

Relationships Between College Students' Control-Value Appraisals of English Learning, Achievement Emotions, and Empowerment

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Abstract

Language learning involves cognitive and non-cognitive factors. Recent research has shifted focus from cognitive outcomes to emotional factors, influenced by positive psychology and an "affective turn" in second language studies. In light of this, the current study preliminarily examined the interrelationships between tertiary-level English learners' control-value appraisals of English learning, academic emotions (i.e., enjoyment and boredom), and empowerment. A study of 289 non-English major students in southwest China used convenience sampling and quantitative questionnaires to assess their control-value appraisals of English learning, boredom, enjoyment, and empowerment. The findings indicate that learners' enjoyment and value appraisals of English learning were at an upper-middle level, while control appraisal and empowerment were at a moderate level. Boredom, however, was rated at a lower middle level. Furthermore, there were significant correlations between these variables. Overall, control and value appraisals played a substantial role in predicting learners' achievement emotions and empowerment. The affective aspects of language learners are essential elements that potentially shape their learning processes and outcomes. This study suggests that to empower students in their language learning journey, teachers should help them recognize the meaningfulness of language learning, bolster their self-efficacy, and create an engaging and enjoyable learning environment.

Keywords: control appraisal; value appraisal; achievement emotions; empowerment; English learners

Introduction*

Learning is a complex and multidimensional process (Dağgöl, 2020), encompassing the attainment of cognitive, behavioral, and affective learning outcomes (Christophel, 1990).

As noted by Derakhshan (2022), cognitive learning gains pertain to changes in learners' cognitive development in thinking, understanding, remembering, and information extracting; behavioral learning gains involve changes in learners' behavioral skills over time

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like teamwork, leadership, and academic engagement; affective learning gains relate to changes in students' well-being, satisfaction, and attitudes. Since the 1970s, research in second language (L2) acquisition has predominantly concentrated on the cognitive dimension of learning. Numerous cognitive theories and models have been proposed to elucidate the learning processes of L2 learners (Graesser et al., 2014). However, these cognitive frameworks often fall short of explaining why learners sometimes fail to utilize their ostensibly acquired language knowledge (Bereiter & Scardamalia, 2013). This limitation has led to the argument that learning is influenced by cognitive abilities such as attention and memory and non-cognitive factors, including learners' emotional states (Artino et al., 2012). Language education expert Krashen introduced the Affective Filter Hypothesis, positing that learners' emotional states can act as a filter that either facilitates or hinders exposure to language input (Krashen, 1985). However, Krashen's hypothesis primarily concerns learners' motivation, self-confidence, and anxiety, potentially overlooking other relevant affective dimensions.

As in the domain-general learning contexts, learners' affective factors also play a pivotal role in language learning classrooms (Boekaerts & Pekrun, 2015). However, they have received less sufficient attention than learners' cognitive factors. Recent developments in positive psychology have significantly influenced L2 acquisition research, prompting what Pavlenko (2013) termed an "affective turn" as researchers incorporate these insights into language teaching studies (MacIntyre & Mercer, 2014). This shift has led to a growing scholarly interest

in affective factors related to language learning (Li, 2021). For instance, researchers have explored various emotional experiences such as boredom (Li & Dewaele, 2020), enjoyment (Dong, 2022), and "flow" (Gao et al., 2022) among L2 learners. Additionally, investigations have extended to how the control-value appraisals of learners' academic activities and outcomes impact their academic emotions and performance (Li, 2021; Heckel & Ringeise, 2017), though this line of research remains relatively limited. Some studies have also examined the interplay between learner empowerment, teachers' use of power (Schrodt et al., 2008), and teachers' positive interpersonal behavior (Diaz et al., 2016). Despite these inquiries, there remains a paucity of research explicitly connecting learners' control-value appraisals of English learning, empowerment, and academic emotions. Therefore, the interconnection between these constructs warrants further investigation.

