The Emotional Experiences of Chinese High School Students Learning English as a Second Language

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Abstract

This study investigated the achievement emotions of Chinese first-year high school students learning English as a foreign language (EFL). We adopted Pekrun et al.'s (2023) three-dimensional taxonomy of achievement emotions and applied it to the English learning context. A total of 178 students responded to a 6-point Likert scale measuring EFL achievement emotions. Data were analyzed using SPSS 27.0. Multiple regression analysis was conducted to identify emotional factors influencing students' achievement scores. Canonical correlation analysis was employed to examine the relationships between the following sets of variables: a set of variables of foreign language outcome-retrospective emotions (FLORE); a set of variables of foreign language outcome-prospective emotions (FLOPE); and a set of variables of foreign language activity emotions (FLAE). The results showed that pride had a significant positive effect on learners' English achievement scores, while anxiety had a significant negative effect. Canonical analysis revealed that the total redundancies among the three models were 22.8%, 26.2%, and 45.6%, respectively. This indicates that negative active emotions were positively associated with negative outcome-reflective and prospective negative emotions, whereas prospective positive emotions were linked to positive reflective emotions. The findings indicate that EFL learners who exhibited displeasure and faced challenges related to their competence in completing English tasks, both before and during English learning, tended to feel more anxiety and less pride. Conversely, students who anticipated academic success were more likely to feel pride in their achievement success. These findings suggest that task demands, cooperative English language learning activities, and effective communication regarding emotions promote positive emotions and reduce negative emotions.

Keywords: Achievement emotions, Canonical correlation analysis, EFL learners, English performance

1. Introduction

With an increasing number of people who are concerned about various emotional factors, emotions regarding English language learning have received significant scholarly attention (Ismail, 2015; Feng & Hong, 2022; Li et al., 2024; Li & Li, 2024; Shao et al., 2013; 2020; 2023). However, most empirical studies have focused on discrete achievement emotions (e.g., enjoyment, hope, pride, anger, anxiety, shame, hopelessness, and boredom). This focus is primarily adapted from Pekrun et al.'s (2023) Achievement Emotions Questionnaire (AEQ; 2011). However, the taxonomy of three-dimensional emotions in learning English is underexplored (Pekrun et al., 2023; 2024; Shao et al., 2020; 2023). Pekrun (2024) suggested that a comprehensive analysis of the full range of conceptual space of achievement emotions (variance, physiological stimulation, and object focus) must be considered, highlighting the necessity of exploring the relationships of all taxonomic cells regarding achievement emotions. Shao et al. (2020) stated the urgent need to examine the relationship between diverse achievement emotions and students' English performance. Thus, extending studies on the three-dimensional taxonomy of achievement emotions in learning EFL will augment the research scope of English language learning, contributing to the comprehensive understanding of EFL learners' emotions.

Based on control-value theory (CVT), the taxonomy of three-dimensional achievement emotions developed by Pekrun and colleagues (2023) investigated students' emotions with extensive emphasis on valence, activation, and object focus. The model provides researchers with a comprehensive emotional framework for analyzing the complex nature of achievement emotions (Pekrun, 2024; Pekrun et al., 2023). This taxonomy is comprised of three components: activity emotions, outcome-prospective, and outcome-retrospective emotions (see Table 1) (Pekrun, 2024; Pekrun et al., 2023). While activity emotions refer to what students feel during academic activities rather than academic outcomes, outcome-prospective emotions involve the beliefs held by learners about emotions focused on expected academic outcomes (i.e., future success or failure). Outcome-retrospective emotions indicate the attention of emotions regarding past outcomes (i.e., past success or failure). Feng and Hong (2022) and Li et al. (2024) suggested that EFL high school students exhibit more anxiety and less enjoyment than Western foreign language learners (Feng & Hong, 2022) and low levels of enjoyment and pride (Li et al., 2024), influenced by contexts such as a test-oriented environment. While EFL learning emotions fluctuate among Chinese high school

students, empirical studies on achievement emotions primarily focus on Chinese university students (Li & Li, 2024; Shao et al., 2020; 2023). Research on Chinese high school students' emotional achievement in learning EFL is limited.

Based on the above and given the scarcity of studies on the three-dimensional taxonomy of achievement emotions to learn EFL, this study investigated Chinese high school students' achievement emotions in learning English. The objective was to identify emotional factors that impact EFL learners' achievement scores. We examined the relationships among foreign language activity emotions (FLAE), foreign language outcome-prospective emotions (FLOPE), and foreign language outcome-retrospective emotions (FLORE) by investigating the achievement emotions of EFL first-year students in a Chinese high school. Based on multiple regressions, emotional factors influencing Chinese high school students' actual achievement scores were determined. Next, the canonical correlation analysis examined three shared variances between FLAE and FLORE, FLOPE and FLORE, and FLAE and FLOPE.

2. Literature Review

2.1 Control-value Theory

The control-value theory (CVT) is a comprehensive theoretical framework that analyzes achievement emotions in academic contexts (Pekrun, 2024; Pekrun et al., 2023). From the perspective of CVT, achievement emotions are affective reactions to academic activities and outcomes (Li & Li, 2024). Control and value appraisals are the primary factors influencing achievement emotions. For instance, subjective control over academic activities or outcomes (i.e., perceived ability to influence academic activities or outcomes such as expectations of perseverance in academic efforts and contributing to success) and the subjective value of academic activities or outcomes (i.e., the perceived importance or interest in academic activities, such as perceived importance of success) (Li et al., 2024; Pekrun, 2006).

