

The Association between Teacher-student Relationship and Social-emotional Competence among Adolescents: The Chain Mediating Roles of Positive Empathy and Self-efficacy

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Abstract: *To investigate the influence mechanism of teacher-student relationship and the social emotional competence of teenagers in ethnic areas of western China, 802 ethnic minority students were conducted by the teacher-student relationship scale, positive empathy scale, self-efficacy scale and social-emotional competence scale. The results show that the teacher-student relationship has a significant positive effect on the social and emotional competence of middle school students; positive empathy and self-efficacy play a separate role between the teacher-student relationship and social-emotional competence; the chain mediation of positive empathy and self-efficacy also plays a significant role between the teacher-student relationship and social-emotional competence. These finding indicates that the teacher-student relationship and individual internal positive resources can promote the social emotional competence of ethnic minority adolescents, and has guiding significance for the positive development of adolescents.*

Keywords: teacher-student relationship, positive empathy, self-efficacy, social and emotional competence.

1. INTRODUCTION

With the appeal of whole-person education and the drive of actual situation of education in China, a series of educational documents on social and emotional learning have been released at domestic and abroad in recent years, pointing out the importance of social and emotional competence to an individual's study, life and future. Education in various countries is constantly promoting the intervention practice of social and emotional learning, which shows that social and emotional competence has become the focus of the current field of education and psychology research. Previous studies have also shown that social and emotional competence has a beneficial impact on a series of positive outcomes of individuals, such as learning input, entrepreneurial intention, etc [1-2]. Chinese teenagers have achieved good scores in the OCED global research test of "Study on Social and Emotional Skills" (SESS). However, compared with the eastern region of China, the actual education situation of western ethnic areas is not optimistic, due to the remote geographical position, stagnant economic development, and national cultural atmosphere. Therefore, the minority youth groups in western China on social and emotional competence may exist its particularity, and need researchers to further explore. As most primary and secondary schools in ethnic minority areas implement boarding system, teachers get along with teenagers for a long time, indicating teachers are the key figures in the boarding life of teenagers. Therefore, the teacher-student relationship is an important environmental factor affecting the development of teenagers' cognitive and emotional ability. Meanwhile, with the vigorous development of positive psychology in recent years, positive empathy and self-efficacy, as its important themes, play an important role in the positive outcomes of individual development [3-4]. Therefore, this study try to explore the relationship between teachers-students relationship and the social and emotional competence among ethnic minority youth, and the mediating role of positive empathy and self-efficacy, in order to provide empirical support for the formation mechanism of social emotional competence, help teenagers improve social-emotional competence, and promote academic and future success.

Social and emotional competence was first formally proposed by the Collaborative of Academic, Social and Emotional Learning in 1994 to solve students' emotional indifference, mental health problems and bad behavior on campus. The concept of Social and emotional competence is defined as a series of individuals' core competence acquiring from the growth and development of complex situation, related to self adaptation and social development [5], mainly includes recognizing and managing emotions, setting and achieving goals, empathizing with others, building and maintaining supportive relationships, and doing responsible decision-making [6]. Its

connotation suggests that the development of social emotional competence is not innate but depends on the acquired accumulation and cultivation. According to the theory of bioecology, teachers are the direct factors influencing student development in the school microsystem [7]. Under a good teacher-student relationship, teachers are willing to give students more understanding, emotional support and positive guidance to students, which are conducive to the development of students' positive psychological quality, reducing the problem behavior in schools. Teacher-student relationship as a crucial relationship in boarding life of teenagers will also help students form the positive expectations and relationship schema for interpersonal communication [8]. Huang and Zeng's empirical study (2023) shows that the teacher-student relationship positively predicts students' social and emotional skills [9]. Thus, it is believed that teacher-student relationship affects teenagers' social and emotional competence, the first hypothesis H1 is proposed.

H1: Teacher-student relationship significantly and positively predicts teenagers' social and emotional competence.

