO CITE:

Qiaozu Wang, Junainah Binti Abd Hamid, Jacqueline Tham (2026). The Impact of Social Support on Academic Performance among International Students in Heilongjiang Province: The Mediating Role of Academic Self-Efficacy. International Journal of Special Education, 41(2s), 472-488.

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ABSTRACT:

Under the background of cross-cultural education and global mobility, the unique geographical environment and cultural characteristics of Heilongjiang Province pose complex challenges to the academic adaptation of international students. This study aims to explore the influence path of social support on the academic performance of international students and focuses on examining the mediating role of academic self-efficacy in this process. Through conducting a questionnaire survey among 509 international students in colleges and universities in Heilongjiang Province, and using Amos 26.0 to construct a structural equation model (SEM) for empirical analysis. Analysis shows that all three types of social support can significantly and positively predict the academic performance of international students. Among them, peer support demonstrates the strongest indirect driving force by enhancing an individual's academic self-efficacy. The mediating effect test further confirmed that academic self-efficacy plays a significant partial mediating role between social support and academic performance. In the specific context of extremely cold climate and a significant sense of cultural boundaries in Heilongjiang Province, informal interactions among peers have irreplaceable value in alleviating environmental stress and restoring academic confidence.

This research theoretically deepens the application logic of social cognitive theory in extremely objective environments. On the practical level, the study suggests that the management department of international students in Heilongjiang Province should enhance the academic success rate and educational quality perception of international students in China by strengthening the guidance of mentors and the peer mutual assistance

network.

Keywords: Social Support, Academic Self-Efficacy, Academic Performance, International Students, Mediating Effect.

1. Introduction

Research context

Under the tide of economic globalization and the internationalization of higher education, the flow of international students has become an important indicator to measure the openness and competitiveness of a country's higher education. With the expansion of global migration and the globalization of the labor market, studying abroad has become an important choice for millions of students (Bhattacharya, 2020). China is not only the world's largest source country of international students but also a leading destination country for international students in Asia. This two-way flow trend not only promotes the internationalization process of China's higher education but also enhances the in-depth interaction between China and the world in multiple dimensions such as economy, diplomacy, culture and politics.

However, with the rapid expansion of the scale of international students in China, higher education management is facing severe challenges. At present, global international student education is undergoing a strategic transformation from scale expansion to quality improvement and efficiency enhancement (Wang et al., 2022). Chinese universities have achieved remarkable accomplishments in the process of internationalization. However, some institutions still have the problem of emphasizing quantity over quality in their actual work, resulting in insufficient internal motivation for cultivating international talents. A prominent practical issue at present is that many international students are confronted with the predicament of poor academic performance, difficulties in graduation, and even inability to complete their studies smoothly (Zhang, 2021). Academic performance is related to the individual self-development of students and their future employment competitiveness. It is a core indicator for measuring the quality of higher education, financial stability and international reputation (Martirosyan et al., 2019). Therefore,

exploring the deep-seated mechanisms that affect the academic performance of international students has become an urgent issue for both the academic community and educational administrative departments to address.

Problem and research objectives

Social support and academic self-efficacy are the core variables affecting learning outcomes (Affuso et al., 2023; Vakkai et al., 2020). Among them, social support provides the necessary psychological buffer for international students. Academic self-efficacy, as a core psychological factor, directly predicts and regulates academic performance (Razgulin et al., 2023). However, the influence of these factors is often restricted by the specific regional environment. Take Heilongjiang Province in northeastern China as an example. Its unique geographical location, harsh natural environment and the disparity in educational resources caused by the brain drain in recent years have made international students in this region face more severe challenges in obtaining social resources and adapting to culture than those in developed regions (Lou, 2021). Many students are prone to "culture shock" when entering this completely unfamiliar cultural and climate environment, resulting in negative emotions such as anxiety and lack of confidence, and further damaging their academic efficacy (Bai et al., 2023; Fu et al., 2023).

Despite this, empirical research on the international student population in Heilongjiang Province remains relatively scarce. A literature search reveals that since 1995, there have been only around 30 studies related to this region, and most of them have focused on macro management or single course teaching, with few systematically exploring the combined influence path of social support and academic self-efficacy on academic performance (Lin Jia, 2023; Khuram, 2022). Against the backdrop of Heilongjiang's vigorous promotion of the "Study in Heilongjiang" program and the expansion of

enrollment, the gap between theoretical research and practical needs has become increasingly evident.

Based on this, this study aims to systematically explore the impact of social support on academic performance of international students in universities in Heilongjiang Province by constructing a mediating model, and to focus on analyzing the mediating mechanism of academic self-efficacy. This study can not only provide new empirical evidence for the theory of psychological contract and academic achievement in a cross-cultural environment, but also offer practical guidance for universities in the high-cold regions of northern China to formulate differentiated support policies for international students and improve their academic quality.

Theoretical Foundation

This study is mainly based on Bandura's Social Cognitive Theory (SCT), with a particular focus on the Self-efficacy Theory within it. The Social Cognitive Theory posits that an individual's functioning is the result of a dynamic interaction among environmental factors (Environment), personal cognition (Person), and behavioral output (Behavior) (Bandura, 1986). In the context of international students' research, this study regards social support as a key environmental input, academic self-efficacy as the core personal cognition, and academic performance as the ultimate behavioral outcome. This framework provides a solid logical basis for understanding how external support influences international students' academic achievements through internal cognitive transformation mechanisms.