The impetus for the present study stems from the fact that China boasts a vast community of English learners who are required to undertake a series of English proficiency assessments throughout their academic careers. In higher education, non-English major students are groomed to excel in two crucial, high-stakes English proficiency examinations: the CET-4 (College English Test Band 4) and CET-6 (College English Test Band 6). The results of these tests are widely regarded as a crucial metric for gauging the efficacy and caliber of collegiate English instruction. Consequently, learners and educators often place a premium on examination scores, potentially overshadowing the importance of fostering a comprehensive learning experience and safeguarding students'

psychological well-being. Acknowledging that the learning process is multifaceted, encompassing affective, behavioral, and cognitive dimensions (Derakhshan, 2022) is imperative. The learning journey's emotional experiences and subjective appraisals should be noticed, as learners will likely encounter a spectrum of emotions and perceptions during their English learning process. These non-cognitive dimensions of learning are not inconsequential; they can significantly influence academic achievements. In light of this, the current study is poised to delve into these constructs within the context of tertiary-level English-as-a-foreign-language (EFL) instruction in China.

Control-value Appraisals

As a prominent framework in educational psychology, control-value theory (abbreviated as CVT thereafter) illuminates the causes and consequences of learners' academic emotions (Li, 2021). This theory presents a three-dimensional taxonomy of academic emotions, classified according to valence (i.e., the positivity or negativity of emotions), degree of activation (i.e., the level of arousal), and object focus (i.e., the aspect of whether academic activities or academic achievements trigger emotions) (Pekrun et al., 2007). For instance, learner boredom exemplifies a negative, low-arousal emotion associated with academic activities, whereas satisfaction derived from learning represents a positive, high-arousal, achievement-oriented emotion.

According to CVT, academic emotions are influenced by both proximal and distal antecedents (Pekrun & Perry, 2014). Among these, proximal antecedents include learners' appraisals of control over and value assigned to

learning. Control appraisal pertains to learners' self-perception regarding the "controllability" of academic activities or outcomes. Value appraisal is subdivided into intrinsic and extrinsic value appraisals. Intrinsic value appraisal involves learners' judgments about the inherent characteristics of academic activities and outcomes, such as a learning activity's perceived importance and usefulness. Extrinsic value appraisal concerns learners' evaluations of the practical benefits, such as substantial rewards, that the learning process or outcome may provide (Pekrun, 2006).

A paucity of empirical studies have applied CVT to investigate L2 learners' emotional experiences. For example, classroom environmental factors indirectly influence students' negative academic emotions by affecting their control and value appraisals of English learning (Xia & Xu, 2018). Similarly, Shao et al. (2020) demonstrated that English learners' control appraisal of learning outcomes significantly predicted test anxiety and classroom enjoyment. This study also emphasized that value appraisal moderated this predictive relationship. In another study, Xia and Chen (2022) revealed that L2 learners' control and value appraisals positively and negatively predicted foreign language classroom boredom, respectively. However, none of these studies have distinguished intrinsic and extrinsic value appraisals. This gap was addressed by Li (2021), who found that intrinsic value appraisal, along with control appraisal, significantly predicted learners' boredom. Intrinsic value appraisal, in particular, exhibited a more substantial predictive effect, while extrinsic value appraisal did not predict substantially boredom. It is noteworthy that Li's (2021) study focused on

non-English majors in Chinese universities, whereas the other three were conducted with English majors. Therefore, further empirical studies are essential to validate the interconnections between control-value appraisals and affective factors across learner demographics. Moreover, no studies have explored the relationship between L2 learners' control-value appraisals and their sense of empowerment in foreign language learning.

Academic Emotions

Academic emotions, defined as emotional experiences directly related to learning and outcomes, significantly influence learning processes and results (Pekrun & Stephens, 2010). This influence can be mediated by attention, self-regulation, and learning motivation (Pekrun et al., 2002; Pekrun, 2006). Pekrun et al. (2011) inquired into the academic emotions of learners in traditional classrooms. They found positive emotional states could enhance creative thinking and reflective abilities, subsequently improving learners' academic performance. In contrast, negative emotions were found to be detrimental to academic performance. Positive emotional experiences such as enjoyment, hope, and pride correlate positively with students' effort, self-regulation, and the use of refined learning strategies. In contrast, negative emotions like anger, shame, anxiety, and boredom were linked to poorer learning performance and reliance on external regulators. Further studies have corroborated these findings, showing that positive emotions aid self-regulation during learning (Carver & Scheier, 1990; Boekaerts et al., 2000). Specifically, self-regulation in learners positively correlates with positive emotions, while perceived external regulation is associated

with negative emotional experiences (Pekrun et al., 2002). Additionally, it is found that positive academic emotions positively correlate with learners' motivation, which in turn influences online learning performance through these emotions (Zhu et al., 2022). Academic emotions also impact learners' attention and cognitive abilities (Hayat et al., 2020). Positive emotions enable learners to use cognitive strategies flexibly, enhancing both the quality and quantity of their thinking. In contrast, negative emotions consume attention resources, impede cognitive processes, and hinder the active use of advanced learning strategies (Xiong et al., 2012).