Pekrun (2006) indicated that subjective control encompasses causal expectations. This process involves addressing the relationship between causes and future effects, such as the impact of students' current efforts or abilities on achievement in an upcoming exam. The process also involves causal attributions, i.e., reflective cognition related to the causes of a particular effect, such as the causes of success or failure on a given test. Among these factors, action control and action-outcome expectations are the main components of causal expectations based on ability-related self-concepts in a particular domain (Putwain et al., 2021). Specifically, action-control expectations refer to one's ability to perform academic activities (e.g., expectations of competence in addressing challenging English tasks). Action-outcome expectations are defined as students' beliefs that their actions will produce or reduce potential positive or negative outcomes (e.g., English proficiency; Pekrun, 2006). Research suggests that students who believe they will prepare well for their subjects and achieve academic success tend to exhibit greater positive expectations regarding action control and outcomes (Putwain, et al., 2021).

Regarding appraisals of subjective value, research has primarily focused on intrinsic values (i.e., the value of activity or outcome) and extrinsic values (i.e., the usefulness of an activity or outcome for achieving other goals) to examine achievement emotions and related variables (McKay et al., 2022; Pekrun, 2023; Putwain, 2021). Intrinsic values reflect academic study for its own sake (e.g., based on exciting learning tasks or materials that inspire curiosity). Extrinsic values convey information regarding academic research for achieving future goals such as career objectives (McKay et al., 2022).

The CVT is a prominent framework for understanding and distinguishing different achievement emotions and their relationship to achievement in an EFL context. Previous research has examined how CVT shapes various EFL emotions, such as enjoyment, boredom, and anxiety, and how these emotions influence learners' EFL achievement through processes involving cognitive resources, motivated and self-regulated learning, and learning strategies within the cognitive-motivational model (Li & Li, 2024; Li et al., 2024; Shao et al., 2020; 2023). However, less attention has been paid to all categories of achievement emotions based on the cognitive-motivational mechanisms in the EFL setting.

Pekrun (2024) expanded CVT to further explore the taxonomy of achievement emotions from three perspectives: object focus, valence, and activation, while classifying combined groups of emotions as follows: activity emotions (AES), outcome-prospective emotions (OPES), and outcome-retrospective emotions (ORES) (Pekrun, 2024; Pekrun et al., 2023). This study adopted CVT as the framework for two reasons. First, CVT is an effective theoretical framework for exploring and distinguishing differing types of achievement emotions (all cells in the taxonomy) and their relationships. Second, it enables the examination of the interplay between achievement emotions and English performance.

2.2 Achievement Emotions and the Three-dimensional Taxonomy of Achievement Emotions for EFL Learning

Achievement emotions are a significant construct for learning English (Li & Li, 2024; Shao et al., 2020; 2023; Wang et al., 2024). Studies on achievement emotions in EFL learners are widely conducted based on Pekrun et al.'s (2023) model (2011) and Pekrun's CVT (2006) of achievement emotions (Li et al., 2024; Li & Li, 2024; Shao et al., 2020; 2023). Pekrun et al. (2011) suggested that achievement emotions are domain-specific and directly relate to academic activities or outcomes. This nuanced finding contrasts with previous research focusing on outcome-related emotions, such as hope and anxiety, and outcome-retrospective emotions, such as pride and shame. Therefore, the previous model included activity emotions like enjoyment, boredom, and anger (Pekrun et al., 2011). Shao and colleagues (2011) adapted this model, applying it to the second language context (Shao et al., 2023). However, the original version of Pekrun's (2024) achievement emotion model only considers different achievement emotions without encompassing all aspects of emotion classification (activity, outcome-prospective, and outcome-retrospective emotions). Thus, they developed a revised version: the three-dimensional taxonomy of achievement emotions (Table 1; Pekrun et al., 2023).

Table 1. Three-Dimensional Taxonomy of Achievement Emotions

Object focus	Positive		Negative	
	Activating	Deactivating	Activating	Deactivating
Activity	**Enjoyment** Excitement	**Relaxation**	**Anger** Frustration	**Boredom**
Outcome-prospective	**Hope** Anticipatory joy	**Assurance**	**Anxiety**	**Hopelessness**
Outcome-retrospective	**Pride** Retrospective joy Gratitude	**Relief** Contentment	**Shame/Guilt** Anger	**Disappointment** Sadness

Note, Bold entries = emotions included in the empirical studies. Table originally presented by Pekrun et al. (2023).

Three-dimensional taxonomy of achievement emotions was based on CVT (Pekrun, 2006; 2024), and it incorporates three dimensions: valence, activation, and object focus (Pekrun, 2024; Pekrun et al., 2023). Valence refers to positive and negative emotions ranging from pleasant to unpleasant (Pekrun et al., 2023). Activation comprises psychological systems mediated by variables, such as heart and respiratory rates, varying from psychologically activating to deactivating (Pekrun et al., 2023). Object focus encompasses activity, prospective, and retrospective outcomes, and their temporal relations to past, present, and future events (Pekrun, 2024; Pekrun et al., 2023). These dimensions distinguish varying features, resulting in twelve types of achievement emotions (i.e., $12=2\times2\times3$) that can be grouped into AES, OPES, and ORES (Pekrun et al., 2023).

Activity emotions primarily surround achievement activities rather than achievement outcomes (Pekrun, 2006). For example, learners experience enjoyment or excitement during a learning activity, but not the outcome (Csikszentmihalyi, 2000; Pekrun, 2006). The concept of AES (enjoyment, relaxation, anger, and boredom) has been broadened to focus on competence as the core of achievement emotions (Pekrun, 2023). Enjoyment and relaxation are positive AES representing learners' competence to perform learning activities with pleasure (Pekrun et al., 2023). However, anger is a negative-activating activity emotion that hinders learners' competence in addressing learning tasks. Moreover, boredom involves the inability to address a task, or it may reduce learners' chance to experience competence due to exceedingly easy projects (Pekrun et al., 2023).

