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Teacher-Student Relationships As Catalysts For L2 Behavioral Engagement: Exploring The Mediating Roles Of Positive Emotions And Academic Resilience

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Abstract:
With the ongoing advancement of the positive psychology movement in second language (L2) education, there has been an increasing focus on the dynamics of L2 learning engagement and its principle influencing factors. Among these, the quality of the teacher-student relationship as perceived by L2 learners emerges as a crucial determinant of engagement. However, the potential mediating roles of positive emotions and resilience in this relationship have been inadequately explored in existing literature. This study seeks to clarify the structural relationships between L2 teacher-student relationships, resilience, positive emotions, and L2 engagement in a sample of 753 L2 students (N_{male} = 394, N_{female} = 359) in mainland China. Controlling gender, age, home educational resources, and L2 achievement, we utilized structural equation modelling (SEM) to examine the predictive effects of teacher-student relationships on behavioral engagement in L2 learning, with resilience and positive emotions acting as mediators. The results demonstrated that teacher-student relationships positively predicted both positive emotions and resilience. Moreover, these positive emotions and resilience significantly influence behavioral engagement of L2 learners. This study offers empirical evidence for the connection between teacher-student relationships and behavioral engagement, while also advancing the literature by clarifying the mediating mechanisms that connect these two constructs. The findings offer a framework for educators and policymakers to foster more effective learning environments that promote active participation among L2 learners.

Keywords: Teacher-student relationships, L2 resilience, positive emotions, behavioral engagement, secondary school students.

1. Introduction

Academic engagement, as a salient indicator of learning motivation (Martin et al., 2017), has garnered significant attention from educators and researchers alike, owing to its pivotal role in influencing academic achievement (Guo et al., 2023; J. S. Lee, 2014). Beyond individual factors such as students' personal achievement goals,

emotional experiences and levels of grit (Derakhshan & Yin, 2024; J. Liu, 2021; Reschly et al., 2008; Rothes et al., 2022), research has established that teachers serve as significant contextual influences on the extent of academic engagement. For instance, in a recent study, Lee et al. (2023) demonstrated that teacher's autonomy support significantly enhances academic engagement among high school students in South Korea. In a separate investigation, Han (2021) revealed a positive association between teaching strategies employed by Australian primary school teachers and student engagement. Furthermore, empirical evidence supports the facilitative role of high-quality teacher-student relationships (TSR) in promoting students' academic engagement (Engels et al., 2016). Nonetheless, a significant portion of the existing research examining the predictive effect of TSR on academic engagement has been situated within general educational contexts, thereby overlooking the domain-specific characteristics inherent to these two constructs (Green et al., 2007; Pianta & Hamre, 2009). Thus, the primary aim of this study is to investigate whether the quality of the relationship perceived by students with their English teachers impacts their engagement in English learning.

Both teachers and students aspire to cultivate a high-quality, positive teacher-student relationship (den Brok et al., 2006). Such relationships not only foster students' adjustment to school but also significantly contribute to their academic engagement, emotional experiences and overall well-being (Ang, 2005; Geng et al., 2020; Halladay et al., 2020; Saxer et al., 2024). This is particularly true for secondary school students in early adolescence, as their relationships with teachers play a critical role in sustaining high levels of academic engagement. Nevertheless, aside from the investigations conducted by Sadoughi & Hejazi (2021) and Gao et al. (2023) that examined the mediating role of achievement emotions and basic psychological needs satisfaction in the linkage between TSR and academic engagement, the underlying mediating mechanisms between these two constructs warrant further exploration. Can interpersonal factors, such as TSR, cultivate positive emotional experiences for L2 learners throughout the English learning process, thereby affecting their level of engagement? For Chinese secondary school students, the journey of learning English frequently entails navigating challenges and setbacks (Seal, 2016). In light of these obstacles, does a strong TSR bolster their resilience, ultimately influencing their engagement in learning English? As such, this study sought to investigate the mediating roles of L2 resilience and L2 positive emotions in the association between TSR and behavioral engagement among 753 secondary L2 learners in China. This study contributes to the understanding of academic engagement by identifying the TSR as a critical determinant of students' behavioral engagement. Furthermore, it demonstrates that positive emotions and resilience serve as mediators in this relationship. These findings have important implications for interventions in L2 education.