Bandura's (1977) theory of self-efficacy provides a core perspective for understanding how individuals maintain their motivation in stressful situations. According to this theory, the construction of efficacy is based on four key sources of information, which align closely with the driving factors explored in this study. First, verbal persuasion, through external encouragement and positive feedback, strengthens an individual's self-belief. In the context of this study, social support from parents, mentors, and peers serves as the primary channel for international students to obtain emotional guidance

and resource supplementation, especially when facing the dual challenges of the extremely cold natural environment in Heilongjiang and academic adjustment. This support can effectively counteract environmental pressure (Fu et al., 2023). Second, vicarious experience emphasizes the confidence boost derived from observing the performance of similar groups. In this study, peer support plays the role of a successful model. Third, physiological and emotional states directly shape an individual's perception of efficacy. The anxiety or "culture shock" experienced by international students during the process of cross-cultural adaptation can create negative physiological feedback, thereby weakening their confidence in academic tasks (Russell et al., 2023). Finally, mastery experience, as the most reliable source of confidence, is reflected in the continuous empowerment of current academic efficacy by students' previous academic achievements and language abilities.

Under the "environment-cognition-behavior" triadic framework of social cognitive theory, academic self-efficacy not only serves as a predictor of behavioral outcomes but also acts as a psychological hub for converting external resources into actual performance. This study posits that environmental factors such as social support do not directly and independently influence academic outcomes but rather function by reshaping an individual's cognitive landscape. High levels of self-efficacy can enable international students to demonstrate greater cognitive resilience and task engagement when facing cross-cultural academic challenges (Haibar & Yuzarion, 2024). This psychological mechanism, on the one hand, compensates for the temporary absence of external environmental resources and, on the other hand, significantly amplifies the positive impact of support on academic achievement (Guo & Laokulrach, 2023). Therefore, academic self-efficacy is regarded as the core mediating path connecting the external social support system with internal academic output, determining whether international students can effectively convert the social capital they acquire into sustainable academic performance.

Conceptual Definitions

Social Support

Social support is widely regarded as a core external resource for alleviating cross-cultural stress and enhancing the psychological resilience of international students (Kristiana et al., 2022). In this study, social support is defined as a multi-dimensional resource system, mainly including three dimensions: parental support, school support, and peer support.

Parental support refers to the emotional encouragement and material security that international students perceive from their families. Despite the geographical distance, parents' understanding and support form the foundation for international students to develop autonomy and maintain mental health, exerting a profound cross-temporal and spatial influence on academic engagement (Wu Jiahui et al., 2023). School support, which encompasses mentorship, accessibility of administrative services, and the overall school atmosphere, has been shown to be a key driver of academic adjustment for international students. High-quality interactions between teachers and students and a sense of safety at school can significantly reduce students' feelings of loneliness (Chan et al., 2021). Peer support involves fellow countrymen, local classmates, and other international students. The alternative experiences and social integration provided by peers can significantly alleviate anxiety. The social connections established through online or offline communication serve as the most direct psychological refuge for international students (Zheng & Ishii, 2023).

Academic Self-efficacy

Academic self-efficacy refers to the degree of confidence of international students in completing specific academic tasks and achieving expected goals in a cross-cultural academic context (Bulfone et al., 2021). In the context of international education, this sense of efficacy depends on an individual's prior knowledge and the strong regulation of language barriers and cross-cultural psychological security (Wang et al., 2022). It drives the learning motivation of international students

and also serves as an intermediary hub for transforming external support into actual academic achievements.

Academic Performance

Academic performance is the ultimate dependent variable for measuring the quality of talent cultivation. Although traditional research mostly takes the average grade point average (GPA) as the sole measurement criterion, for the group of international students, academic performance has been endowed with richer connotations. In this study, academic performance was mainly measured by comprehensively assessing the test results, course participation, and self-evaluation of learning outcomes of international students during their study in China (Everson & Terjesen, 2023). It reflects the degree of knowledge mastery and demonstrates students' cognitive resilience and self-development ability in a complex cross-cultural academic environment (Vera & Cortes, 2021).

The Relationship between Social Support and Academic Performance

Social support is regarded as a protective resource for individuals when coping with cross-cultural pressure. It directly regulates individuals' learning behaviors by providing material assistance, information guidance and emotional comfort (Gu et al., 2024). For international students in a foreign land, an external support system is not only a psychological haven but also a necessary condition for academic success. Parental support encompasses material security, but more crucially, it involves emotional resonance and psychological empowerment from a distance. Studies have shown that when international students perceive strong parental support, their psychological needs can be fully met, thereby stimulating higher enthusiasm for learning and perseverance (Wu Jiahui et al., 2023). This cross-border support can enhance students' autonomy and sense of competence, enabling them to remain focused when facing complex cross-cultural academic tasks. Therefore, this study put forward the following hypotheses. H1: Parental support has a significant positive impact on the academic performance of international students.