Outcome-related emotions can be classified into outcome-prospective and outcome-retrospective emotions based on academic outcomes and temporal relations. OPES (hope, assurance, anxiety, and hopelessness) are primarily associated with future success and failure (Pekrun et al., 2023). While hope and assurance focus on potential success, anxiety, and hopelessness indicate possible failure (Pekrun et al., 2023). Hope and anxiety imply uncertainty regarding success or failure (Pekrun et al., 2023). In contrast, assurance and hopelessness indicate certainty regarding outcomes (Pekrun et al., 2023). Referring to events that have already occurred, attention is given to past outcomes of success or failure in the case of outcome-retrospective emotion ORES such as pride, relief, shame, and disappointment (Pekrun et al., 2023). Unlike OPES, ORES do not involve fluctuations of outcomes (Pekrun et al., 2023).

Adopting scales measuring achievement emotions in EFL learning contexts, researchers have integrated AES, OPES, and ORES based on the AEQ with second language learning (Davari et al., 2020; Shao et al., 2023). However, existing EFL learning studies do not comprehensively address the contexts of AES, OPES, and ORES. Therefore, this study examined the relationships between AES, OPES, and ORES by incorporating twelve achievement emotions in EFL learning from the three-dimensional taxonomy of achievement emotions, as identified in the AEQ-R scale (Pekrun et al., 2023).

2.3 Relationships Between Achievement Emotions in Learning EFL and Their Impact on EFL Performance

Relevant studies have identified significant positive relationships between achievement emotions of the same valence, such as hope and pride, and negative relationships between achievement emotions with opposite valences, such as enjoyment and anxiety in learning English (Davari et al., 2020; Feng & Hong, 2022; Shao et al., 2020). Correlations with the same valence of achievement emotions are stronger than those of opposite valences (Shao et al., 2020). Shao et al. (2020) collected data from 550 Chinese university students to investigate achievement emotions based on CVT. They found that students felt more positive emotions (e.g., enjoyment, hope, and pride) and fewer negative emotions (e.g., anger, anxiety, shame, and hopelessness) when they felt their English learning activities and outcomes were essential and interesting, believing that they could cope with challenging English tasks. Empirical analyses of the foreign language emotions of enjoyment, anxiety, and boredom (Dewaele & Li, 2021; 2022; Li & Han, 2022) demonstrate that enjoyment is negatively associated with anxiety and boredom, while anxiety and boredom are positively related. Research further indicates that EFL learners with higher levels of enjoyment tend to have fewer negative emotions, such as anxiety and boredom (Dewaele et al., 2022). This finding indicates the importance of "undoing" emotions with opposite valence and "promotion" for emotions with the same valence. Li et al. (2024) collected data from 330 high school students in China while investigating positive emotions of enjoyment, pride, and hope, indicating low levels of enjoyment and pride. Upcoming college entrance examinations combined with moderate levels of hope could explain this finding. These reasons could be linked to cultural factors, such as Confucianism, which emphasizes the importance of education, social harmony, and the power of effort (Li et al., 2024). This finding contrasts with the findings regarding higher enjoyment and lower anxiety levels in learning EFL (Dong et al., 2022; Feng & Hong, 2022; Jiang & Dewaele, 2019).

Based on CVT, achievement emotions can impact students' cognitive resources (e.g., concentration on learning tasks, information processing ability, and memory retention), learning motivation (i.e., intrinsic and extrinsic motivation for learning), learning strategies,

and achievement (Forsblom et al., 2022; Pekrun, 2006; Pekrun et al., 2011; Pekrun, 2024; Pekrun et al., 2023). Relevant studies indicate a positive relationship between positive emotions (enjoyment, hope, and pride) and L2 performance and a negative relationship between negative emotions (e.g., anxiety, anger, shame, boredom, and hopelessness) and L2 performance (Lee, 2014; Shao et al., 2020). Ismail (2015) collected data from 315 EFL Saudi university students and examined the relationship between emotions and English proficiency. The findings indicate that positive emotions (enjoyment and pride) and negative emotions (shame and hopelessness) predicted students' English performance and explained a 65.8% of variance in academic achievement. Dewaele et al. (2022) conducted data collection from 332 Foreign language learners with the average age of 25.46 and measured the relationship between emotions (enjoyment, anxiety, and boredom) and foreign language achievement. They found that boredom was interrelated with enjoyment and anxiety but not a predictor when combined with co-predictors of enjoyment and anxiety. Pekrun et al. (2023) examined the correlation between the three-dimensional taxonomy of achievement emotions and performance in the educational domain. They claimed that anxiety was essential in predicting student performance, explaining about 10% of the variance. This relationship was consistent with previous studies (Pekrun et al., 2023; von der Embse et al., 2018). These researchers also emphasized that other achievement emotions, such as hope and assurance, were significant variables for predicting performance (Pekrun et al., 2023). However, few studies have examined the relationship between the twelve types of the three-dimensional taxonomy of achievement emotions (enjoyment, hope, pride, relaxation, assurance, relief, anger, anxiety, shame, boredom, hopelessness, and disappointment) and EFL proficiency using multiple regression. The present study adopted this technique while recognizing the linear regression between the independent variables of twelve emotions and the dependent variable of English proficiency.

Therefore, to understand Chinese high school students' achievement emotions toward learning EFL, this study aimed to identify the impacts of all cells of the taxonomy of achievement emotions on students' EFL proficiency while examining the relationship between EFL achievement emotions.

The study seeks to answer the following questions:

1. What are the levels of EFL achievement emotions of enjoyment, hope, pride, relaxation, assurance, relief, anger, anxiety, shame, boredom, hopelessness, and disappointment among high school students in China?