2. Literature Review

2.1 Teacher-Student Relationships

The teacher-student relationship encompasses the interpersonal dynamics that exist between educators and their students (Hagenauer & Volet, 2014). A positive TSR, characterized by mutual respect, warmth, and trust, fosters an environment where students experience greater care, sense of belonging, and security, significantly enhancing their confidence in acquiring new knowledge and developing skills (Aldrup et al., 2018; Feeney et al., 1991). As

students spend a substantial amount of their time in school, this relationship is essential for shaping the overall educational environment and significantly influences the quality of the learning experience (Ang, 2005). The nature of this relationship—whether characterized by positivity or negativity—can have profound implications for academic and well-being outcomes. From the perspective of attachment theory, the TSR is significantly correlated with students' school adjustment, as well as their subsequent academic performance and behavioral adaptation (Poulou, 2020; Wubbels et al., 2016). The TSR can foster a sense of belonging among students, and according to self-determination theory, a higher perceived quality of this relationship is associated with increased intrinsic motivation for learning (Henry & Thorsen, 2018; Ryan & Deci, 2000).

Moreover, the positive impact of the TSR on academic engagement has been confirmed (Engels et al., 2021; Roorda et al., 2011; Tas et al., 2019). However, while the effects of the TSR on academic engagement are well-established, few studies have thoroughly examined the mediating mechanisms that connect them. Furthermore, given the domain-specific nature of TSR (Pianta & Hamre, 2009) and academic engagement (Green et al., 2007), there is an urgent need for further exploration of their relationship and the mediating mechanisms involved, particularly in the context of L2 education.

2.2 Academic Resilience

From the perspective of human development psychology, resilience is defined as an individual's capacity to withstand and adapt to challenging environmental conditions in the face of adversity (Burton et al., 2010). It encompasses the dynamic processes involved in sustaining positive adaptation during periods of significant stress (Zhang, 2022). From an educational standpoint, resilience is conceptualized as the capacity of students to navigate challenges encountered in the learning process and to attain academic success despite these obstacles (Vance et al., 2015). English language learning presents considerable challenges for Chinese learners. The ability to confront these challenges with courage and ultimately achieve success in English proficiency is closely associated with an individual's level of resilience. In this context, recent research has concentrated on the predictive effects of resilience on academic outcomes, as well as the factors that contribute to the development of learners' resilience (e.g., Kim et al., 2019; Ye et al., 2024).

Numerous studies have established the predictive relationship between academic resilience and academic performance. Furthermore, emerging research has begun to investigate the facilitating influence of academic resilience on academic engagement. In a study conducted among Spanish college students, García-Martínez et al. (2021) demonstrated a significant positive impact of resilience on student engagement. Similarly, Romano et al. (2021) established a positive predictive relationship between resilience and student engagement among Italian high school students. Also, the positive impact of TSR on academic resilience has been confirmed. For example, based on interviews with secondary school students in Australia, Johnson (2008) identified that TSR exert a positive facilitating effect on academic resilience. Drawing from the existing literature, we hypothesize that academic resilience mediates the relationship between TSR and academic engagement. However, this mediating effect has been infrequently corroborated by empirical research, particularly within the context of L2 education in China. Furthermore, while existing studies have

examined the general relationships among TSR, resilience, and academic engagement in educational contexts, they have largely neglected the domain-specific nature of these constructs. Thus, one primary objective of this study is to examine the extent to which TSR positively impacts L2 resilience, and to further assess whether this impact enhances students' engagement in L2 learning.

2.3 Positive Emotions

From an educational standpoint, emotions pertain to the emotional experiences that are directly associated with learning outcomes, such as academic success or failure, as well as achievement-related activities, including in-class learning, examination performance, and self-study efforts after class (Pekrun, 2019). Emotions play a crucial role throughout the entire learning process, significantly affecting students' academic and well-being outcomes. They are considered fundamental to learning experience (King & Chen, 2019; Zull, 2006). Pekrun et al. (2002) identified eight discrete emotions that are most commonly experienced in the learning process, those are, enjoyment, hope, pride, boredom, anxiety, hopelessness, shame, and anger. From the perspective of valence, these emotions can be categorized into two groups: positive emotions (i.e., enjoyment, pride, and hope) and negative ones. The rise of positive psychology has remedied the shortcomings of earlier research, which primarily focused on addressing and mitigating negative emotions, such as anxiety. In contrast, it highlights the importance of exploring the beneficial roles that positive emotions can have in fostering well-being and improving academic performance (Kang & Wu, 2022).