School support (including mentor guidance, teaching resources and administrative services) directly determines the quality of the "academic ecosystem" of international students in their target countries. The academic support from mentors can reduce the confusion of international students regarding new academic norms, while a friendly campus atmosphere can significantly enhance students' sense of belonging (San & Guo, 2023). Effective mentorship interaction and teaching feedback can not only acquire knowledge, but also improve GPA and course engagement by optimizing learning strategies (Yan et al., 2024). Based on the logic that environmental improvement can enhance academic output, this study proposes: H2: School support has a significant positive impact on the academic performance of international students.

Peer relationships are the most frequently encountered social connections in the daily lives of international students. Support from fellow townspeople, domestic and international students can effectively alleviate the loneliness and anxiety of international students (Chaliawala et al., 2024). Interaction among peers provides important opportunities for social integration. Research has found that in-depth contact with non-native international students and students from host countries can significantly enhance academic output, as this interaction not only improves language proficiency but also strengthens learning motivation through alternative experiences (Pho & Schartner, 2021). this study put forward the following hypotheses. H3: Peer support has a significant positive impact on the academic performance of international students.

The Relationship between Social Support and Academic Self-efficacy

According to Bandura's theory, verbal persuasion and vicarious experience are the core sources of self-efficacy. The social support system is precisely the main channel through which international students obtain such information. Parents' encouragement is regarded as a lasting form of verbal persuasion. Even with geographical distance, parents' affirmation of their children's abilities can significantly enhance their core self-evaluation.

Research has shown that children who perceive a high level of parental support tend to have a stronger sense of autonomy and competence, thereby demonstrating higher efficacy beliefs in academic challenges (Kang et al., 2024). H4: Parental support has a significant positive impact on the academic self-efficacy of international students.

The school has created a safe and controllable learning environment for students through professional guidance from mentors, an active feedback mechanism, and organizational support. This interactive environment can be directly internalized as students' academic confidence through knowledge acquisition and skill enhancement (Yang, 2023). H5: School support has a significant positive impact on the academic self-efficacy of international students.

Peers can offer emotional comfort to alleviate anxiety and, more importantly, provide alternative experiences. By observing peers with similar backgrounds successfully coping with cross-cultural academic challenges, international students can generate positive psychological cues, thereby enhancing their academic self-efficacy (Kim & Shin, 2021). H6: Peer support has a significant positive impact on the academic self-efficacy of international students.

The relationship between academic self-efficacy and academic performance

Academic self-efficacy is a key psychological variable in predicting academic success. A high level of self-efficacy means that students tend to invest more effort when facing difficult tasks and exhibit greater persistence. Literature indicates that strong academic confidence can prompt students to adopt more advanced metacognitive learning strategies and reduce academic procrastination (Gun et al., 2020). This positive motivational state can directly translate into excellent course grades and academic resilience (Meng & Zhang, 2023). H7: Academic self-efficacy has a significant positive impact on the academic performance of international students.

The mediating role of academic self-efficacy

Social cognitive theory posits that external environmental factors (social support) often

influence the final behavioral output through the mediating path of individual cognitive assessment (self-efficacy). Social support provides necessary resources and external motivation, but whether international students can convert this external energy into academic achievements depends on their internal confidence state. For instance, the support from parents or mentors may first reduce students' sense of loneliness and anxiety and enhance their sense of control, thereby consolidating their confidence in completing academic tasks at the psychological level, and ultimately manifesting as improved academic performance (Guo et al., 2024). Academic self-efficacy plays the role of an energy conversion station in this process, internalizing environmental

resources into individual initiative. this study put forward the following hypotheses:

H8: Academic self-efficacy mediates the relationship between parental support and academic performance.

H9: Academic self-efficacy mediates the relationship between school support and academic performance.

H10: Academic self-efficacy mediates the relationship between peer support and academic performance.

Based on the theoretical foundation and the formulation of research hypotheses, this study proposes the following research framework:

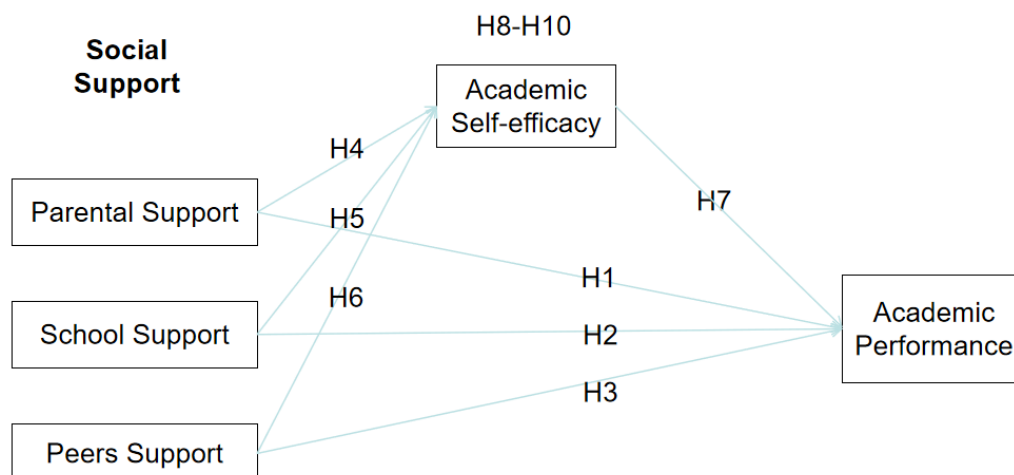


Figure 1: Framework

2. Methodology

Research design

This study adopted a quantitative research approach, collecting cross-sectional data through questionnaires.