2. How much variance in English achievement scores can be explained by the linear combination of EFL achievement emotions?

3. What are the total redundancies (i.e., similar to R^2 in multiple regression) between the following: (a) the independent set of FLAE and the dependent set of FLORE, (b) the independent set of FLOPE and the dependent set of FLORE, (c) the independent set of FLAE and the dependent set of FLOPE, respectively?

3. Method

3.1 Participants

This study recruited 210 first-year high school students as participants to answer the survey. However, 32 responses were deemed invalid (questionnaires with answers with a repetition rate of over 90% or missing data), resulting in 178 students in the final analysis. Of these, 50% (n=89) were female and 50% (n=89) were male. The age range was from 15 to 17 years (M_{age} = 15.95, SD = 0.32). All participants were from a first-tier high school in southern China. Regarding English education, the participants had completed three years of English instruction in primary school and another three years in junior high school; they successfully gained admission to the study location's high school with outstanding academic performance. During their first year of high school, students were required to take mandatory English courses following a rigorous English teaching and learning curriculum syllabus.

3.2 Instrument

Table 2. Introduction of variables and compilation of Cronbach's Alpha coefficients

Constructs	Example item	Items	Number of items	Cronbach's Alpha
Enjoyment	I get excited about learning English.	8	1,13,25,37#,49,59#,65,70	0.89
Hope	I am full of hope that I will excel in this English course.	4	2,14,26#,38	0.82
Pride	I am proud of my English competence.	6	3,15#,27,39,50#,60	0.80
Relaxation	I feel relaxed when learning English.	5	4#,16,28,40#,51	0.77
Assurance	I feel relaxed because I know I will be successful in English.	4	5,17,29,41	0.83
Relief	When I succeed at a difficult English task, the tension in my stomach goes away.	5	6,18#,30,42,52	0.72
Anger	I get angry when I have to learn English.	8	7,19,31#,43,53,61, 66#,71	0.72
Anxiety	I get tense when I start to learn English.	12	8,20#,32,44#,54,62,67,72,76,77,78#,79	0.80
Shame	When others find out about my poor English performance I start to blush.	6	9#,21,33,45#,55,63	0.74
Boredom	I start yawning because I'm so bored in learning English.	8	10#,22#,34,46,56,64,68,73	0.87

| Hopelessness | I feel hopeless in English. | 9 | 11,23,35,47,57#,58,69,74,75 | 0.88 |
| Disappointment | I am disappointed that I did not perform well in English. | 4 | 12#,24,36,48# | 0.69 |

Note: Inverted items: numbers with #.

The survey assessed twelve foreign language emotions using a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). The items measuring subjects' foreign language emotions were adapted from the Achievement Emotions Questionnaire-Revised (AEQ-R; Pekrun et al., 2023), which is comprised of 79 items. This scale was selected because Pekrun et al.'s (2023) focused on the three dimensions of emotions (valence, activation, and object focus) while including combined groups of activity, outcome-prospective, and outcome-reflective emotions. This approach aligned with the design of the second research question regarding multiple regression and the third research question concerning canonical correlation analysis. These items were initially translated into Mandarin Chinese by the first author of this paper. They were back translated into English by a professional translator and reviewed for accuracy by a university English teacher. Table 2 presents the survey constructs and internal consistency coefficients.

The participants' English learning performance was assessed based on their standardized terminal English test scores. This test evaluated their proficiency in five dimensions: listening, reading, comprehensive language use, in-class English knowledge, and writing. Their listening performance was evaluated using a grading rubric that comprised 20 items on a 1.5-point scale with a total score of 30 points. Four passages were graded on a 2-point scale with a total score of 40 points for reading comprehension. Moreover, we conducted separate evaluations for comprehensive language use (30 points), in-class English knowledge (25 points), and writing competence (25 points). The maximum score for the test was 150 points. Two teachers from high school graded their English performance.

3.3 Data Collection and Analysis

The survey was presented to four first-year high school classrooms during the last two weeks of the summer semester of 2024. First, the study's purpose was explained to students before they completed the surveys. Research assistants distributed hard copies of the survey to students who volunteered to participate. The survey elicited 210 returned samples, and 178 responses with complete information were considered valid. After completing the survey, descriptive analyses, Pearson's correlation coefficient, multiple regression, and canonical correlation analysis were conducted using SPSS. Descriptive analysis involving means, standard deviation, skewness, and kurtosis was undertaken to assess the level of each construct. Pearson's correlation was calculated to examine the correlations between variables, including 12 variables representing students' achievement emotions and one variable representing English proficiency. We conducted multiple regressions to examine the degree of variance in English proficiency, which could be explained by enjoyment, hope, pride, relaxation, assurance, relief, anger, anxiety, shame, boredom, hopelessness, and disappointment. We performed canonical correlation analysis to further investigate the relationship between variable sets in FLAE and FLORE, the relationship between the variable set in FLOPE and FLORE, and the relationship between the variable set in FLAE and FLOPE.

4. Results

4.1 Descriptive Analysis

Table 3. Descriptive statistics of the main variables

Variables	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Kurtosis
1.Achievement	60.0	139.0	109.758	14.7133	216.481	-.611	.380
2.Enjoyment	1.00	6.00	3.4523	.89497	.801	-.089	.216
3.Hope	1.00	6.00	4.2921	.95613	.914	-.418	.441
4.Pride	1.00	6.00	3.8515	.84849	.720	-.300	.786
5.Relaxation	1.00	6.00	3.3374	.84450	.713	-.121	.334
6.Assurance	1.00	6.00	3.5758	.99284	.986	-.108	-.055
7.Relief	1.60	6.00	4.1683	.72624	.527	-.192	.870
8.Anger	1.25	5.38	3.2096	.67533	.456	.178	.674
9.Anxiety	1.33	5.08	3.1802	.67813	.460	-.163	.246
10.Shame	1.00	6.00	3.3474	.84444	.713	-.091	.532
11.Boredom	1.50	6.00	3.1351	.86102	.741	.673	.443
12.Hopelessness	1.00	6.00	2.5949	.85378	.729	.724	1.329
13.Disappointment	1.00	6.00	3.8361	.89018	.792	-.188	.142

Achievement: English performance, total score of 150.