Previous studies have substantiated both the advantageous effects and the precursors of positive emotions (Fredrickson, 2000; Yu et al., 2022). For example, in a study conducted among Chinese high school students, Li et al. (2024) documented that positive emotions significantly enhance self-regulated learning, which subsequently contributes to improved academic performance in English as a foreign language. Scholars have also investigated the beneficial effects of individual positive emotions on academic engagement. In this regard, Ainley and Ainley (2011) found that academic enjoyment positively influences student engagement. Besides, the positive predictive effects of pride and hope on student engagement were also confirmed (Azadianbojnordi et al., 2022; Derakhshan & Yin, 2024). A quantitative investigation involving public university students in the USA reveals that teacher behaviors significantly influence students' positive emotions (Titsworth et al., 2013). Furthermore, Li et al. (2025) demonstrated that TSR exerted a significant positive predictive effect on positive emotions among Chinese freshmen. Building upon the existing research (Ainley & Ainley, 2011; Li et al., 2025), we proposed the model "TSR → positive emotions → academic engagement." While the validity of this model has yet to be established within the context of L2 education, confirming its applicability constitutes one primary objective of this study.

2.4 Behavioral Engagement

Behavioral engagement refers to students' conduct in the classroom, their active participation in academic tasks, and their involvement in school-related activities (Nguyen et al., 2018). As a concrete manifestation of intrinsic motivation, the positive influence of behavioral engagement on academic achievement is thoroughly documented in the existing literature (e.g., Olivier et al., 2020). In view of this, particularly during a period of growing emphasis on positive psychology within

the field of language education, scholars increasingly seek to identify key factors that enhance behavioral engagement. Among the different indicators of behavioral engagement, Engels et al. (2016) reported that TSR had a positive effect on behavioral engagement in a sample of Belgian adolescents. Besides, the predictive effect of resilience and positive emotions on behavioral engagement were also confirmed (Reschly et al., 2008; Wu et al., 2024).

While existing literature has established that TSR, positive emotions, and academic resilience positively influence behavioral engagement, it has predominantly concentrated on the dyadic interactions between pairs of these variables. This focus has resulted in a lack of comprehensive analysis that examines the interrelationships among all these constructs simultaneously. To elucidate the interrelationships among TSR, positive emotions, academic resilience, and behavioral engagement, the present study develops a theoretical model encompassing "TSR → positive emotions/academic resilience → behavioral engagement." Further, the present study aims to verify the effectiveness of this model within a cohort of Chinese secondary L2 learners.

2.5 The Present Study

Existing research indicates that the quality of TSR can serve as a catalyst, enhancing positive emotions, academic resilience, and behavioral engagement. However, the focus on dyadic relationships between pairs of variables limits our understanding of the complex interconnections among all four constructs. This raises critical questions: Does positive emotion function as a mediating variable between TSR and behavioral engagement? Similarly, what role does academic resilience play in this dynamic? More specifically, we formulated the model delineated by the pathway "TSR → positive emotions/academic resilience → behavioral engagement." This model serves as the framework for our investigation, enabling us to explore the research questions through the examination of the following four hypotheses.

Research Hypothesis 1: Teacher-student relationships exert a positive and significant influence on students' resilience and positive emotions.

Research Hypothesis 2: Students' academic resilience and positive emotions are positively associated with behavioral engagement.

Research Hypothesis 3: Teacher-student relationships are positively associated with students' behavioral engagement through the mediator of academic resilience.

Research Hypothesis 4: Teacher-student relationships are positively associated with students' behavioral engagement through the mediator of positive emotions.

3. Methods

3.1 Participants and Procedure

This investigation was conducted in four middle schools in Foshan, China, utilizing convenience sampling to facilitate accessibility. A total of 753 secondary school students participated, including 394 males (52.3%) and 359 females (47.7%). The participants, aged between 12 and 15 years (M = 12.84, SD = 0.73), were predominantly from the seventh grade (n = 444, 59.0%) and eighth grade (n = 309, 41.0%). Data were collected through paper-and-pencil questionnaires administered during a 15-minute English class, under the supervision of the researchers with the assistance of the students' English teachers. Prior to participation, students were informed of the study's voluntary nature and their right to withdraw without repercussions. To ensure linguistic and cultural relevance, measurement scales were initially translated from English to

Chinese and subsequently backtranslated by independent translators to confirm accuracy and consistency. This methodological framework was designed to uphold the validity of the instruments while effectively addressing the local context.

3.2 Instruments

3.2.1 Teacher-Student Relationships Scale

In this study, we employed the four-item teacher-student relationships scale developed by Martin et al. (2007) to measure the quality of TSR between participants and their English teachers. One representative item from this scale is "I get along well with my English teacher." This scale exhibited robust psychometric properties in prior studies (Martin & Collie, 2019; Wu et al., 2024). In the present study, respondents rated their level of agreement on a six-point Likert scale, where 1 indicated "strongly disagree" and 6 represented "strongly agree." Upon completion of data collection, we calculated Cronbach's α for the teacher-student relationship variable, which yielded a value of 0.87, indicating strong reliability. This result suggests that the measurement tool used to assess TSR exhibited consistency and stability.