Positive empathy refers to the individual's ability to understand, share, and empathize with the positive emotional state of others in the process of interacting with others [10]. Adolescence is a crucial education stage for cultivating the development of adolescent character and ability. Teachers are the active guides of students' positive growth, thus a good teacher-student relationship can help teachers to better guide the development of students' positive empathy ability. According to the perspective of social learning theory, individuals mainly acquire character and ability through the acquired environment, and teachers are a common learning model in the growth process of teenagers [11]. In a good teacher-student relationship, the teachers will pay more attention to the students, and are sensitive to perceive and understand the students' positive emotion; correspondingly students will imitate and internalize these teacher's empathic behavior in a subtle way. So it is believed that the emotional social relations is the basis of teenagers learn positive empathy, previous studies also found that the teacher-student relationship is the prediction of empathy positive [12-13].

In the dual processing model of empathy, the theory suggests that empathy mechanisms play an important role in individual social information processing [14]. Empathy helps individuals to understand the thoughts and behaviors of others, drive less egocentrism, obtain a higher gregariousness, convey common positions and interests, and then help individuals to form and maintain lasting social relationships [15]. Positive empathy can help teenagers feel more joy of others, arouse the positive emotional resonance and emotional experience, so that individuals with higher positive empathy can internalize those positive emotions into a positive state for a long time, which will make them more confident and optimistic in their academic and interpersonal performance. In addition, a large number of studies have also found that the positive effects of empathy on individuals' emotions and social behaviors, such as mental health [16], interpersonal quality [17], and prosocial behavior [18]. Based on these, the second, third and fourth hypothesis (H2, H3 and H4) are proposed.

H2: Teacher-student relationship significantly and positively predicts teenagers' positive empathy.

H3: Positive empathy significantly and positively predicts teenagers' social and emotional competence.

H4: Positive empathy plays a mediating role in the association between teacher-student relationship and teenagers' social and emotional competence.

Self-efficacy refers to an individual's belief in the ability to accomplish expected outcomes [19]. According to the ecosystem theory, the micro-environment system is an important condition affecting the psychological development of individuals [7]. Thus the intimate relationship between teachers and students can help teenagers to accumulate psychological resources in school life. For instance, encouraging and expectant words from teachers will enhance the confidence of students' self-ability, and thus accumulate self-efficacy. Also, many empirical studies have found the close relationship between teacher-student relationship and self-efficacy. Zhou et al. (2020) have argued that primary schools students with a higher level of teacher-student relationship show a higher level of self-efficacy [20]. Xu and Qi (2019) have demonstrated that middle school students who feel more connected with teachers have higher self-efficacy [21]. And the study of Wang et al. (2022) also have found that teacher-student relationship predict self-efficacy among postgraduate students [22].

In social cognitive theory, Bandura (1997) believes that self-efficacy, as a strong initiative of individuals, can affect an individual's cognition and behavior [19]. Students with a strong sense of self-efficacy usually have a strong belief in their ability and positive results of setted goal, those characteristics promote self-awareness. Adolescents' self-efficacy is also reflected in strong sense of control and expectation of their action results. A

previous study have found that students with high self-efficacy tend to believe that the intelligence is modifiable, and they pursue mastery goals including challenging and acquiring new knowledge [23]. It can be seen that adolescents with higher self-efficacy are better at do a great self-management. When they are faced with difficulties and challenges in learning and life, individuals with a strong sense of self-efficacy show more positive determination to make responsible decisions, more effort to build relationships with others, and stronger adaptability in the social adjustment. A cross-sectional study shows that self-efficacy positively predicts the social and emotional competence of Chinese primary school students [9]. Based on these, the fifth, sixth and seventh hypothesis (H5, H6 and H7) are proposed.

H5: Teacher-student relationship significantly and positively predicts teenagers' self-efficacy.

H6: Self-efficacy significantly and positively predicts teenagers' social and emotional competence.

H7: Self-efficacy plays a mediating role in the association between teacher-student relationship and teenagers' social and emotional competence.