Table 3 presents the descriptive statistics of the key variables in this study. The mean value of English performance was 109.76 out of 150. The participants achieved the highest mean scores in the positive emotions of hope (4.29) and relief (4.17) categories. In contrast, the lowest mean value was observed in the negative emotions of hopelessness (2.59). Skewness ranged from −.611 to .724, and kurtosis ranged from −.055 to 1.329. These statistics indicate that this data was normally distributed according to the criteria (skewness <2, kurtosis <7) described by Finney and DiStefano (2006).

Table 4. Pearson correction coefficients between the variables

	Achievement	Enjoyment	Hope	Pride	Relaxation	Assurance	Relief	Anger	Anxiety	Shame	Boredom	Hopelessness	Disappointment
Achievement	1												
Enjoyment	.292**	1											
Hope	.364**	.599**	1										
Pride	.437**	.643**	.686**	1									
Relaxation	.403**	.715**	.588**	.601**	1								
Assurance	.329**	.623**	.699**	.645**	.718**	1							
Relief	.304**	.633**	.641**	.772**	.522**	.562**	1						
Anger	-.290**	-.747**	-.458**	-.482**	-.618**	-.457**	-.515**	1					
Anxiety	-.471**	-.463**	-.524**	-.467**	-.701**	-.606**	-.363**	.533**	1				
Shame	-.145	.075	-.044	-.016	-.158*	-.162*	.073	.099	.426**	1			
Boredom	-.341**	-.799**	-.576**	-.650**	-.671**	-.549**	-.583**	.795**	.597**	.029	1		
Hopelessness	-.406**	-.561**	-.668**	-.620**	-.525**	-.545**	-.612**	.531**	.607**	.088	.698**	1	
Disappointment	-.001	.117	.072	.148*	-.136	-.103	.128	-.088	.228**	.614**	-.130	-.121	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 4 shows that students' English performance exhibited was positively associated with positive achievement emotions and negatively correlated with negative emotions. There was a significant positive correlation between pride and relief and achievement emotions (r = .77), enjoyment and relaxation (r = .72), and relaxation and assurance (r = .72). Similarly, there were significant negative correlations between enjoyment and boredom (r = −.80), enjoyment and anger (r = −.75), as well as relaxation and anxiety (r = −.70). The weakest correlation was observed between pride and disappointment (r = .15). Regarding the correlations among the main variables, most ranged from .30 to .70 without multicollinearity concerns.

4.2 English Proficiency and Achievement Emotions: Multiple Regression Analysis

This study performed multiple regression analysis to determine how much variance in the English achievement scores of Chinese high school students could be explained by the linear combination of achievement emotions of enjoyment, hope, pride, relaxation, assurance, relief, anger, anxiety, shame, boredom, hopelessness, and disappointment.

Table 5. ANOVA for Statistical Significance

Model	R^2	Sum of Squares	df	Mean Square	F	Sig.
Regression	.307	11761.806	12	980.150	6.090	.000[b]
Residual		26555.306	165	160.941		
Total		38317.112	177			

Note: The dependent variable is achievement.

Table 5 shows that the multiple regression model was statistically significant (F = 6.09; *p* < 0.001). R square was .307, indicating that the independent variables explained about 31% of the variance in English proficiency.

Table 6. Multiple Linear Regression Coefficients Predicting Achievement

Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	113.438	17.501		6.482	.000		
Enjoyment	-.518	2.286	-.031	-.227	.821	.217	4.602
Hope	.341	1.685	.022	.203	.840	.350	2.854
Pride	6.697	2.162	.386	3.098	.003**	.270	3.700
Relaxation	2.304	2.202	.132	1.046	.297	.263	3.804
Assurance	-2.207	1.676	-.149	-1.316	.190	.328	3.047
Relief	-2.080	2.331	-.103	-.892	.373	.317	3.150
Anger	-.996	2.650	-.046	-.376	.708	.284	3.523
Anxiety	-7.382	2.591	-.340	-2.848	.005**	.294	3.396
Shame	-.005	1.662	.000	-.003	.998	.462	2.166
Boredom	3.184	2.539	.186	1.254	.212	.190	5.255
Hopelessness	-2.388	1.933	-.139	-1.235	.219	.334	2.996
Disappointment	.683	1.501	.041	.455	.650	.509	1.964

a. Dependent Variable: Achievement
Note: **p<0.01, *p<0.05.