3.2.2 Academic Resilience Scale

In this study, we assessed students' resilience in learning English utilizing the six-item Academic Resilience Scale, originally developed by Martin and Marsh (2006). Participants responded to items on a six-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree). An example item from the scale is: "I do not let the stress of learning English overwhelm me." This scale demonstrated a good psychometric properties in existing studies (Liu et al., 2023; Wang et al., 2024). In this study, the academic resilience scale demonstrated strong psychometric properties, as indicated by Cronbach's alpha value of .86.

3.2.3 Positive Emotions Questionnaire

In this study, the positive emotions under investigation consisted of three types: enjoyment, pride, and hope. To measure the participants' positive emotions, the class-related achievement emotions questionnaire developed by Pekrun et al. (2011) was employed. To assess students' enjoyment of their English class, we employed a four-item scale, with an example item being: "I enjoy my English class." Participants responded using a six-point Likert scale, where 1 indicated "strongly disagree" and 6 represented "strongly agree," with higher scores corresponding to greater levels of enjoyment; this subscale demonstrated high internal consistency, as indicated by a Cronbach's alpha of .88. For measuring students' hope, we utilized another four-item scale, including a sample item such as: "I feel optimistic that I will make good progress in studying English," which also used a six-point Likert scale, with higher scores indicating a stronger sense of hope and exhibiting excellent internal consistency (Cronbach's alpha of 0.90). To gauge students' pride in their English studies, we implemented a four-item scale, with items like: "I think I can be proud of my accomplishments in studying English," rated on the same six-point Likert scale, where higher scores reflected increased feelings of pride; this subscale yielded a Cronbach's alpha of .80, indicating satisfactory internal consistency. Overall, enjoyment, hope, and pride were operationalized as indicators of students' positive emotions in English class, and the means of the scores for these subscales resulted in an overall Cronbach's alpha of .93 for the combined measure, suggesting a high level of reliability for this composite assessment.

3.2.4 Behavioral Engagement Scale

To measure students' behavioral engagement, we adapted four items from the Engagement vs. Dissatisfaction with Learning Questionnaire

developed by Reeve and Tseng (2011), with a sample item being: "When I'm in English class, I listen very carefully." Participants responded using a six-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree), reflecting their level of active participation in learning activities. Higher scores indicated a greater willingness to engage behaviorally in classroom activities. The scale demonstrated strong internal consistency, with a Cronbach's alpha of .93, confirming its reliability for assessing behavioral engagement in the context of English class.

Furthermore, the results of the Confirmatory Factor Analysis (CFA) and the reliability assessments for all the study variables involved indicate a robust data structure (see Table 3).

3.2.5 Covariates

Covariates included gender, age, home education resources, and prior L2 achievement, as these factors may introduce biases in achievement emotions, academic engagement, resilience, or teacher-student relationships. For instance, Gentry et al. (2002) found that achievement emotions were influenced by biases related to gender and age. Meanwhile, Santos et al. (2021) reported that there are gender and age differences in academic engagement. Moreover, Pekrun et al. (2017) established that academic performance and achievement emotions exhibit a reciprocal relationship. This underscores the importance of controlling for prior academic performance when investigating the role of achievement emotions. The substantial predictive influence of family educational resources on students' emotional experiences (Ma et al., 2023) suggests that it is essential to account for home educational resources when investigating the antecedents or outcomes of achievement emotions. In sum, the present study accounted for gender, age, prior English performance, and home educational resources while examining the relationships among TSR, positive emotions, academic resilience, and behavioral engagement. This approach was adopted to mitigate the potential influence of these variables on the study's primary variables and their interconnections.

3.3 Data Analysis

Prior to conducting the data analysis, it is essential to address the issue of missing data. In the current study, the proportion of missing data for each item was less than 1.1%. The mechanism underlying the missing data was assessed using Little's MCAR test (Little & Rubin, 2019), which indicated that the missing values were not completely at random ($\chi^2(207) = 335.434$, $p < .000$). Consequently, the use of a listwise deletion strategy to exclude students with missing data was deemed inappropriate. Instead, the full-information maximum likelihood (FIML) approach, as implemented in Mplus, was utilized to manage missing values (Muthén & Muthén, 2013). The efficacy and reliability of FIML for producing unbiased parameter estimates in the presence of missing data have been established (Enders, 2010).