Both positive empathy and self-efficacy are indispensable and important protective factors in the process of individual self-development and social adaptation. According to the promotion hypothesis model of protective factor-protective factor, one protective factor will enhance the effect of the other and drive the influence of this protective factor on the individuals' positive outcome [24]. On the one hand, positive empathy is a tendency of individuals to empathize with others' positive emotions, so adolescents with more positive empathy are more likely to be affected by the positive emotions of others. Surrounded by more positive cultural atmosphere, ethnic minority adolescents are more sensitive to the recognize positive emotions and are good to transform the positive feelings of others into self-positive experience through transposition. On the other hand, empathy is the basis of individual socialization, helping individuals to gain more social support. Adolescents enhance their successful experience in this process, and ultimately improve their sense of self-efficacy. Few current studies on relationship between positive empathy and adolescent self-efficacy, but Zheng and Zhao' s study (2015) has found that empathy positively predicted undergraduates' self-efficacy[25]. Therefore, this study speculates that there is a positive relationship between adolescents' positive empathy and their self-efficacy, and positive empathy and their self-efficacy may play a line role between teacher-student relationship and social-emotional competence. Based on these, the eighth and ninth hypothesis (H8 and H9) are proposed.

H8: Positive empathy significantly and positively predicts teenagers' self-efficacy.

H9: Positive empathy and self-efficacy play a chain mediating role in the association between teacher-student relationship and social-emotional competence.

In conclusion, this study proposed a theoretical model of chain mediation among teenagers, to explore the potential mechanism of teacher-student relationship and social-emotional competence, as well as the mediating roles of positive empathy and self-efficacy. (see Figure 1)

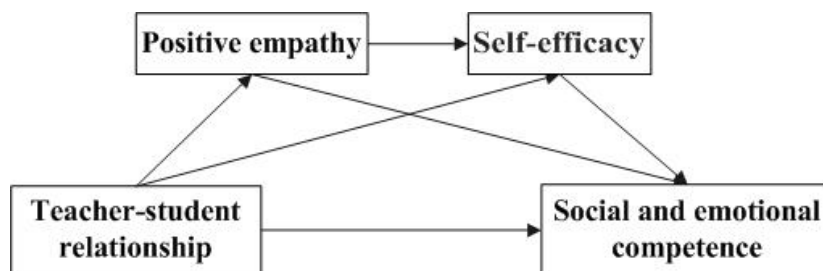


Figure 1: Hypothetical model

2. METHODOLOGY

2.1 Sampling and Procedure

This study used cluster sampling to conduct three middle schools in a western ethnic minority area of China. Before data collection, professional training was provided to the principal test subjects on the measurement

process, and the consent of the headmasters and the parents was obtained. During the formal test process, the students were told the purpose of the study and to complete the questionnaires anonymously. Finally, after removing invalid questionnaires, a total of 802 valid samples were included in the statistical analysis. Participants were all from same ethnic minority, predominantly 13-15 years of age, and included male students (47.3%) and 423 female students (52.7%).

2.2 Questionnaire Design

The questionnaire is composed of teacher-student scale, positive empathy scale, self-efficacy scale, social and emotional competence scale and some general demographic variables, such as gender and age. First, the four items of teacher-student relationship scale are from Zhu's study (2018) [26], which measures the quality of the relationship between teachers and students. In this study, its internal coefficient of consistency was 0.818. The fitting index of confirmatory factor model for teacher-student relationship: CFI = 0.990, TLI = 0.971, GFI=0.992, RMSEA = 0.082.

Second, the five items of positive empathy scale are from Morelli et al.'s study(2015) [27], which measures individuals' cognitive and affective responses to positive emotional states of others. The internal coefficient of consistency of positive empathy in this study was 0.765. The fitting index of confirmatory factor model are as follows: CFI = 0.994, TLI = 0.988, GFI=0.995, RMSEA = 0.036.