Participants

The target population consisted of international students who had studied in China for more than one year. Stratified sampling yielded 530 responses, of which 21 were excluded due to insufficient study duration. Ultimately, 509 valid questionnaires were retained, with an effective recovery rate of 96.03%. The sample was predominantly female (72.5%),

concentrated in the 18 – 30 age group (75.3%), and mainly from Russia, Japan, and South Korea (85.4%). Academically, most participants held master's degrees or above (68.8%), and over half had resided in China for more than three years, ensuring cultural immersion and reliable evaluations.

Instruments

Data were collected via the Wenjuanxing platform using structured questionnaires covering demographic information, cross-cultural adaptation, and academic performance.

Procedure

A total of 530 datasets were downloaded and rigorously preprocessed, including cleaning invalid responses and controlling response duration (minimum of 60 seconds) to ensure reliability. Screening excluded participants with less than one year of study experience, resulting in 509 valid cases.

Data Analysis

Descriptive statistics were conducted on demographic information, followed by empirical analysis using SPSS and AMOS software to ensure robustness and validity of the findings.

3. Results

Demographic Information

The sample characteristics of the study demonstrated significant geographical targeting and academic maturity. In terms of gender composition,

the proportion of females was relatively high (72.5%), and the age distribution was highly concentrated among the youth aged 18-30 (75.3%), reflecting the typical vitality of the international student group. The distribution of student origins closely aligned with the geographical advantages of Heilongjiang Province, with students from Russia, Japan, and South Korea forming the majority (accounting for 85.4% in total), thus establishing a stable circle of international students from Northeast Asia. On the academic front, the majority of the subjects held master's degrees or higher (68.8%), and all had more than one year of residence experience in China. Among them, over half of the students had lived in China for more than three years, ensuring that the sample could provide stable and reference-worthy evaluations on cross-cultural adaptation and academic achievements based on deep cultural immersion.

Table 1: Demographic Information

Name	Options	Results of frequency analysis		
		Frequency	Percentage(%)	Cumulativepercentage(%)
Gender	Male	140	27.5	27.5
	female	369	72.5	72.5
Age	18-25 years old	200	39.3	39.3
	26-30 years old	183	36.0	36.0
	31-35 years old	94	18.5	18.5
	36 years old and above	32	6.3	6.3
	Russia	251	49.3	49.3
Nationality	Korea	80	15.7	15.7
	Japan	104	20.4	20.4
	Mongolia	18	3.5	3.5
	Thailand	36	7.1	7.1
	Pakistan	20	3.9	3.9
Learning level	Short-term students	21	4.1	4.1
	Undergraduate	138	27.1	27.1
	Master's degree	308	60.5	60.5
	Doctor	42	8.3	8.3
	6 months to 1 year	0	0	0
Duration in China	1-2 year	126	24.8	24.8
	2-3 year	110	21.6	21.6
	3-4years	149	29.3	29.3
	4 years and above	124	24.4	24.4
Academic performance situation	excellent (90-100)	93	18.3	18.3
	good (80-89)	216	42.4	42.4

Name	Options	Results of frequency analysis		
		Frequency□	Percentage(%)□	Cumulativepercentage(%)□
	moderate (70-79)	57	11.2	11.2
	pass(60-69)	117	23.0	23.0
	Fail (Under 60 points)	26	5.1	5.1
	Combined	509	100	100

Descriptive Statistics

The descriptive statistics of this study show that the means of all observed items range from 3.63 to 3.99, indicating that international students in Heilongjiang Province are generally at an above-average level in terms of social support, self-efficacy, and academic performance. Notably, the scores for academic self-efficacy and academic adaptation are relatively the highest, which reflects that despite the unique extremely cold climate and cross-cultural challenges in Heilongjiang, the respondents have demonstrated strong cognitive resilience and

confidence in academic execution after living in China for more than a year. Additionally, the standard deviations of all items (1.020 - 1.147) fluctuate slightly, revealing a high degree of consistency among different national groups in perceiving external resource support. In terms of distribution characteristics, the absolute values of skewness and kurtosis of all items are far below the recommended critical standards, and the data present an ideal normal distribution feature, laying a solid statistical foundation for subsequent maximum likelihood estimation and path analysis using Amos 26.0.