The results in Table 6 indicate that pride (B = 6.697, *p* < .01) and anxiety (B = −7.382, *p* < .01) were statistically significant variables. With a one-unit increase in a positive emotion of pride, the learner's English proficiency score was expected to increase by 6.697 points. However, with a one-unit increase in the negative emotion of anxiety, the English proficiency score was likely to decrease by 7.382 points. Since the VIF values ranged from 1.964 to 5.255, there was no evidence of multicollinearity among variables.
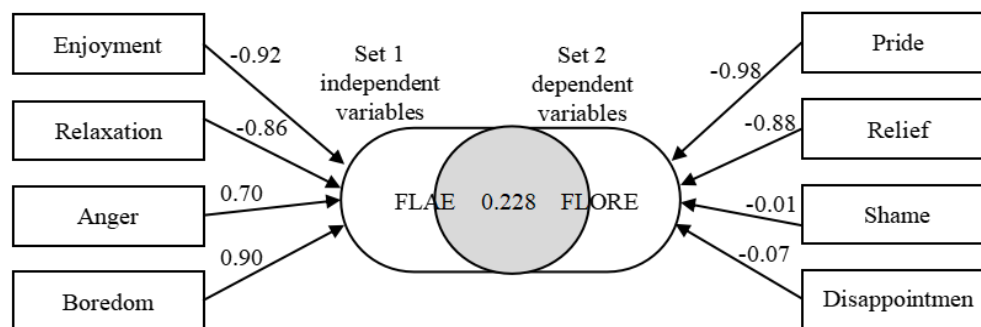
4.3 FLAE, FLOPE, and FLORE: Canonical Correlation Analysis

We conducted canonical correlation analyses to answer the third research question: What are the canonical correlation relationships in the three models, namely between FLAE and FLORE (Model 1), FLOPE and FLORE (Model 2), FLAE and FLOPE (Model 3)?

Table 7. Wilks' Lambda test of significance, squared correlation coefficients and PV value

Model	Function	Wilks' Lambda	Sig.	Sq cor	PV DEP
1 Canonical correlation between FLAE and FLORE	1	.34188	.001	.52803	43.16017
	2	.72437	.001	.14761	35.60641
	3	.84981	.001	.11029	12.13247
2 Canonical correlation between FLOPE and FLORE	1	.27148	.001	.60836	43.36116
	2	.69320	.001	.26001	38.55534
3 Canonical correlation between FLAE and FLOPE	1	.20529	.001	.67126	68.42547
	2	.62447	.001	.22488	11.68524
	3	.80564	.001	.19380	13.01540

Table 7 indicates that the three canonical models were statistically significant (Model 1: *Wilks*=0.34188, *p*=0.001; Model 2: *Wilks*=0.27148, *p*=0.001; Model 3: *Wilks*=0.20529, *p*=0.001). There were three statistically significant canonical functions in Model 1. Both canonical functions in Model 2 and three in Model 3 were also statistically significant (*p*=0.001). However, the second and third canonical functions had total redundancies of 0.057 and 0.013, respectively, in Model 1, a redundancy of 0.101 for the second function in Model 2, and redundancies of 0.024 and 0.025 for the second and third functions in Model 3, respectively. Accordingly, these canonical functions with low total redundancy (approximately less than 0.10) were not interpreted. The first canonical functions in Models 1, 2, and 3 were used for interpretation. The total redundancies of the first canonical functions in Models 1, 2, and 3 were 0.228 (Model 1: PV value of 0.43 ×squared canonical correlation coefficient of 0.53), 0.262 (Model 2: PV value of 0.43 × squared canonical correlation coefficient of 0.61), 0.456 (Model 3: PV value of 0.68 ×squared canonical correlation coefficient of 0.67). In other words, in Model 1, approximately 23% of the variance in the dependent set FLORE (pride, relief, shame, disappointment) was explained by the independent variable set FLAE (enjoyment, relaxation, anger, boredom). In Model 2, approximately 26% of the variance in the dependent set FLORE was explained by the independent variable set FLOPE (hope, assurance, anxiety, hopelessness). In Model 3, approximately 46% of the variance in the dependent set FLOPE (hope, assurance, anxiety, hopelessness) was explained by the independent variable set FLAE (enjoyment, relaxation, anger, boredom).

Model 1. Canonical correlation between FLAE and FLORE
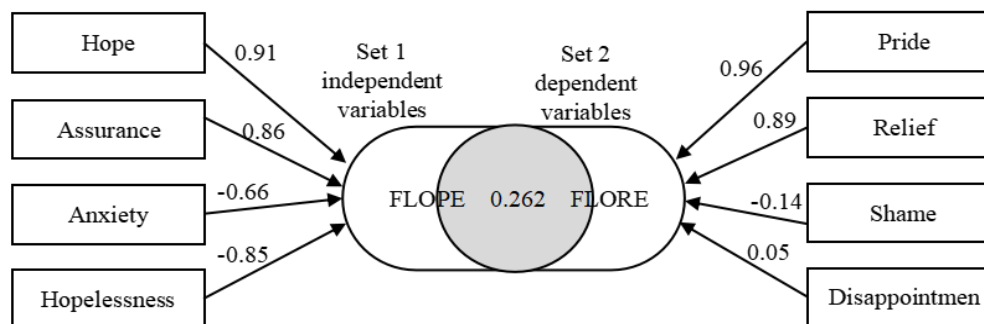
Model 2. Canonical correlation between FLOPE and FLORE
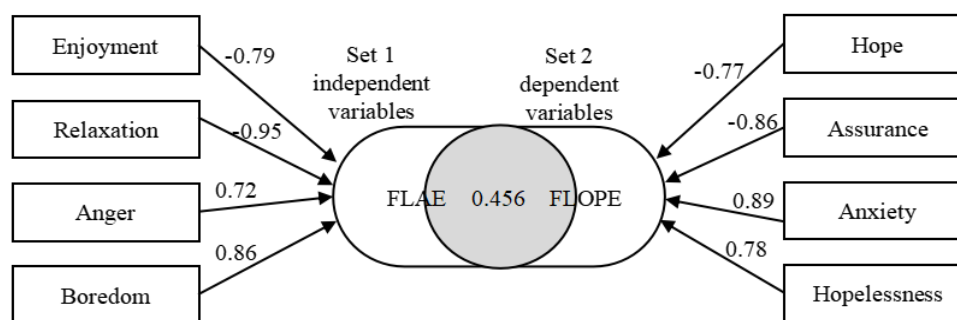
Model 3. Canonical correlation between FLAE and FLOPE

Models 1, 2, and 3 present structure coefficients for Function 1. The relevant independent variables were primarily enjoyment, relaxation, anger, and boredom for the canonical coefficients in Model 1. Enjoyment and relaxation had the same negative signs and aligned with anger and boredom. Pride and relief were primary relevant variables with the same negative sign for the dependent variable set in Function 1, indicating a positive relationship. Based on the canonical coefficient structure, less enjoyment, less relaxation, more anger, and more boredom indicated negative active emotions, while less pride and less relief indicated negative outcome-reflective emotions.