Third, the six items of self-efficacy scale are from Greene et al.'s study(2004) [28], which measures students' confidence in understanding the content and skills of classroom teaching, as well as the confidence that they are good at exams. The internal coefficient of consistency of self-efficacy in this study was 0.791. The fitting index of confirmatory factor model are as follows: CFI = 0.976, TLI = 0.960, GFI=0.984, RMSEA = 0.063.

Last, the nine items of social and emotional competence are from Mantz et al.'s study(2018) [29], which measures adolescents' responsibility for the needs of others in the decision-making process, the ability to care about the feelings of others, and the ability to regulate the skills of personal thoughts, emotions and behaviours in the process of building and maintaining healthy interpersonal relationships. The internal coefficient of consistency of social and emotional competence in this study was 0.780. The fitting index of confirmatory factor model are as follows: CFI = 0.930, TLI = 0.907, GFI=0.966, RMSEA = 0.067.

Four scales all demonstrate good reliability and validity in this study. Except general demographic variables, all measurement items were scored with Likert 6 points ranging from 1 to 6 (strong disagreement to strong agreement). Higher scores indicate higher levels of teacher-student relationships, positive empathy, self-efficacy and socio-emotional competence among middle school students.

2.3 Statistical Analysis

All data were analysed by SPSS 26.0, macro PROCESS 3.5 and AMOS 24.0. In this study, common method bias test, internal consistency coefficient analysis, descriptive statistics and correlation analyses were firstly carried out on all the study variables using SPSS 26.0; then validation factor analysis was carried out by using AMOS 24.0; and finally, the macro PROCESS3.5 plug-in in SPSS was used to examine the simple mediated effect analysis and chained mediated effect analysis.

3. RESULTS

3.1 Common Method Variance

Since the data of this study were obtained through self-reporting, the results of the study may have the problem of common methodological bias. The common methodological bias was controlled beforehand by anonymously completing the questionnaire and separately arranging the questions of the same dimension, etc., The questionnaire items of all the relevant variables of the study were subjected to unrotated exploratory factor analysis using Harman single factor test in SPSS 26.0 afterwards. The results showed that a total of five factors with eigenvalues greater than 1 were analysed and the percentage of explanatory power explained by the first factor was 31.235%, which was less than the critical criterion of 40%, indicating that the problem of common method bias was not serious in this study.

3.2 Descriptive statistics and correlation analysis

As shown in Table 1, the mean (standard deviation) of teacher-student relationship, positive empathy, self-efficacy and social-emotional competence were respectively 4.631(1.044), 4.573 (0.919), 4.360 (0.832) and 4.708 (0.707), indicating the four variables were at the upper average level. The correlation analysis of variables found that the teacher-student relationship, positive empathy, self-efficacy and social-emotional competence were pairwise related, and all showed significant positive associations (see Table 1 for details). Moreover, since gender and age were significantly associated with multiple variables in this study, to ensure the rigor of the analysis, age and gender were included as control variables for mediation analysis in the subsequent process.

Table 1: Descriptive statistics and correlation analysis

variable	M	SD	1	2	3	4
1 TS	4.631	1.044	-			
2 PE	4.573	0.919	0.453**	-		
3 SE	4.360	0.832	0.472**	0.414**	-	
4 SEC	4.708	0.707	0.538**	0.674**	0.546**	-
5 Age	13.964	1.073	-0.126**	-0.083*	-0.105**	-0.079*
6 Gender	-	-	0.041	0.104**	-0.018	0.074*

Note: TS= Teacher-student relationship, PE= Positive empathy, SE= Self-efficacy, SEC=Social and emotional competence, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

3.3 The significance test of mediating effect

Table 2 shows the results of regression analysis, teacher-student relationship significantly predicted social and emotional competence ($\beta = 0.362$, $p < 0.001$), positive empathy ($\beta = 0.393$, $p < 0.001$) and self-efficacy ($\beta = 0.281$, $p < 0.001$). Positive empathy significantly predicted positive self-efficacy ($\beta = 0.233$, $p < 0.001$) and social and emotional competence ($\beta = 0.366$, $p < 0.001$). Self-efficacy significantly and positively predicted social and emotional competence ($\beta = 0.217$, $p < 0.001$). Hypotheses H1, H2, H3, H5, H6, H8 are thus confirmed.

