

Enhancing Academic Self-Efficacy among Chinese College Students: The Critical Impact of Teacher Support and Care

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Abstract: Self-efficacy pertains to an individual's belief in their capabilities to accomplish tasks or achieve specific goals. In the context of academics, it reflects a student's confidence in in and assessment of their ability to successfully complete academic tasks, pass exams, and achieve academic goals. Studies have indicated that students with greater academic self-efficacy tend to perform better and are more resilient when facing academic problems. This study examines how students' perceptions of teacher support and care on their academic self-efficacy. A total of 667 university students from China participated, and after the screening, 600 valid questionnaire responses were obtained and analyzed using Pearson's correlation and linear regression analyses using IBM SPSS and AMOS software. The results, derived from Structural Equation Modeling (SEM), revealed a strong correlation between perceived teacher support, care, and student's academic self-efficacy. Highlighting the significant impact of teacher involvement in fostering students' confidence in their academic abilities.

1. Introduction

Academic self-efficacy is defined as "an individual's confidence in their capacity to plan and execute the actions needed to succeed academically [1]. The impact of academic self-efficacy on both student commitment and achievement has encouraged scholars around the world to investigate the factors that shape it. Many have focused on individual factors like gender, neurofeedback, personality traits, and self-esteem in shaping students' academic self-efficacy [2-5]. Several researchers have examined various environmental or situational factors associated with students' academic self-efficacy, such as quality of life and sleep, educational institution interventions, and academic stress [6-9]. Similarly, some scholars have delved into communicative behaviors, such as parental, peer, and teacher relationships, to assess their possible effect on students' academic self-efficacy [10-13].

Indeed, several researchers have inquired how teacher support and teacher-student relationships affect students' academic self-efficacy [14-16]. Nevertheless, the specific impact of teacher support

and care on students' self-efficacy has not been thoroughly scrutinized, and thus, whether teacher support and caring can influence students' academic self-efficacy remains an open question. To fill this gap, the present study examines how teacher support and care affect the academic self-efficacy of Chinese college students. The research questions for this study, which are based on its main objective, are as follows:

- 1) Does a meaningful association exist between teacher support, teacher care, and students' academic self-efficacies?
- 2) If so, to what degree do teachers' support and care serve as significant factors in predicting the academic self-efficacy of Chinese students?

2. Literature Review

To date, many scholars have studied how teacher support and caring behaviors impact students' perceived academic self-efficacy [17-24]. For example, Won, Lee and Bong [19] identified the role of social encouragement from teachers as a crucial factor influencing students' academic self-efficacy, while Kim, Dar-Nimrod and MacCann [17] used multilevel regression on data from 2,082 secondary school students and their math and English teachers (N=75), revealing that greater perceived teacher support by students was linked to higher academic self-efficacy.

3. Method

3.1. Participant

This study used convenience sampling technology to recruit 667 college students from different universities in 29 provinces in China to fill out a questionnaire based on the availability, geographical location, and accessibility of participants on QQ and WeChat platforms. In order to ensure the validity of the questionnaire, 600 valid questionnaires were finally obtained after excluding questionnaires with excessively short response times (less than 150 seconds) and duplicate selection of one item. Convenience sampling is a non probability sampling method that may not fully represent the population, but is suitable for preliminary or exploratory research due to its convenience and low cost [25].

The sample includes 390 female and 210 male college students, aged between 18 and 26 years old, with an average age of 21.15 years and a standard deviation of 1.27. All participants' participation is completely voluntary, with informed consent and willingness to collaborate with scholars to achieve research objectives. The study followed ethical principles, ensuring the anonymity of participants and the confidentiality of data.