Following the handling of missing data, common method bias was assessed using Harman's single-factor test to evaluate the potential impact of common method variance (Podsakoff et al., 2003). Descriptive statistics were computed using SPSS 23.0 to provide preliminary insights into the data. The skewness and kurtosis of all variables were examined to ensure appropriateness for maximum likelihood (ML) estimation. Subsequently, confirmatory factor analysis (CFA) was performed to evaluate the measurement model, with latent models analyzed using Mplus 8.3. Furthermore, structural equation modeling (SEM) in Mplus 8.3 was employed to investigate the relationships among teacher-student relationships, resilience, and behavioral engagement. To assess mediation effects, a bootstrap procedure with 5,000 re-

samples and 95% bias-corrected confidence intervals (CIs) was implemented, with significance determined when the CIs did not encompass zero (Efron, 1988).

4. Results

4.1 Common Method Bias

We conducted Harman's single-factor test to assess the issue of common method variance in the present study (Podsakoff et al., 2003). A single-factor CFA using all the items from all latent variables (i.e., teacher-student relationship, resilience and positive emotions and behavioral engagement) revealed a poor fit, with $\chi^2(135) = 2038.447$, $p < .001$, CFI = .822, TLI = .798, RMSEA = .137, 90% CI [.132, .142], SRMR = .070. These results suggest that common method bias is unlikely to pose significant concern within the dataset.

4.2 Descriptive Statistics

Initially, we analyzed the descriptive statistics for all items. As presented in Table 1, the skewness and kurtosis values for each item met the criteria established by Roever and Phakiti (2017), with |skewness| < 2 and |kurtosis| < 2.

Table 1. Descriptive statistics of the study variables' items

	Minimum	Maximum	Mean	SD	Skewness	Kurtosis
TSR1	1	6	5.00	1.10	-1.35	2.09
TSR2	1	6	4.60	1.16	-.78	.43
TSR3	1	6	4.52	1.20	-.88	.80
TSR4	1	6	4.76	1.19	-1.14	1.24
RES1	1	6	4.05	1.47	-.34	-.81
RES2	1	6	4.58	1.24	-.80	.26
RES3	1	6	4.15	1.31	-.42	-.41
RES4	1	6	4.07	1.37	-.40	-.53
RES5	1	6	4.09	1.43	-.42	-.66
RES6	1	6	4.40	1.31	-.69	-.08
PE1	1	6	4.29	1.18	-.61	-.05
PE2	1	6	4.00	1.24	-.28	-.54
PE3	1	6	4.03	1.14	-.32	-.16
BE1	1	6	4.52	1.43	-.85	.00
BE2	1	6	4.30	1.32	-.54	-.29
BE3	1	6	4.36	1.31	-.70	.03
BE4	1	6	4.36	1.31	-.78	.13
BE5	1	6	4.27	1.31	-.64	-.03

Besides, descriptive statistics of all the study variables are shown in Table 2. Based on the standards proposed by Roever and Phakiti (2017) (|skewness| < 2, |kurtosis| < 2), all study variables had satisfactory normality for the maximum likelihood (ML) estimation.

Table 2. Descriptive statistics for study variables

Construct	Mean	SD	Skewness	Kurtosis	Cronbach's Alpha	Factor loadings
TSR	4.72	.97	-1.14	1.72	.87	.72-.83

RES	4.22	1.04	-.27	-.46	.86	.55-.80
PE	4.11	1.11	.37	-.25	.90	.87-.93
BE	4.36	1.18	-.74	.26	.93	.77-.89

Note. TSR = Teacher-student relationships; RES = Academic resilience; PE = Positive emotions; BE = Behavioral engagement.

Additionally, as demonstrated in Table 2, the internal consistency coefficients for all latent variables were satisfactory, with Cronbach's α values of .87 for the L2 teacher-student relationship, .86 for academic resilience, .93 for positive emotions, and .93 for L2-related behavioral engagement. In this study, the independent variable is the L2 teacher-student relationship, while the mediators are resilience and positive emotions within English classes. The dependent variable is behavioral engagement, and the analysis also accounts for other variables, including students' prior achievement, age, gender, and home educational resources.

4.3 Measurement Models and Latent Bivariate Correlations

An initial measurement model was built using four indicators for FL teacher-student relationships, six items for resilience, three items for positive emotions and five items for behavioral engagement. This CFA, and all subsequent analyses, were performed using Mplus 8.3 and evaluated using a variety of model fit criteria. These included the comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). All latent constructs exhibited good model fit according to traditional cutoff criteria that indicate excellent and adequate fit, respectively: (a) CFI and TLI values of ≥ .95 and ≥ .90; (b) RMSEA values of ≤ .06 and ≤ .08; and (c) SRMR values of ≤ .08 and ≤ .10 (Chen, 2007; Hu & Bentler, 1999).