Table 2: The results of regression analysis

Regression		Fitting index			Significance	
Result variable	Predictor variable	R	R ²	F	β	t
SEC		0.540	0.292	109.561		
	Age				-0.006	-0.280
	Gender				0.073	1.734
	TS				0.362	17.785***
PES		0.461	0.213	71.865***		
	Age				-0.018	-0.660
	Gender				0.156	2.688
	TS				0.393	14.097***
SE		0.528	0.279	77.025***		
	Age				-0.034	-1.448
	Gender				-0.103	-2.046
	TS				0.281	10.393***
	PES				0.233	7.601***
SEC		0.755	0.569	210.440***		
	Age				0.009	0.600
	Gender				0.031	0.927
	TS				0.137	7.258***
	PES				0.366	17.519***
	SE				0.217	9.309***

A test method of Bootstrap 5000 times with 95% confidence interval was used for further analysis of mediating effects. As presented in Table 3, the total mediation effect value was 0.225, accounting for 62.15% of the total effect of the model, and the Bootstrap 95% confidence interval was [0.285,0.402], excluding 0, indicating that three pathway of mediating effects were statistically significant. Table 3 shows that the indirect effect of positive

empathy on social and emotional competence is 0.144(95% bias-corrected CI [0.115, 0.177], $p < 0.001$, 39.78%), which is significantly higher than the effect size of the other two indirect pathways. The results also show that self-efficacy has a significant positive predictive effect on social and emotional competence ($\beta = 0.061$, $p < 0.001$), and the chain mediation composed of positive empathy and self-efficacy has a significant positive predictive effect on social and emotional competence ($\beta = 0.020$, $p < 0.001$) though its mediation effect only contributed 5.52% of the total effect.

Table 3: The results of mediation analysis

	Effect	Boot SE	Boot LLCI	Boot ULCI	Relative mediation effect
Total indirect effect	0.225	0.020	0.188	0.266	62.15%
Indirect effect 1	0.144	0.016	0.115	0.177	39.78%
Indirect effect 2	0.061	0.010	0.043	0.080	16.85%
Indirect effect 3	0.020	0.005	0.012	0.030	5.52%

Note: Indirect effect 1= teacher-student relationship → positive empathy → social and emotional competence; Indirect effect 2= teacher-student relationship → self-efficacy → social and emotional competence; Indirect effect 3= teacher-student relationship → positive empathy → self-efficacy → social and emotional competence.

4. DISCUSSION

This study aims to explore the relationship between teacher-student relationship and ethnic minority adolescents' social emotional competence, as well as the mediation effect of the positive empathy and self-efficacy, which has certain theoretical and practical significance to promote the social and emotional competence of adolescents in ethnic minority region. The findings are as follows.

First, this study found that the teacher-student relationship significantly positively predicted social-emotional competence, verifying the study hypothesis H1, which is consistent with Huang and Zeng's findings [9]. One possible reason is that middle school students live together with teachers in a long boarding life, the relationship between teachers and students is not only an interpersonal relationship formed by knowledge teaching, but also an emotional relationship. Teachers and students establish a relationship on the basis of emotional care, mutual understanding and mutual acceptance. A good teacher-student relationship is the experience accumulation of adolescent social interpersonal relationship. In the process of communication and interaction with teachers, adolescents improve individual self-cognition and master interpersonal skills, so as to promote the tendency and behavior of individual social communication. Through social activities, they will constantly cultivate and practice the sense of cooperation, responsibility and decision-making ability [30], thus promoting the development of social and emotional competence. The result of this study has further verified the importance of significant others on social-emotional competence.