Table 2: Descriptive Statistics

Items	N	M	S.D	Skewness	Kurtosis
Pa1	509	3.64	1.126	-.439	-.657
Pa2	509	3.63	1.123	-.422	-.684
Pa3	509	3.67	1.131	-.542	-.540
Pa4	509	3.65	1.136	-.518	-.505
Pa5	509	3.63	1.147	-.541	-.479
Pa6	509	3.66	1.131	-.491	-.637
Pa7	509	3.64	1.118	-.509	-.521
Sa1	509	3.75	1.103	-.533	-.495
Sa2	509	3.75	1.072	-.424	-.703
Sa3	509	3.76	1.068	-.550	-.416
Sa4	509	3.75	1.101	-.629	-.332
Sa5	509	3.74	1.111	-.490	-.667
Sa6	509	3.75	1.092	-.596	-.417
Sa7	509	3.78	1.084	-.577	-.494
Aa1	509	3.81	1.097	-.577	-.579
Aa2	509	3.85	1.079	-.738	-.085
Aa3	509	3.84	1.071	-.653	-.338
Aa4	509	3.84	1.086	-.689	-.323
Aa5	509	3.88	1.077	-.625	-.514
Aa6	509	3.81	1.116	-.646	-.458
Aa7	509	3.88	1.068	-.732	-.215
ASe2	509	3.87	1.114	-.777	-.238
ASe3	509	3.99	1.020	-.695	-.354
ASe4	509	3.88	1.087	-.766	-.187
ASe5	509	3.97	1.045	-.853	.087
ASe6	509	3.97	1.038	-.718	-.329
ASe7	509	3.94	1.052	-.676	-.399
AP1	509	3.75	1.047	-.556	-.349

Items	N	M	S.D	Skewness	Kurtosis
AP2	509	3.76	1.093	-.522	-.523
AP3	509	3.77	1.112	-.589	-.477
AP4	509	3.76	1.073	-.615	-.231
AP5	509	3.78	1.078	-.616	-.355
AP6	509	3.77	1.058	-.589	-.287
AP7	509	3.80	1.075	-.551	-.585

Reliability Analysis

This study employed Cronbach's coefficient to test the internal consistency of the scale. The analysis results indicated that the reliability coefficients of all core variables were at a relatively high level. Among them, school support had the highest coefficient, reaching 0.911. Peers support and academic self-efficacy followed closely, with coefficients of 0.903 and 0.907 respectively. Parental support and

academic performance also reached 0.896 and 0.897 respectively. The alpha coefficients of all dimensions were far above the 0.70 critical standard recognized in the academic community, indicating that the measurement tools used in this study had excellent stability and internal logical consistency, providing a reliable data quality guarantee for the subsequent structural equation model (SEM) analysis.

Table 3: Reliability Analysis

Variables	Cronbach α
Parental support	0.896
School support	0.911
Peers support	0.903
Academic self-efficacy	0.907
Academic performance	0.897

Measurement Model

This study used Amos 26.0 to test the overall fit of the measurement model. The empirical results show that all fit indices performed excellently and reached the ideal range recognized by the academic community. Among them, the absolute fit index χ^2/df remained within 3, and RMSEA and SRMR were respectively below the critical values of

0.08 and 0.05. Meanwhile, the incremental fit indices such as CFI, TLI, and GFI were all significantly higher than 0.90. The above statistical evidence collectively indicates that the theoretical model constructed in this study has a high degree of consistency with the observed data, and the measurement model demonstrates good robustness, which is sufficient to support the subsequent structural path test and hypothesis analysis.