3.2. Instruments

3.2.1. Teacher Support Scale (TSS)

A revised edition of the Teacher Support Scale was employed to assess students' attitudes toward teacher-supportive behaviors [26]. This instrument contains 21 items beginning with "Most of the teachers at my school/college". Sample items include: (4) "Take the time to help me get better grades", (16) "Encourage me to learn". Participants rated each item using a 5-point Likert scale, with answers ranging from "Strongly agree (score of 5)" to "Strongly disagree (score of 1)." The revised scale demonstrated excellent reliability, with a Cronbach's alpha coefficient of 0.945.

3.2.2. Perceived Caring Scale (PCS)

A 10-item format of the Perceived Caring Scale was used to examine students' views on teachers' caring behaviors [27]. The scale comprises 10 bipolar items. Examples of items include: (1) “cares about me/doesn't care about me,” (4) “sympathetic/indifferent.” The 10-item version of this measure has a reliability index of 0.946.

3.2.3. Academic Self-Efficacy Scale (ASS)

The Academic Self-Efficacy Scale (ASS) was employed to assess students' academic self-efficacies. Initially created by Pintrich and later revised by Liang [28]. The ASS consists of two subscales: “self-efficacy in academic ability” (items 1-11), and “self-efficacy in academic behavior” (items 12-22). This 22-item inventory includes statements like: (3) “In comparison to other students, I believe I am academically competent,” (11) “Regardless of my academic performance, I never doubt my ability to learn.” Participants responded on a 5-point Likert scale, ranging from “Strongly agree (5)” to “Strongly disagree (1).” The scale demonstrated excellent reliability, with a Cronbach's alpha coefficient of 0.948.

3.3. Data Acquisition Procedures

Before administering the validated measures of the variables, the study's primary objectives and purpose were explained to the participants. To ensure clarity, the questionnaires (TSS, PCS, and ASS) were translated into Chinese. These translated surveys were then shared with the participants via Weibo, WeChat, and QQ, using the Wenjuanxing platform—a tool designed to gather extensive quantitative data. The data collection, facilitated by the Wenjuanxing platform, occurred from March 15 to May 13, 2024.

3.4. Data Analysis

First, the instrument reliability was calculated using Cronbach's alpha coefficient in IBM SPSS (version 25). Subsequently, an SEM was established with IBM SPSS Amos (version 26), and the tool's effectiveness was tested through confirmatory factor analysis (CFA). Next, the interaction between teacher support, teacher care, and students' academic self-efficacy was analyzed using Pearson's product-moment correlation. Finally, multiple linear regression analysis was performed to evaluate how teacher care and support behaviors impacted the academic self-efficacy of Chinese students.

4. Result

Initially, a validated factor analysis (CFA) was performed to examine the validity of the constructs being studied, namely, teacher support, teacher care, and students' academic self-efficacy. The results from this analysis are detailed in Table 1.

Table 1: The result of CFA.

			Estimate	S.E.	C.R.	P
Competence	<---	Teacher Care	1.000			0.000
Character	<---	Teacher Care	.895	.038	23.361	0.000
Caring	<---	Teacher Care	.934	.039	24.122	0.000
Invested	<---	Teacher Support	.953	.058	16.295	0.000
Positive Regard	<---	Teacher Support	.989	.059	16.745	0.000
Expectations	<---	Teacher Support	1.000			0.000