Second, this study found that positive empathy is a partial mediator between the teacher-student relationship and social emotional competence, supporting the research hypothesis H4. The quality of the relationship between teachers and students is the result of the mutual maintenance, students who perceive the higher teachers-students relationship tend to be more understanding and inclusive. They perceive more positive emotions and feedback from teachers, and thus this positive communication mode will generalize into other situation, forming the basis of empathy. In addition, this conclusion is also in line with the view of broaden-and-build theory of positive emotions [31]. Positive emotional state will promote the individual to accumulate and construct beneficial resources, such as physical and mental resources, and social resources, which can enhance the individual's positive cognition and behavior. Cognitive component in positive empathy helps individuals to show understanding, humility, mutual assistance, and collaboration in interpersonal communication. Therefore, the increase of social adaptive behaviors such as interpersonal emotional communication and harmonious interpersonal relationship, will promote the social development of individual cognition, emotion and behavior. The result of this study has revealed the importance of positive empathy in teacher-student relationships and social-emotional competence.

Third, this study found that self-efficacy is a partial mediator between teacher-student relationship and social-emotional competence, supporting the study hypothesis H7. This conclusion is in line with the view of self-determination theory, where teachers support can foster students' autonomy and motivate them to grow and integrate themselves [32]. Students' self-efficacy is enhanced by giving students care, respect and affirmation from teachers. In addition, as a self-regulation mechanism, self-efficacy controls a person's motivation, action and cognition [33], and can directly act on individual development. Middle school students with high self-efficacy

have strong cognitive flexibility, which can effectively deal with stressful events in the process of study and life. For the reason of confidence in their own abilities, teenagers are willing to take an active part in various school and social activities, which will improve their sense of cooperation and interpersonal coordination ability, constantly enhance students to adapt to school, and then improve their social and emotional competence. The result of this study has further confirmed the influence of individuals' initiative on social emotional competence.

Last, this study found that positive empathy and self-efficacy functioned as a chain indirect role between teacher-student relationships and social-emotional competence, supporting the research hypothesis H9. This conclusion is in line with the promotion hypothesis model of protective factor-protective factor proposed by Brook et al. (1986). Due to colorful ethnic culture and high level of life happiness, ethnic minority teenagers are more sensitive to receive signals of positive emotions and can get more positive states such as confidence, optimism, hope and tenacity from others. When teenagers have enough self-efficacy, they can not only resist difficulties and setbacks, cognize objective ability positively, manage self behavior, make rational decisions in the process of academic life and socialization, also have abundant strength and energy to explore the environment, develop their social ability, and broaden the interpersonal communication, so as to improve the social and emotional competence. The result has confirmed the influence of protective factors on promoting the development of social and emotional competence, which is conducive to deepening the study of the influencing factors of social emotional competence.

5. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

This study explored the relationship between parent-child relationship and the social-emotional competence of ethnic minority adolescents, and the role of positive empathy and self-efficacy in it, which gained a deeper understanding of the influencing factors of social emotional competence. From a theoretical point of view, this study explores the mechanism of environmental factor and individual internal factors on social emotional competence, and explains the new perspective of how the teacher-student relationship affects the internal mechanism of social-emotional competence. From a practical perspective, the results of this study provide the educational thinking and reference for students in ethnic minority areas under the background of whole-person education.

Moreover, limitations in the study also should be noticed for future researches. First, the measurement tools used in this study are all self-evaluation scales, which are inevitably subjective and biased. Future studies should consider other evaluation methods as a supplement, such as mutual evaluation, or qualitative research methods. Second, the study based on cross-sectional data cannot reveal the causal relationship among variables. Future studies may use a longitudinal study design to do a further confirmation. Third, this study only analyzed the mechanism of the teacher-student relationship on the social emotional competence of adolescents, without considering other important interpersonal relationships, such as parent-child relationship, peer relationship and so on. Therefore, future studies can further explore the influence of other interpersonal relationships on social and emotional competence.

6. CONCLUSION

In the context of ethnic minority areas and groups in western China, the results of this study show that the teacher-student relationship, positive empathy and self-efficacy play an important role in the social emotional competence of middle school students. The positive empathy and self-efficacy not only play a separate intermediating role between the teacher-student relationship and the social emotional competence of middle school students, but also play a link role.

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