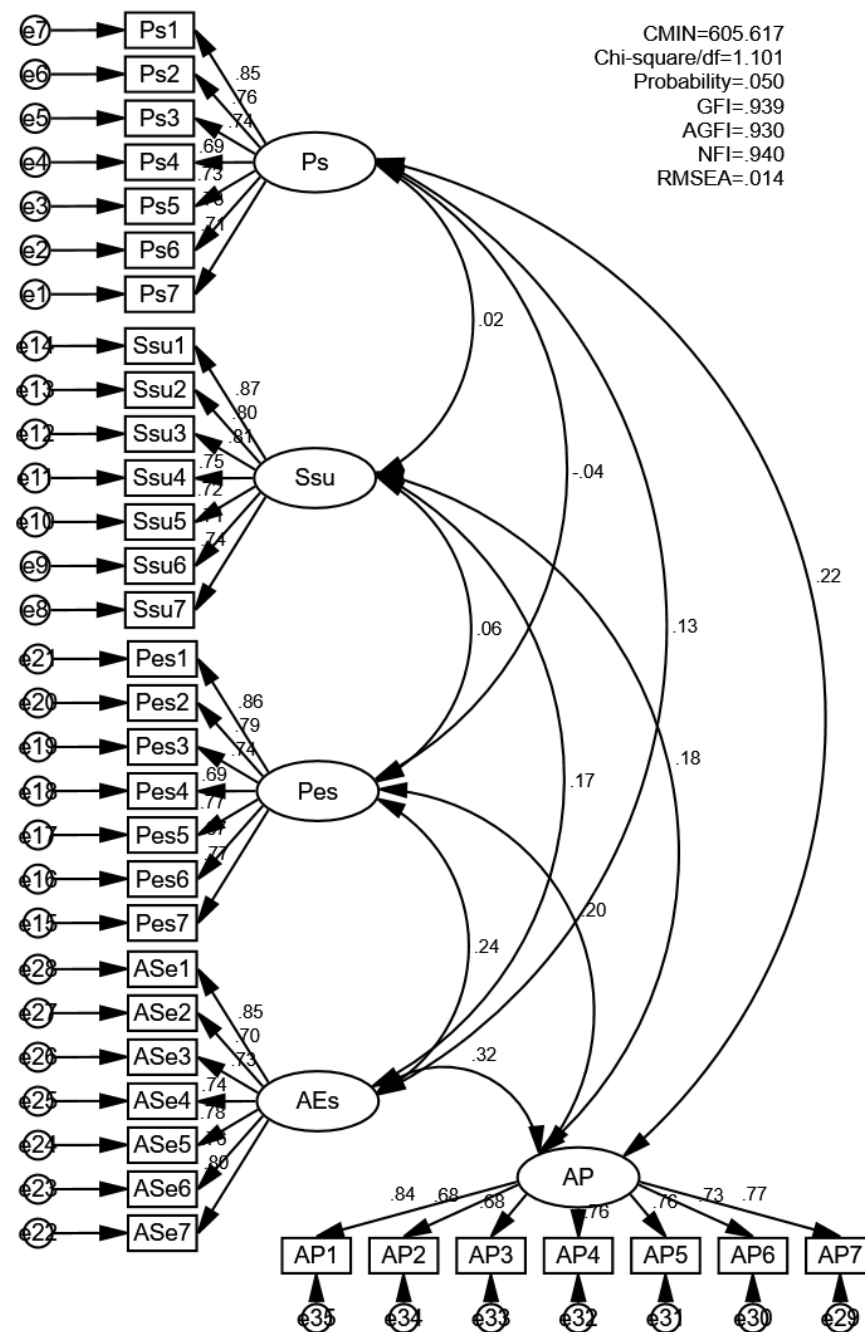


Figure 2: Measurement Model

This study conducted a thorough examination of the convergent validity of the measurement model by calculating standardized loading coefficients, composite reliability (CR), and average variance extracted (AVE). Empirical results show that the standardized loadings of all observed items on their corresponding latent variables range from 0.673 to 0.871 and are significant at the 0.001 level, fully demonstrating the strong representativeness of the observed variables for the latent variables. In terms

of reliability, the CR values of each dimension range from 0.88 to 0.93, far exceeding the benchmark requirement of 0.70, confirming the high internal consistency of the scale. Additionally, the AVE values of each latent variable are between 0.616 and 0.703, significantly higher than the suggested threshold of 0.50, indicating that the model can effectively explain more than half of the variance of the observed items, and the measurement model possesses excellent convergent validity.

Table 4: Reliability and convergent validity tests of the measurement model

Construct	Items	λ	CR	AVE
Parental Support	Ps1 - Ps7	0.686 - 0.853	0.898	0.559
School Support	Ssu1 - Ssu7	0.713 - 0.871	0.923	0.632
Peer Support	Pes1 - Pes7	0.673 - 0.857	0.906	0.579
Academic Self-efficacy	ASe1 - ASe7	0.699 - 0.847	0.912	0.598
Academic Performance	AP1 - AP7	0.677 - 0.835	0.905	0.576

This study employed the Fornell-Larcker criterion to assess discriminant validity. As shown in the following table, the square roots of the average variance extracted (AVE) of each latent variable are all greater than the correlation coefficients between

them and other latent variables. This result strongly indicates that there are clear boundaries among the research variables, and the discriminant validity has been empirically supported.

Table 5: Discriminant Validity

	AP	AEs	Pes	Ssu	Ps
AP	0.759				
AEs	.224	0.773			
Pes	.133	.165	0.761		
Ssu	.114	.109	.037	0.795	
Ps	.140	.085	-.023	.012	0.748

4.4 Structural Model and Hypothesis Testing

The structural model of the research is shown in the following figure.