Accessible	<---	Teacher Support	.982	.061	16.028	0.000
Learning Ability	<---	Academic SelfEfficacy	.902	.052	17.393	0.000
Learning Behavior	<---	Academic SelfEfficacy	1.000			0.000
LB6	<---	Learning Behavior	.816	.050	16.426	0.000
LB7	<---	Learning Behavior	.875	.050	17.535	0.000
LB8	<---	Learning Behavior	.940	.048	19.416	0.000
LB9	<---	Learning Behavior	.797	.051	15.712	0.000
LB10	<---	Learning Behavior	.928	.047	19.553	0.000
LB5	<---	Learning Behavior	.896	.049	18.152	0.000
CO3	<---	Competence	.845	.033	25.583	0.000
CO2	<---	Competence	.934	.029	31.982	0.000
CO1	<---	Competence	1.000			0.000
CH3	<---	Character	1.000			0.000
CH2	<---	Character	.891	.046	19.394	0.000
CH1	<---	Character	.980	.042	23.112	0.000
CA4	<---	Care	.974	.042	23.348	0.000
CA3	<---	Care	1.000			0.000
CA2	<---	Care	.935	.042	22.302	0.000
CA1	<---	Care	.986	.040	24.458	0.000
IN6	<---	Invested	1.000			0.000
IN5	<---	Invested	.898	.060	14.999	0.000
IN4	<---	Invested	.902	.060	14.967	0.000
IN3	<---	Invested	.854	.057	14.852	0.000
IN2	<---	Invested	.884	.055	15.992	0.000
IN1	<---	Invested	.865	.057	15.129	0.000
PR5	<---	Positive Regard	.860	.057	15.143	0.000
PR4	<---	Positive Regard	.957	.058	16.583	0.000
PR3	<---	Positive Regard	1.000			0.000
PR2	<---	Positive Regard	.986	.058	17.120	0.000
PR1	<---	Positive Regard	.988	.059	16.648	0.000
EX5	<---	Expectations	.933	.056	16.595	0.000
EX4	<---	Expectations	.958	.059	16.283	0.000
EX3	<---	Expectations	.911	.057	15.867	0.000
EX2	<---	Expectations	1.000			0.000
EX1	<---	Expectations	.922	.056	16.375	0.000
AC5	<---	Accessible	1.000			0.000
AC4	<---	Accessible	.973	.062	15.813	0.000
AC3	<---	Accessible	.953	.060	15.846	0.000
AC2	<---	Accessible	.963	.062	15.611	0.000
AC1	<---	Accessible	.981	.062	15.926	0.000
LB1	<---	Learning Behavior	.804	.048	16.599	0.000
LB2	<---	Learning Behavior	.770	.047	16.279	0.000
LB3	<---	Learning Behavior	.924	.052	17.804	0.000
LB4	<---	Learning Behavior	.910	.049	18.568	0.000
LA11	<---	Learning Ability	.968	.058	16.640	0.000
LA10	<---	Learning Ability	1.000			0.000
LA9	<---	Learning Ability	.897	.058	15.601	0.000
LA8	<---	Learning Ability	.888	.056	15.930	0.000
LA7	<---	Learning Ability	.857	.055	15.455	0.000
LA6	<---	Learning Ability	.862	.057	15.211	0.000
LA5	<---	Learning Ability	.960	.059	16.241	0.000
LA4	<---	Learning Ability	.982	.059	16.748	0.000
LA3	<---	Learning Ability	.924	.056	16.618	0.000
LA2	<---	Learning Ability	.953	.058	16.319	0.000
LA1	<---	Learning Ability	.899	.056	16.130	0.000
LB11	<---	Learning Behavior	1.000			0.000

The CFA findings indicated that each value exceeded 0.50, confirming the validity of the scale and its associated constructs. These values were used to develop the preliminary CFA model (see

Figure 1).