By these criteria, the measurement model showed an acceptable fit to the data: $\chi^2(129) = 690.762$, $p < .001$, CFI = .947, TLI = .938, RMSEA = .076, 90% CI [.071, .082], SRMR = .040. And the standardized factor loadings reported from the measurement model were satisfactory (ranged from .55 to .93) (see Table 3), more than .50 (Sharma et al., 2005).

Table 3. Correlations matrix for the study variables

	1	2	3	4	5	6	7	8
1Teacher-student relationship	-							
2 Academic resilience	.642***	-						
3 Positive emotions	.707***	.763***	-					
4 Behavioral engagement	.762***	.777***	.896***	-				
5 English achievement	-.027	-.082*	-.066	-.056	-			
6 Age	-.090*	-.026	-.041	-.028	.060	-		
7 Gender	.048	-.100*	.092*	.068	-.001	-.044	-	
8 Home educational resources	.157***	.173***	.180***	.174***	-.058	-.064	.085*	-

**p < .01; ***p < .001; *p < .05.

English achievement, age, gender, and home educational resources were incorporated into the measurement model as manifest variables, which subsequently demonstrated an excellent fit to the

data: $\chi^2(185) = 776.815$, $p < .001$, CFI = .944, TLI = .930, RMSEA = .066 (90% CI [.061, .071]), and SRMR = .036. The latent bivariate correlations derived from this model are detailed in Table 3. Notably, TSR exhibited positive correlations with students' academic resilience, positive emotions, and behavioral engagement. Additionally, resilience was positively correlated with both positive emotions and behavioral engagement.

4.4 Structural Equation Modelling

Structural equation modeling (SEM) was employed to evaluate the proposed model, which included prior achievement, age, gender, and home educational resources as covariates. The model exhibited an adequate fit to the data, with the following fit indices: $\chi^2(190) = 1009.721$, $p < .001$, CFI = .923, TLI = .909, RMSEA = .077 (90% CI [.072, .081]), and SRMR = .080. Figure 1 presents the model along with standardized regression weights. The most notable findings are as follows: (1) a positive association between the teacher-student relationship and resilience ($\beta = .692$, SE = .042, $p < .001$), as well as with positive emotions ($\beta = .734$, SE = .034, $p < .001$); (2) a positive relationship between resilience and behavioral engagement ($\beta = .205$, SE = .051, $p < .001$); and (3) a positive correlation between positive emotions and behavioral engagement ($\beta = .618$, SE = .068, $p < .001$).

Regarding the covariates, gender (coded as 0 = male and 1 = female) was negatively associated with resilience ($\beta = -.148$, SE = .033, $p < .001$), indicating that male students demonstrate higher levels of resilience in foreign language classes. Furthermore, home educational resources were positively correlated with resilience ($\beta = .084$, SE = .033, $p < .05$), and academic achievement was positively associated with positive emotions ($\beta = .213$, SE = .037, $p < .001$). The proposed model accounted for significant proportions of variance in student resilience (51.0%), positive emotions (59.4%), and behavioral engagement (84.0%).