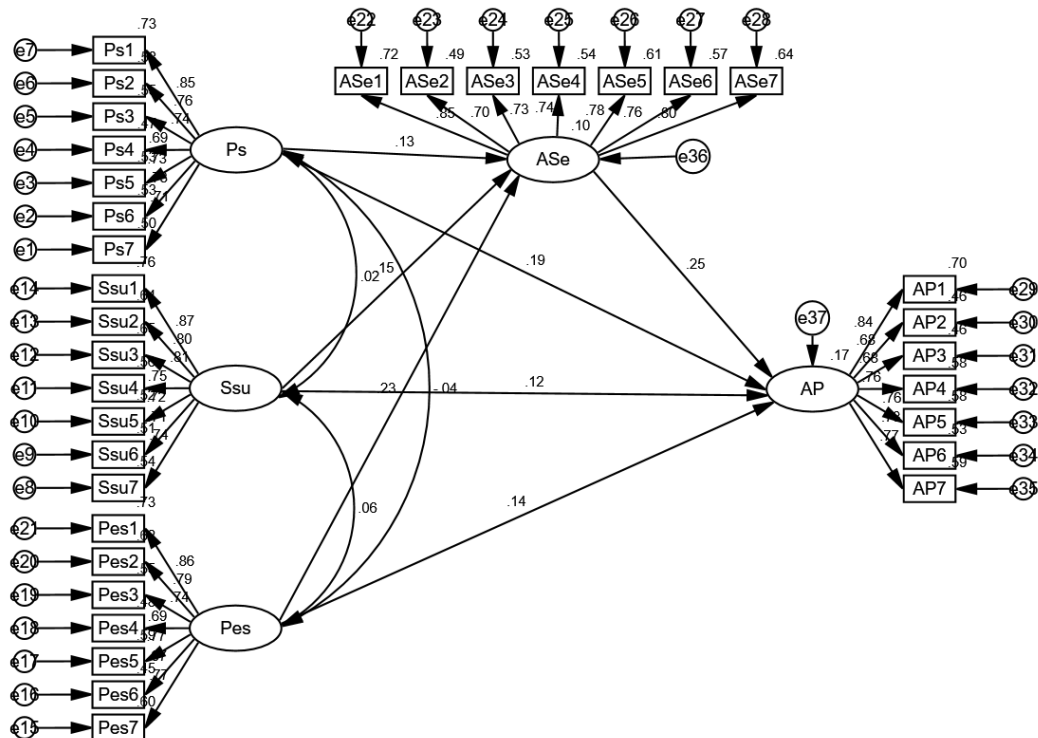


Figure 3: Structural Model

The path analysis results of this study show that the external resource system has a significant positive predictive effect on the academic output of international students in Heilongjiang Province. From a data perspective, the direct path coefficients of parental support, school support, and peer support on academic performance are all statistically significant, indicating that a diversified support network is a solid foundation for international students' academic success in a foreign country. It is worth noting that in the specific educational environment of Heilongjiang, parental support has demonstrated a relatively stronger direct pull effect ($\beta=0.187$), which may imply that although international students are geographically isolated from their families, the emotional and material support from their families remains the core driving force for them to cope with the cold climate and cultural differences and maintain academic output.

In the process of individual cognitive construction, various types of social support also exhibit significant synergistic effects. Peer support has the most prominent predictive power for academic self-efficacy ($\beta=0.234$), which is much higher than that of the other two types of support. This discovery reveals the key value of the social circle of international students in the university environment of Heilongjiang Province, that is, the interaction and information sharing among peers can more

effectively alleviate cross-cultural anxiety, thereby significantly enhancing an individual's sense of competence in completing academic tasks. School support and parental support both play a positive role in promoting the establishment of a sense of efficacy, indicating that a comprehensive support system, from macro institutional guarantees to micro emotional connections, jointly strengthens the inner confidence of international students in overcoming academic difficulties.

Furthermore, the strongest logical correlation ($\beta=0.246$) was demonstrated between academic self-efficacy and academic performance across the entire model. This highly significant coefficient demonstrates the driving effect of cognitive evaluation on behavioral outcomes. This not only highlights the crucial position of efficacy as a core psychological variable in academic success, but also provides an empirical basis for subsequent in-depth exploration of how it transforms external resources to influence academic achievements. From the overall performance of the comprehensive path coefficient, the support of the external environment can only be maximally transformed into substantive academic achievements through the internalization of individual efficacy. This internal and external linkage model constitutes the core logic of the academic development of international students in Heilongjiang Province.

Table 6: Structural model path coefficients and hypothesis testing results

Hypothesized Path	S.E.	C.R.	P	β	Result
Ps $\rightarrow$ ASe (H4)	0.053	2.847	0.004	0.135	Supported
Ssu $\rightarrow$ ASe (H5)	0.052	3.175	0.001	0.150	Supported
Pes $\rightarrow$ ASe (H6)	0.051	4.893	***	0.234	Supported
Ps $\rightarrow$ AP (H1)	0.052	3.968	***	0.187	Supported
Ssu $\rightarrow$ AP (H2)	0.052	2.679	0.007	0.124	Supported
Pes $\rightarrow$ AP (H3)	0.050	2.879	0.004	0.137	Supported
ASe $\rightarrow$ AP (H7)	0.049	5.007	***	0.246	Supported

Note: *** denotes $p < 0.001$.

Mediation Analysis

This study conducted a thorough examination of the mediating paths H8 to H10 using the Bootstrap resampling method. The experimental data revealed that in all three paths, the 95% confidence interval of the indirect effect (between Lower and Upper) did not include 0, and the p-values all reached a

significant level. This strongly confirmed that academic self-efficacy played a significant mediating role between the social support system and academic output. Academic self-efficacy was manifested as a typical partial mediation in the model. Among the three mediating paths, peer support had the highest indirect effect value through efficacy ($\beta = 0.061$), which once again

verified that in the context of international students in Heilongjiang universities, healthy peer interaction has an irreplaceable transformative value in stimulating students' intrinsic learning motivation and confidence.

The composition of the total effect further reveals the logic of the synergy between internal and external causes. Although the direct effect dominates numerically, the robust existence of the intermediary path indicates that if the cultivation of

the academic efficacy of international students is ignored, the effectiveness of external support policies will not be fully released. This discovery emphasizes that in the management of international students, more attention should be paid to how to transform these resources into students' psychological confidence and cognitive advantages. Through this outside-in transmission mechanism, outstanding academic achievements of international students can be achieved in the overall environment of Heilongjiang Province and even China.