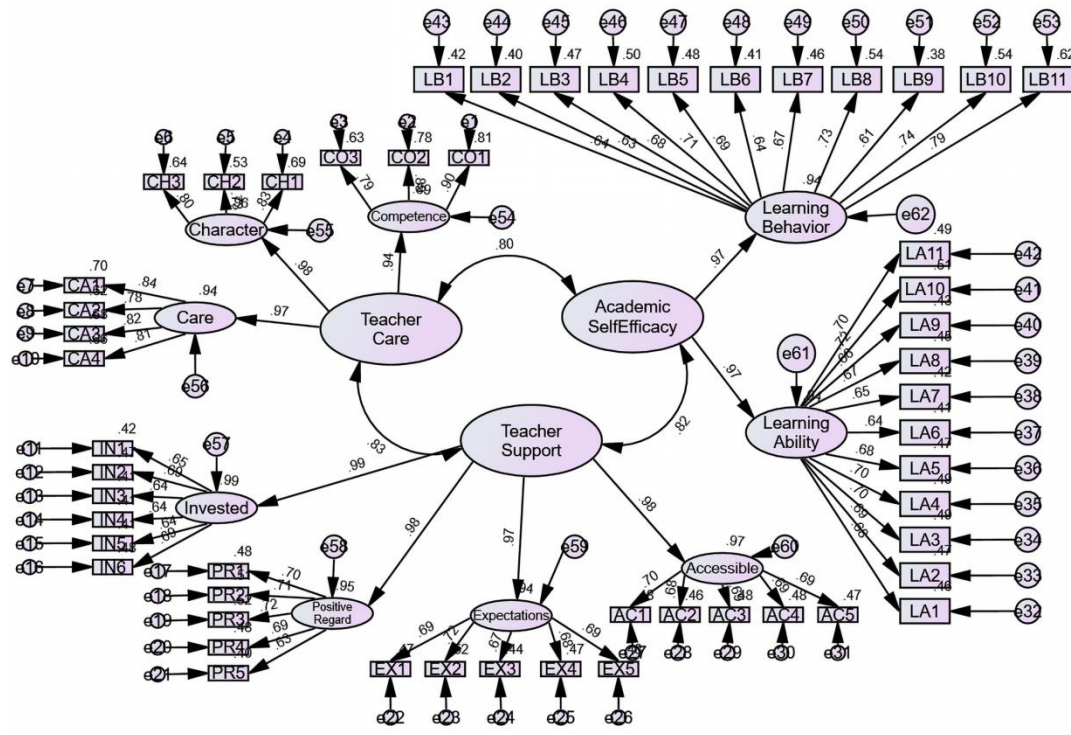


Figure 1: Initial CFA model with standardized estimates.

Subsequently, the quality of the proposed CFA model was assessed, and the results are presented in Table 2.

Table 2: Assessment of the initial CFA model.

Criteria		Criteria	Threshold		
			Acceptable	Excellent	Evaluation
CMIN	1739.711				
DF	1313				
CMIN/DF	1.325	>5	>3	>1	Acceptable
RMSEA	.023	>0.08	<0.08	<0.06	Excellent
GFI	.901	<0.9	>0.9	>0.95	Acceptable
CFI	.977	<0.9	>0.9	>0.95	Acceptable
PNFI	.868	<0.5	>0.5		Acceptable
TLI	.975	<0.9	>0.9	>0.95	Acceptable

Table 2 presents the findings for five key fit indices: CMIN-DF ratio, Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Proximate Normal Fit Index (PNFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA). All indices were within the specified range [29]. The CMIN/DF was 1.325 (specification ≤ 3.0), the GFI = 0.901 (specification >0.9), the CFI = 0.977 (specification > 0.9), the PNFI = 0.868 (specification > 0.5), the TLI = 0.975 (specification > 0.9) and RMSEA = 0.023 (specification < 0.080).

The findings in Table 3 reveal that the composite reliability (CR) values for each factor exceed the critical value of 0.70 [30], confirming the model's CR. These values also indicate that the factors meet the criteria for convergent validity (AVE > 0.50) [31], meaning that another criterion for convergent validity is met with factor loadings greater than 0.50, as shown in Table 1.

Additionally, the model demonstrated discriminant validity (the square root of AVE > inter-construct correlations).

Table 3: Composite reliability and discriminant validity of the factors.

	CR	AVE	Teacher support	Teacher care	Academic Self-Efficacy
Teacher support	0.990	0.962	0.981		
Teacher care	0.976	0.931	0.829	0.965	
Academic Self-Efficacy	0.967	0.937	0.819	0.799	0.968

The findings in Table 4 reveal a meaningful positive link between teacher care, teacher support, and students' academic self-efficacy.

Table 4: Connections among teacher support, teacher care, and academic self-efficacy.