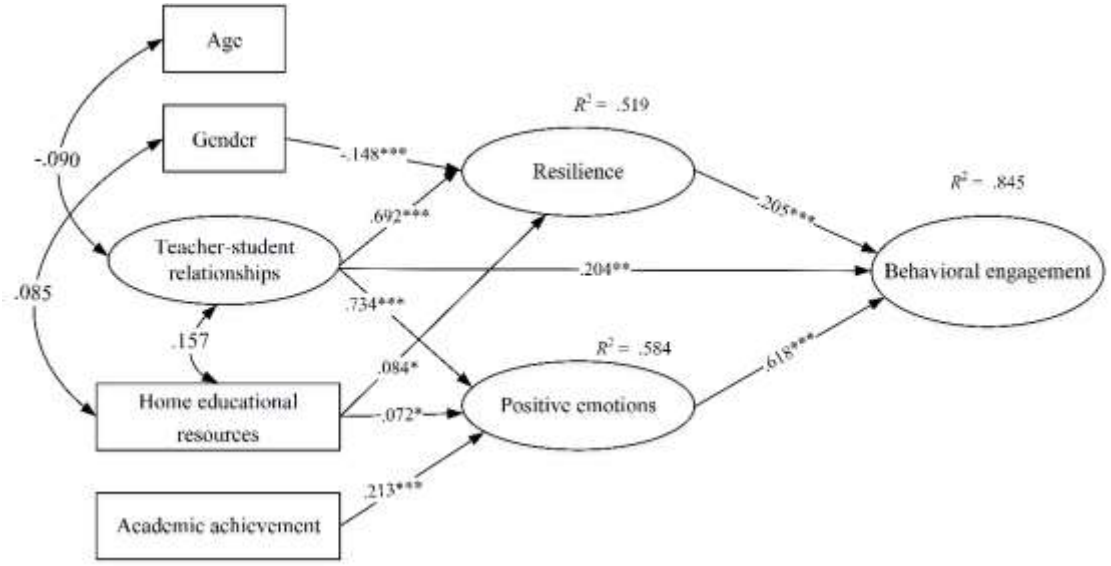

Figure 1. The structural equation model designed to examine the relationships among L2-related teacher - student relationships, resilience, positive emotions, and behavioral engagement. To enhance clarity and simplify the visual representation, the observed indicators corresponding to each variable have been excluded from the figure. All correlations and path coefficients depicted are standardized. Direct paths that did not achieve statistical significance have been omitted. *** $p < .001$; ** $p < .01$; * $p < .05$.

Furthermore, this study employed bias-corrected bootstrap testing with a 95% confidence interval to assess the significance of the indirect effects (Gootzeit & Markon, 2011). An indirect effect

was deemed significant if the 95% confidence interval did not encompass zero. As indicated in Table 3, the 95% confidence intervals for resilience ([.075, .228]) and positive emotions ([.342, .567]) do not include zero, allowing us to conclude with 95% confidence that resilience mediates the effect of foreign language teacher-student relationships on behavioral engagement. Similarly, positive emotions were found to mediate the relationship between teacher-student interactions and behavioral engagement. Importantly, the direct paths from teacher-student relationships to behavioral engagement remained statistically significant, suggesting that resilience and positive emotions serve as partial mediators in the association between teacher-student relationships and behavioral engagement, even when controlling for prior achievement, age, gender, and home educational resources.

Table 4. Results of mediation analysis

Path	Effect	SE	Bias-corrected CIs 95%	
			Lower	Upper
Total effect	.799***	.027	**.745**	**.850**
Indirect effect				
IND1	.142***	.039	**.075**	**.228**
IND2	.453***	.058	**.342**	**.567**
Direct effect	.204**	.065	**.076**	**.332**

Note. IND1 = Teacher-student relationship → Academic resilience → Behavioral engagement;
IND2 = Teacher-student relationship → Positive emotions → Behavioral engagement.
Bolded CIs considered significant (values do not include zero). *p < .05; **p < .01; ***p < .001.

5. Discussion

Previous research has demonstrated that teacher-student relationships, positive emotions, and academic resilience exert a positive influence on behavioral engagement (Engels et al., 2016; Reschly et al., 2008; Wu et al., 2024). Nevertheless, these investigations provide insufficient insights into the interactions among the antecedents of behavioral engagement and their combined contributions on this construct. Moreover, existing research primarily addressed these study variables within the context of general education, neglecting the domain-specific nuances that may influence their interactions and effects. Our research extends previous research on the beneficial roles of both contextual and individual factors in promoting behavioral engagement by examining the mediating effects of positive emotions and academic resilience between TSR and behavioral engagement within the context of L2 education, specifically in a sample of Chinese secondary school students.

Our research demonstrates that teacher-student relationships positively predict positive emotions and academic resilience, thereby fully validating Research Hypothesis 1. This finding suggests that cultivating high-quality interpersonal relationships between teachers and students significantly enhances positive

emotional experiences in L2 learning and increases students' ability to rebound from learning difficulties or setbacks. This finding is consistent with prior research that highlights the positive impact of high-quality teacher-student relationships on both positive emotions and academic resilience in the educational contexts (Bondy et al., 2007; Martin & Collie, 2016). This result reinforces prior research findings by validating the relationships among these variables within L2 educational settings in Asian societies (Liu et al., 2018; Wang, 2025). Indeed, a harmonious TSR helps students overcome challenges related to L2 learning, enabling them to experience greater positive emotions in non-Western contexts, such as mainland China.

Positive emotions and academic resilience emerged as significant predictors of behavioral engagement, thereby confirming Research Hypothesis 2. Our results are consistent with previous research that underscores the contributive roles of positive emotions and academic resilience in promoting behavioral engagement (Granado et al., 2017; Reschly et al., 2008; Wu et al., 2024). These findings indicate that when students experience more positive emotions during the learning process, they are more likely to engage behaviorally in their studies. Furthermore, higher levels of academic resilience empower students to effectively manage difficulties and challenges in their learning journey, thereby further boosting their behavioral engagement. Together, positive emotions and academic resilience are essential components of the psychological repertoire that enhance students' engagement in the L2 learning process.