Model 2 shows that hope, assurance, anxiety, and hopelessness were the primary contributors to the independent set of emotions. Hope and assurance exhibited a positive correlation while showing a negative correlation with anxiety and hopelessness, indicating positive prospective emotions. Pride and relief in the dependent set exhibited a positive relationship, indicating positive retrospective emotions. All variables were highly relevant in Function 1 of Model 3. The predictors of less enjoyment, less relaxation, more anger, and more boredom indicated negative active emotions; the dependent set indicated negative prospective emotions. Models 1, 2, and 3 support the theoretically expected relationships between negative active/negative outcome-reflective emotions, positive prospective/positive retrospective emotions, and negative active/negative prospective emotions.

5. Discussions and Implications

This study employed descriptive statistics to answer the first research question regarding the achievement emotional factors of subjects' EFL learning. Table 3 shows the mean scores of three variables that approached or exceeded 4 points out of 6. This finding indicates an intermediate-to-advanced level of emotions toward learning English. The results support Shao et al.'s (2019) claim that promoting positive emotions is necessary for academic success in English learning. Hope had the highest mean score among high school students among the three variables. This finding illustrates their high expectations for English academic success and their strong perception and motivation to facilitate English language learning (MacIntyre & Gregersen, 2012; MacIntyre & Vincze, 2017; Pekrun et al., 2023). The second-highest mean score for relief demonstrated that those who achieved academic success experienced complex and confusing emotions regarding potential failure during English learning activities (Pekrun et al., 2023). The high mean score for pride among English learners might indicate that achieving academic success quickly elicited great pleasure, motivating them to fully utilize cognitive resources, maintain strong motivation, and apply appropriate learning strategies to learn English effectively (Shao et al., 2020). This important emotional construct is further discussed in the following section.

The second research question was answered by employing multiple regression analysis. Table 6 shows that pride and anxiety were significant variables in predicting students' EFL achievement scores when combined with the other ten achievement emotions. As a positive activating outcome-reflective emotion, pride positively predicted high school students' English performance. The result indicates that the higher the emotion of pride learners had, the higher achievement scores they obtained, aligning with previous studies (Khajavy & Lüftenegger, 2024; Lee, 2014; Ismail, 2015; Villavicencio et al., 2013). Furthermore, based on CVT, the statistical significance of pride toward English learning suggests that positive outcome-reflective emotions can positively affect performance through several mediating processes such as motivating English learners to address the task, effectively utilizing cognitive strategies and metacognitive strategies, and concentrating on completing the task (Pekrun, 2006; 2024). In other words, students who are proud of their past academic success may perceive the importance of tasks, utilize effective strategies and focus on English tasks while effectively addressing English tasks and enhancing their EFL performance. It should be mentioned that pride as a positive outcome-reflective emotion could positively affect performance under specific task conditions, such as tasks in the English course, rather than external objects, such as an award from school or recognition from parents. Otherwise, students might become distracted and limit their efforts (Pekrun, 2024). Thus, pride focused on the completed English tasks rather than other objects may keep learners focused on learning a foreign language, enhancing achievement scores.

Anxiety measures learners' displeasure due to the future uncertainty of negative outcomes (Pekrun, 2023; Reilly & Rosas, 2019). The variable is complex in EFL learning as it can positively and negatively impact achievement. The results of the current study indicate that anxiety toward learning English was negatively correlated with learners' achievement scores, aligning with previous studies (Dewaele et

al., 2008; Lee, 2014; Salehi & Marefat, 2014; Shao et al., 2013; 2020). Thus, anxiety can be detrimental and debilitating to academic performance among high school students. Based on CVT, anxiety depends on learners' subjective value of achievement, such as the degree of emphasis placed on academic performance (Pekrun, 2006). If learners feel that they may fail an important examination but perceive it as beyond their control, anxiety will exist, undermining intrinsic motivation (learning English for its own sake) while impacting performance (Pekrun, 2006; 2024). In a test-oriented environment, high expectations for English achievement scores and task demands may cause anxiety among learners (Feng & Hong, 2022; Li et al., 2024; Pekrun, 2006; Salehi, 2014). In the present study, learners reviewed English for an upcoming terminal (high stakes) exam in one week. According to In'nami (2006) and Salehi (2014), anxiety reflected high stakes testing, which significantly undermines test performance. Students may experience state-like anxiety (temporary emotional feelings occurring in a specific situation at a given time) or trait-like anxiety (habitual emotional feelings experienced in English-related situations) before an exam as a result (Pekrun, 2011). Therefore, it is plausible that test anxiety may limit students' cognitive resources (working memory for storing and processing English information), intrinsic motivation to learn, and, ultimately, their proficiency. Furthermore, the subjects' high expectations for English achievement scores may have contributed to undermining their proficiency. The participants in this study were outstanding first-year students from a top-tier provincial high school, selected based on their exceptional performance in the high school entrance examination after attending different ordinary junior middle schools. Their English performance ranked among the top echelon in their former schools while they maintained high expected value for English achievement scores similar to their previous junior middle school. However, when higher levels of English listening, reading, and writing (from basic knowledge to comprehensive comprehension) were required based on the high school curriculum outline (Wang & Chen, 2012), learners' high expectations and high standards of English levels (i.e., the high level of task demand) in the highly competitive English learning environment became contradictory. This brought them pressure (Li et al., 2024). It seemed impossible for them to control their English language activities or outcomes, and failure in the English terminal examination became possible. Thus, they experienced anxiety, which may have undermined their intrinsic motivation to perceive tasks as less important or interesting, negatively influencing performance (Pekrun 2006; 2024).