			Estimate
Teacher Care	<-->	Teacher Support	.829
Teacher Care	<-->	Academic Self-Efficacy	.799
Teacher Support	<-->	Academic Self-Efficacy	.819

To address the study question (2), linear regression was performed within the SEM framework. The findings of this investigation are displayed in Figure 2.

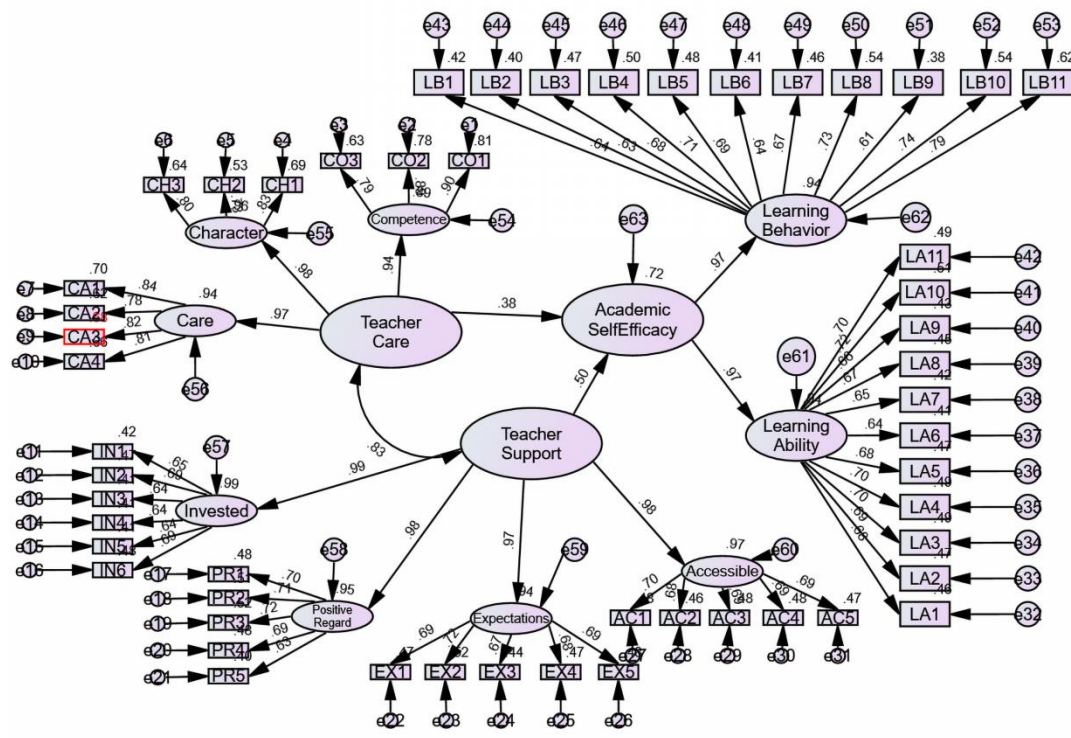


Figure 2: Final evaluation model with standardized values.

Figure 2 shows that around 38% of the variations in students' academic self-efficacy can be predicted by perceiving teacher care. In comparison, approximately 50% of the changes in academic self-efficacy can be expected based on students' perceptions of teacher support.

5. Conclusion and Impact

This investigation, reveals a strong positive relationship between teacher care, support, and students' academic self-efficacy. Additionally, regression analysis reveals that teacher

communication behaviors, specifically support and care, are crucial for improving academic self-efficacy among Chinese students. In other words, the views of Chinese students regarding the caring and supportive behavior of teachers greatly affect their academic self-efficacy. These findings are both theoretically and practically significant. Regarding the theoretical significance, this study expands the current literature by underscoring the positive effect of teacher care and support on the academic self-efficacy of university students in China. Practically, the results have important guiding significance for all in-service teachers, indicating that providing comprehensive care and support can significantly boost students' academic self-efficacy throughout their educational journey.

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