Research Hypothesis 3 is supported given that academic resilience mediates the association between TSR and behavioral engagement. This finding suggests that high-quality teacher-student relationships not only exert a direct influence on students' behavioral engagement but also indirectly foster such engagement by enhancing students' academic resilience in L2 education. This underscores the importance of teachers' efforts in cultivating positive relationships with their students, as these connections can significantly aid students in navigating the challenges associated with learning English. A plausible explanation for this phenomenon is that a harmonious teacher-student relationship increases the likelihood of students receiving academic support, care, and concern from their teachers (Carmona-Halty et al., 2019; Wu et al., 2024). Such supportive interactions empower students to better navigate academic challenges or difficulties, thereby promoting sustained engagement in L2 learning.

Positive emotions also serve as a mediator in the relationship between TSR and behavioral engagement, thereby providing support for Research Hypothesis 4. The beneficial effects of teacher-student relationships and positive emotions on behavioral engagement are well established in the literature (Galve-González et al., 2025; Gregory & Korth, 2016). However, there has been a relative lack of exploration into the interrelationships among these three variables. This study contributes to the literature by demonstrating that TSR fosters the experience of more positive emotions in students, which subsequently enhances their level of behavioral engagement. One possible explanation for this phenomenon is that a positive TSR cultivates a sense of security and belonging among students (Ibrahim & El Zataari, 2020), which serves as a foundation for the emergence of positive emotions. Additionally, these relationships promote active interaction and communication between teachers and students, effectively stimulating students' interest and enthusiasm for learning (Pakarinen et al., 2021), thereby encouraging more active participation in their L2 learning.

Drawing upon the existing literature, we developed a theoretical framework delineating the progression from "TSR to positive emotions

and academic resilience, subsequently influencing behavioral engagement." The effectiveness of this framework was empirically validated using a sample of 753 Chinese secondary school students within the context of L2 education. This study offers significant theoretical implications, as it is the first to explore the mediating roles of positive emotions and academic resilience in the relationship between TSR and behavioral engagement within the realm of L2 education. By presenting preliminary evidence of the impact of TSR on behavioral engagement in a non-Western context, this research addresses a notable gap in the existing literature concerning the mediating mechanisms that connect TSR and behavioral engagement. Our research carries important educational implications for English language educators and educational administrators. The finding of a positive association between TSR and behavioral engagement underscores the critical importance of fostering harmonious TSR in the context of L2 education. L2 educators are encouraged to cultivate a positive classroom atmosphere, deepen their understanding of students, and foster relationships characterized by trust and respect, underpinned by care, concern, and genuine interest (Carmona-Halty et al., 2019). In collaboration with administrators, it is essential to establish a supportive environment that facilitates teachers' development of effective communication skills and classroom management strategies, among other initiatives, to promote the cultivation of positive teacher-student relationships.

This study utilized a cross-sectional design to investigate the relationships among TSR, positive emotions, academic resilience, and behavioral engagement. As a result, the determination of temporal precedence and causal effects among the study variables was not possible. Future research could employ experimental methods and longitudinal design approaches to yield more robust evidence concerning the relationships among TSR, positive emotions, academic resilience, and behavioral engagement. In this study, data regarding teacher-student relationships, positive emotions, academic resilience, and behavioral engagement were exclusively self-reported by the participants. Although potential common method biases were considered, the impact of social desirability on the results cannot be eliminated. To address this limitation, future research could enhance the validity of findings by diversifying data collection sources, such as obtaining information on positive emotions and behavioral engagement from English teachers.

6. Conclusion

This study focuses on L2 education and offers compelling evidence for the significant role of teacher-student relationships in promoting behavioral engagement, as well as the mediating mechanisms that support this connection. The more harmonious the relationships that L2 learners cultivate with their English educators, the more likely they are to experience positive emotions and demonstrate higher levels of academic resilience and behavioral engagement. Therefore, administrators and L2 educators are encouraged to prioritize the development of teacher-student relationships, as this emphasis can greatly enhance L2 learners' emotional experiences, academic resilience, and engagement in the learning process. Positive emotions and academic resilience serve as mediators in the relationship between TSR and behavioral engagement. This finding is consistent with the foundational principles of positive psychology, which underscore the importance of fostering positive emotions and enhancing the capacity of L2 learners to rebound from challenges. Such enhancements are likely to significantly elevate behavioral engagement levels, ultimately contributing to improved

academic outcomes and overall well-being.

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