In conclusion, academic emotions influence learners' academic processes and achievements. Given this significance, it is essential to examine the diverse emotions experienced by L2 learners during language acquisition. While language learning anxiety has traditionally received disproportionate attention, recent years have witnessed a growing interest in other academic emotions, such as foreign language enjoyment and boredom. This study primarily focused on these two emotions, highlighting the need for a more comprehensive understanding of their impact on language learning.

Foreign Language Enjoyment

L2 acquisition research has traditionally emphasized negative emotions, particularly anxiety (Teimouri et al., 2019). Nonetheless, it is essential to recognize that both positive and negative emotions coexist in learning contexts and merit equal consideration (Heckel & Ringeisen, 2017). It is proposed that foreign language enjoyment is fundamental in establishing a psychologically safe environment for learners, thereby unlocking their language

learning potential (Dewaele & MacIntyre, 2014). Learners experiencing elevated levels of enjoyment tend to forge robust interpersonal relationships in their everyday language learning experiences and make consistent progress toward their objectives (Dewaele & MacIntyre, 2014). Consequently, the experience of enjoyment fosters the enhancement of learners' language skills and supports the maintenance of their psychological well-being.

Dewaele and MacIntyre (2014) conducted a pioneering empirical study investigating language learners' enjoyment. The study surveyed 1,746 learners of various languages—including English, French, Spanish, Dutch, and German—across the globe and found that Asian learners reported the lowest levels of enjoyment compared to other demographic groups. Current research hotspots in the empirical investigation of foreign language enjoyment include (1) developing measurement tools for assessing language learners' enjoyment (Li et al., 2018); (2) exploring gender (Mierzwa, 2018) and age/grade (Dewaele & MacIntyre, 2014) differences in enjoyment levels; (3) probing into the relationship between enjoyment and other academic emotions, such as boredom and anxiety (Feng et al., 2023); (4) evaluating the impact of enjoyment on language performance (Li & Han, 2022; Cui & Meng, 2023); and (5) analyzing the dynamic development of enjoyment through the lens of the complex dynamic systems theory (Elahi Shirvan & Talebzadeh, 2020). Despite increasing studies on L2 learners' enjoyment, this positive emotional aspect has received considerably less attention than negative emotions in L2 learning, particularly within the Chinese English teaching context.

Foreign Language Learning Boredom

Educational psychologists assert that boredom is a negative psychological experience, an unpleasant academic emotion triggered by a learning environment with low cognitive stimulation and physiological arousal (Lewinski, 2015). Such an environment impedes learners' capacity to engage deeply and meaningfully with learning tasks (Wang & Zhang, 2022). Boredom is prevalent in educational settings and adversely affects learners' learning behavior, classroom participation, cognitive development, interest cultivation, learning motivation, strategy utilization, and overall academic performance (Daniels et al., 2015).

Research on boredom in foreign language learning began with Chapman's (2013) seminal empirical study, which addressed the perceptions of boredom among German learners and teachers in the United States, laying the groundwork for subsequent investigations. Following Chapman's work, Polish scholars extensively researched boredom in English learners (e.g., Pawlak et al., 2022; Zawodniak et al., 2023). Additionally, several Asian scholars have contributed to this research area (e.g., Li, 2021; Li & Han, 2022), further diversifying the understanding of boredom in foreign language learning contexts.

Numerous scholars have investigated the factors influencing learners' levels of boredom (Zawodniak et al., 2023; Derakhshan et al., 2021). Other empirical research has particularly focused on several key areas: (1) the relationship between boredom and other academic emotions (Li & Han, 2022); (2) the impact of boredom on the learning process and academic performance (Li & Wei, 2023); and (3) the dynamic changes in learners' boredom levels

over time (Derakhshan et al., 2021). However, more investigation is warranted into L2 learners' experiences of boredom.