Canonical correlation analyses yielded three models. We investigated the relationship between the dependent variable sets: pride, relief, shame, and disappointment (FLORE: foreign language outcome-retrospective emotions)/hope, assurance, anxiety, and hopelessness (FLOPE: foreign language outcome-prospective emotions). We also examined the three independent variable sets of achievement emotions (FLAE, FLOPE, and FLAE, respectively). Models 1 and 3 indicated the following relationships: negative FLAE (less enjoyment, less relaxation, more anger, and more boredom) and negative FLORE (less pride, less relief); negative FLAE and negative FLOPE (less hope, less assurance, more anxiety, and more hopeless). In other words, English learners who experienced negative emotions in the learning process tend to develop negative emotions toward both the past outcomes and the expectation of those outcomes, respectively. It is possible that task demands, and task complexity influenced the study participants' ability to address the task because they were transitioning from junior middle school to high school English tasks, which led to negatively active emotions. The structure coefficients in Models 1 and 3 indicate that enjoyment (-0.92) and boredom (0.90) positively and negatively influenced pride (-0.98), respectively. Similarly, relaxation (-0.95) and boredom (0.86) was negatively and positively affected by anxiety (0.89), respectively, aligning with previous studies (Pu Khajavy & Lüftenegger, 2024; twain et al., 2021; Putwain & Daumiller, 2023; Pekrun et al., 2023; Shao et al., 2020; Yang et al., 2021).It should also be noted that the key variable, boredom, was negatively correlated with pride and positively correlated with anxiety across all sets of achievement emotions in Models 1 and 3. Previous studies suggest that boredom is detrimental to English learning, underscoring the importance of mitigating boredom (Li et al., 2022; Li et al., 2024; Pekrun, 2006). Model 2 results highlight the relationship between positive FLOPE (more hope, more assurance, less anxiety and less hopelessness) and positive FLORE (more pride and more relief except shame and disappointment). These findings suggest that participants who had positive expectation(s) for academic success before and during English learning were more likely to develop positive emotions upon achieving success. It is possible that this finding is attributed to cultural factors, such as Confucianism, which emphasizes education and teaches the importance of effort (Li et al., 2024). It should be noted that hope (0.91), as a dominant predictor, positively relates to pride (0.96), aligning with previous studies (Elorriaga, 2014; Yang et al., 2021).

The three models of canonical correlation analysis indicate that a wide range of emotional variables must be considered (excluding shame and disappointment) when measures are taken to promote pride and reduce anxiety in EFL learning. Shao et al. (2020) found that EFL learners may experience more positive and less negative emotions when they feel confident and find English activities and outcomes essential and interesting. Based on these critical findings, this study presents the following implications for EFL teachers.

(1) Task demands and the cognitive quality of instruction should be the focus to reduce learners' anxiety and promote pride (Pekrun, 2006). EFL teachers may provide appropriate learning materials, the difficulty of which may match learners' abilities. This is important for first-year students in high schools transitioning from junior middle to high school; if task demands are too high, students may experience boredom, influencing their value perception of English tasks (Pekrun, 2006).

(2) Teachers may aim to understand and discuss students' feelings. EFL learners have varying personalities. Emotions are often invisible without carefully observing words, actions, and facial expressions. Effective communication between teachers and students regarding emotional changes may help students address partial anxiety, such as test anxiety. This recommendation could help students orient their reasonable expectations concerning natural errors resulting from tasks and lifelong English learning.

(3) A cooperative learning environment may facilitate students' positive emotions in a fiercely competitive English environment.

Matsuda and Gobel (2004) suggested that cooperative activities such as pair work, group work, games, and role play may create a comfortable learning environment, helping students feel more confident. Challenging tasks may be provided to students gradually to meet reasonable task demands. By doing so, learners may not suffer negatively before and during tasks, mitigating boredom and anxiety and promoting pride in EFL learning.

6. Conclusion

This study examined achievement emotions of Chinese high school students regarding English language learning based on Pekrun et al.'s (2023) three-dimensional taxonomy of achievement emotions. The findings indicate that some examined variables impacted the subjects' academic activities and outcomes during the English course. Pride and anxiety were significant variables that influenced learners' English achievement scores. Furthermore, the findings suggest the following relationships: FLAE exhibited negative active emotions, sharing high variances with negative outcome-reflective emotions in FLORE and negative outcome-prospective emotions in FLOPE, respectively; FLOPE exhibited positive outcome-prospective emotions, which shared a high variance with positive outcome-reflective emotions. These results indicate that enjoyment, boredom, hope, and relaxation are essential in predicting pride and anxiety in English language learning. The implications drawn from this study are essential for EFL teachers. The findings indicate that students who experienced negative active emotions regarding obstacles to their competence performance tended to feel less proud and more anxious, while those who expected academic success were more likely to be proud of the achieved success. To maintain and foster high levels of positive emotions, especially pride, and to alleviate negative emotions, such as boredom and anxiety in EFL learners, progressive task demands, lively and cooperative activities, and practical and direct communication between teachers and learners about emotional factors are recommended to help learners build their confidence, motivate them to perform English tasks, utilize effective learning strategies and focus on their efforts in completing tasks in EFL learning.

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