Table 7: The test results of the mediating effect of academic self-efficacy

Hypothesized	Effect Type	Estimate	Lower	Upper	P
Ps → ASe → AP (H8)	Direct Effect	0.208	0.104	0.321	0.001
	Indirect Effect	0.037	0.012	0.079	0.003
	Total Effect	0.245	0.132	0.362	0.001
Ssu → ASe → AP (H9)	Direct Effect	0.138	0.032	0.237	0.010
	Indirect Effect	0.041	0.017	0.083	0.001
	Total Effect	0.179	0.074	0.279	0.001
Pes → ASe → AP (H10)	Direct Effect	0.145	0.051	0.242	0.005
	Indirect Effect	0.061	0.034	1.020	0.001
	Total Effect	0.206	0.116	0.298	0.001

4. Discussion

The research found that all three dimensions of social support significantly and positively predict the academic performance of international students. This conclusion is highly consistent with the research results of San and Guo (2023) on international students in China. In Heilongjiang Province, due to the harsh winter climate and relatively remote geographical location, international students often face greater environmental stress. Against this backdrop, emotional comfort from parents, institutional support from schools, and information sharing among peers jointly form a stress buffering system. The strong direct effect of parental support ($\beta = 0.187$) demonstrated in this study indicates that the transnational psychological support from families remains a stabilizing factor for the academic achievements of international students in China.

Compared with Kang et al. 's (2024) study on international students in the southeast coastal areas, a notable feature of this study is the strong shaping

effect of peer support on academic self-efficacy ($\beta = 0.234$). In colleges and universities in Heilongjiang Province, due to the high concentration of students from Northeast Asia such as Russia, Japan and South Korea, a stable social network within or near the same cultural circle has been formed. This high-density peer interaction provides students with a large number of observational learning opportunities and Vicarious experiences, enabling them to quickly acquire the skills to cope with the cold life in the north and complex academic tasks. Peer support here serves as an efficient cognitive converter, indirectly alleviating the sense of loneliness and fear of difficulties brought about by extreme environments by enhancing an individual's sense of competence.

The mediating effect analysis confirmed the core transmission role of academic self-efficacy between Social support and academic achievement, which further expanded the application boundaries of Social Cognitive Theory. In the context of higher education institutions in Heilongjiang Province, the

ultimate value of scholarships provided by schools, guidance from mentors, and encouragement from parents lies in whether they can be transformed into students' firm beliefs. This study found that when international students perceive stronger social support, their academic self-efficacy significantly increases, which in turn triggers a higher level of academic engagement and final grades.

The highlight of this research lies in capturing the internal and external interaction logic under the special educational window of Heilongjiang Province. Unlike previous studies that mostly focused on general cross-cultural adaptation, this research reveals how international students maintain their internal cognitive assessment through social support clusters when facing severe environmental challenges. This finding emphasizes that educational administrators should, while paying attention to material and policy support, place greater importance on the construction of campus peer culture and the activation of individual psychological efficacy among students, so as to enable the international student group to shift from passive adaptation to active academic success when responding to external objective challenges.

Implications

This study sketches out the psychological map of international students in Heilongjiang Province under stressful situations through empirical data, providing a powerful supplement to the application of social cognitive theory in specific geographical environments. In the special context where extremely cold climates and border cultures interweave, external resources cannot be automatically transformed into academic outputs but are highly dependent on the internalization process of an individual's cognitive system. This discovery reveals that when the objective environment faces challenges, the construction of psychological resilience is the fundamental logic that drives international students towards academic success.

Based on the above findings, colleges and universities in Heilongjiang Province should transform from single material assistance to in-depth humanistic care and capacity empowerment.

The administrative department needs to break down cultural silos by establishing academic communities or mutual assistance salons for international students. Meanwhile, in view of the harsh natural environment in Heilongjiang, schools should introduce seasonal psychological intervention programs to help students alleviate the sense of isolation induced by climatic factors. The focus of educational policy should be on how to transform external administrative support into the intrinsic sense of competence of international students, and enhance the quality of talent cultivation by stimulating their academic effectiveness.

5. Conclusion

This study demonstrates that parental, institutional, and peer support each play a significant role in enhancing international students' academic performance. Academic self-efficacy emerges as the key mediating mechanism, transforming social support into stronger engagement and achievement. The findings highlight that under the unique conditions of Heilongjiang Province, peer networks and family support are crucial in enabling students to move from passive adaptation toward active academic success.

Due to objective constraints, this study still has room for improvement in terms of sample coverage, data timeliness, and evaluation dimensions. The subjects mainly come from Northeast Asian countries such as Russia, Japan, and South Korea, with insufficient coverage of a broader range of cultural groups. In terms of research design, the current cross-sectional data, although revealing the correlations among variables, is unable to fully capture the causal dynamics of the psychological changes of international students during their stay in China. Additionally, academic performance is mainly based on self-assessment by students, which, while reflecting their psychological perceptions, may have some deviation from the actual and objective academic records. Future research should focus on longitudinal tracking designs to observe the fluctuation patterns of self-efficacy and social support from the initial enrollment to the graduation stage of international students, in order to establish a more solid logical relationship. At the

same time, efforts should be made to expand the national diversity of the sample pool by including more students from Belt and Road countries or tropical regions to explore whether geographical and cultural distances have a moderating effect on the existing model. Finally, it is recommended to incorporate qualitative interview methods and other

mixed research approaches to deeply explore the qualitative experiences of international students in the unique living context of Heilongjiang, thereby more comprehensively analyzing the impact path of extreme objective environments on individual academic achievements.

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