Learner Empowerment

The concept of "empowerment" originated in the workplace (Frymier et al., 1996) and has since been widely adopted across various fields. In the educational context, learner empowerment is closely linked to learner motivation (Brooks & Young, 2011). Specifically, learner empowerment pertains to three key factors: learners' perceived meaningfulness of learning tasks, their ability to complete these tasks effectively, and the impact of their invested effort on learning outcomes (Frymier et al., 1996).

Frymier et al. (1996) conceptualized learners' sense of empowerment into three dimensions: (1) impact, which refers to learners' perception that the completed learning task influences current ongoing events; (2) meaningfulness, which is the value judgment that learners assign to the learning task, such as whether the task is exciting and valuable; and (3) competence, which involves learners' perception of their knowledge and skills required to complete the learning task. Effective teaching strategies should empower learners, as empowerment can stimulate intrinsic motivation (Conger & Kanungo, 1988), promote learning engagement (Mazer, 2013), and enhance mental health (Taştan, 2013). Research indicates that teacher power use (Schrodt et al., 2008) and positive teacher-student relationships (Derakhshan, 2022) are significant predictors of learner empowerment. Moreover, Paulsel (2005) explored the relationship between students' emotional responses and their sense of empowerment, revealing a notable association

between the two constructs. Therefore, fostering empowerment in educational settings is crucial for optimizing learner outcomes.

In the domain of L2 acquisition, the exploration of learners' sense of empowerment has been relatively limited thus far. Rodríguez-Gómez and Ibarra-Sáiz (2014) examined the relationship between empowerment and English language acquisition among English learners in Mexican universities, revealing that learners employed various strategies, such as socio-emotional and metacognitive strategies, to augment their sense of empowerment. Similarly, Nie (2015) adopted a quasi-experimental design to investigate the empowerment of Chinese university English learners in English writing courses within a flipped classroom teaching model. The results indicated that the flipped classroom model significantly enhanced learners' sense of empowerment. Additionally, Dağöl (2020) explored the learning motivation and empowerment among Turkish vocational high school English learners, finding that the level of empowerment was moderate and positively correlated with learning motivation. Learner empowerment is still a developing construct in L2 acquisition, and the relationships between learner empowerment, academic emotions, and control-value appraisals have yet to be fully unveiled and understood. That is precisely what this study intended to explore.

Based on previous research, the present research attempted to address the answers to the profiles of English learners' appraisals of control and value, empowerment, and emotions regarding their English learning, whether learners' appraisals of control and value, empowerment, and emotions correlate, and

whether learners' appraisals of control and value can predict their empowerment and emotions.

Method

Participants

In this research endeavor, a non-probability convenience sampling method was utilized to amass data from a cohort of 289 undergraduates hailing from various disciplines, from Accounting to Civil Engineering, at a university in Southwest China. The demographic composition of the participants was balanced, with 142 males (49.13%) and 147 females (50.87%), spanning across different academic levels: 169 first-year students (58.48%), 79 sophomores (27.34%), and 41 juniors (14.18%). The average age of the participants was 20.36 years ($SD=0.65$). Their English proficiency, as assessed by their instructors, was categorized as lower-intermediate.

The sample size employed in our study is deemed both appropriate and robust, aligning with the guidelines established by Tabachnick and Fidell (2007). They proposed a formula for determining the requisite sample size, which

incorporates the number of independent variables intended for analysis: $N > 50 + 8m$, where m represents the count of independent variables. In the context of our investigation, six independent variables were identified: control appraisal, intrinsic value appraisal, extrinsic value appraisal, learning empowerment, foreign language enjoyment, and foreign language learning boredom. Applying this formula, the minimum sample size necessary for our study was determined to be 98 ($50 + 8 \times 6$). Consequently, the actual sample size of 289 significantly surpasses this minimum threshold, thereby ensuring the present study's methodological rigor and the validity of its findings.

Measures

This study employed a quantitative research method to explore the relationships among various variables. The primary measurement tools included the Control Appraisal Scale, the Intrinsic Value Appraisal Scale, the Extrinsic Value Appraisal Scale, the English Learning Boredom Scale (Li, 2021), the Foreign Language Enjoyment Scale (Li et al., 2018), and the Learner Empowerment Scale (Frymier et al., 1996).

Table 1
Information on the Measurement Scales

Scale	Item (N)	Sample
Control	3	I have always been good at English.
Intrinsic value	5	I think the subject of English is very important.
Extrinsic value	5	Only if I write good grades in English I am satisfied.
Empowerment	18	My participation is important to the success of this class.
Enjoyment	9	I've learned interesting things in English classes.
Boredom	4	I get bored in English classes

These six scales had undergone rigorous testing by their respective designers to ensure

their reliability and validity. Modifications were made to the original scales to better suit the

present study's objectives. Specifically, the adapted scales were formatted as five-point Likert scales, allowing participants to rate each item from 1 (strongly disagree) to 5 (strongly agree). Detailed information about each scale is presented in Table 1.

Ethical Considerations

Participants in the online questionnaire survey were first provided with information regarding the research purpose and their right to withdraw, which aligned with academic ethical standards. Following this, at the onset of the questionnaire, participants were presented with a statement highlighting the confidentiality of their data, guaranteeing its use exclusively for academic research and assuring them of no harm. Subsequently, participants were asked to indicate their consent by selecting the "I Agree" option. This step symbolized their readiness to continue with the survey and furnish genuine responses to the ensuing questionnaire items.

Data collection and analysis

The online questionnaire survey was conducted via *wenjuanxing* (an online survey platform) over two weeks (June 5-18, 2023). After the survey was completed, we meticulously reviewed the data, excluding any invalid responses. This rigorous process resulted in a final dataset comprising 268 valid responses (92.73%).

After data screening, we employed AMOS (version 26.0) to perform confirmatory factor analysis on each scale, ensuring that the fit indices fell within the recommended range to confirm the measurement tools' high construct validity. Subsequently, reliability tests were conducted using SPSS (version 23.0) to guarantee the scales' high reliability. Following

these preliminary validations, we utilized SPSS 23.0 to perform descriptive statistics, correlation, and regression analyses to answer the three research questions.

Findings and Discussion

Findings

Validity and Reliability of the Scales

This study assessed validity using a range of fit indices, including χ^2/df , the Goodness-of-Fit Index (GFI), the Adjusted Goodness-of-Fit Index (AGFI), the Comparative Fit Index (CFI), the Root Mean Square Residual (RMR), and the Root Mean Square Error of Approximation (RMSEA). Reliability was measured using Cronbach's α coefficient. As indicated in Table 2, the results demonstrate that all fit and reliability indices for the scales fell within the recommended ranges (Xu, 2019), suggesting that the measurement tools employed in this study possessed high reliability and validity.

Overall Profiles of the Constructs

To clarify L2 learners' perceived control over and value appraisals of English learning and their overall levels of empowerment, enjoyment, and boredom during the learning process, this study conducted a descriptive statistical analysis of the collected data. As indicated in Table 3, all data's kurtosis and skewness values ranged from -2 to +2, signifying that the data were normally distributed and that subsequent analyses should employ parametric statistical methods (Gravetter et al., 2021). The analysis indicated that learners' control appraisal was at a moderate level (Mean=9.541, SD=2.383), while both intrinsic value appraisal (Mean=18.898, SD=3.501) and extrinsic value appraisal

(Mean=19.610, SD=3.756) were at an upper-middle level. Moreover, the sense of empowerment was found to be moderate (Mean=55.776, SD=11.47), enjoyment was at an upper-middle level (Mean=35.752, SD=5.993),

and boredom was at a lower-middle level (Mean=11.191, SD=2.581). Taken together, the participants in this survey generally held positive attitudes toward English learning.

Table 2

Indices Indicating the Construct Validity and Reliability of all the Scales (N=268)

Indices	χ^2/df	<i>p</i>	GFI	AGFI	CFI	RMR	RMSEA	Alpha
Benchmark	≤5	>0.05	≥0.9	≥0.9	≥0.9	≤0.10	≤0.08	>0.70
Control	0.054	0.726	0.907	0.924	0.941	0.064	0.053	0.917
Intrinsic value	2.378	0.53	0.917	0.962	0.937	0.058	0.042	0.886
Extrinsic value	2.546	0.243	0.926	0.921	0.929	0.067	0.049	0.821
Empowerment	3.275	0.057	0.921	0.909	0.911	0.037	0.052	0.933
Enjoyment	2.756	0.173	0.903	0.916	0.925	0.056	0.075	0.872
Boredom	1.788	0.144	0.927	0.914	0.932	0.029	0.062	0.928

Table 3

Descriptive Results (N=268)

Variables	Range	Minimum	Maximum	Mean	SD ²	Kurtosis	Skewness
Control	3-15	3	15	9.541	2.383	-0.261	0.069
Intrinsic value	5-25	5	25	18.898	3.501	-0.125	0.428
Extrinsic value	5-25	8	25	19.610	3.756	0.386	0.258
Empowerment	18-90	25	88	55.776	11.470	-0.353	0.509
Enjoyment	9-45	11	45	35.752	5.993	0.261	1.609
Boredom	4-20	3	15	11.191	2.581	-0.659	-1.231

SD, standard deviation.

Correlations Between the Variables

The results of the correlation analysis demonstrate significant relationships among the variables under study (see Table 4). Specifically, control appraisal was found to have a moderate positive correlation with intrinsic value appraisal ($r=0.511$, $p<0.01$), empowerment ($r=0.413$, $p<0.01$), and enjoyment ($r=0.450$, $p<0.01$), a weak positive correlation with extrinsic value appraisal ($r=0.191$, $p<0.05$), and a moderate negative correlation with boredom ($r=-0.402$, $p<0.05$). Additionally, intrinsic value appraisal had a moderate positive association with extrinsic value appraisal ($r=0.387$, $p<0.01$),

empowerment ($r=0.457$, $p<0.01$), and enjoyment ($r=0.472$, $p<0.01$), while showing a moderate negative correlation with boredom ($r=-0.424$, $p<0.01$). Furthermore, extrinsic value appraisal had a weak positive correlation with both empowerment ($r=0.248$, $p<0.01$) and enjoyment ($r=0.282$, $p<0.01$), and a weak negative correlation with boredom ($r=-0.265$, $p<0.01$). Empowerment was moderately positively correlated with enjoyment ($r=0.450$, $p<0.01$) and moderately negatively correlated with boredom ($r=-0.463$, $p<0.01$). Moreover, there was a strong negative correlation between enjoyment and boredom ($r=-0.823$, $p<0.01$).

These findings suggest that students having higher control and value appraisals of their English learning experience tended to feel more

empowered and enjoy the learning process more, while experiencing less boredom.

Table 4
Bivariate Correlations (N=268)

Variables	1	2	3	4	5	6
1. Control	1					
2. Intrinsic value	0.511**	1				
3. Extrinsic value	0.191*	0.387**	1			
4. Empowerment	0.413**	0.457**	0.248**	1		
5. Enjoyment	0.450**	0.472**	0.282**	0.450**	1	
6. Boredom	-0.402**	-0.424**	-0.265**	-0.463**	-0.823**	1

* $p < 0.05$; ** $p < 0.01$.

Results of Regression Analyses

This study performed a linear regression analysis with control-value appraisals as the independent variables and empowerment as

the dependent variable. As indicated in Table 5, the examination of multicollinearity for the model reveals that the variance inflation factor (VIF) values ranged between 1 and 10, and the tolerance values were between 0 and 1.

Table 5
Regression Results I (Empowerment, N=268)

	<i>B</i>	<i>SE</i>	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>VIF</i>	<i>Tolerance</i>	<i>Contribution</i>
Constant	15.915	4.203	-	3.786	0.000**	-	-	-
Control	1.171	0.310	0.329	3.78	0.000**	1.353	0.739	10.8%
Intrinsic value	0.984	0.225	0.379	4.381	0.000**	1.534	0.652	14.4%
Extrinsic value	0.260	0.183	0.085	1.417	0.158	1.177	0.85	0.7%
R^2						0.259		
F						$F(3, 242) = 28.180, p = 0.000$		

Dependent variable: empowerment; SE, standard error; VIF, variable inflation factor.

These results indicate the absence of multicollinearity issues, suggesting a robust model (Lei, 2016). Furthermore, the regression model passed the F-test ($F=28.180$,

$p=0.000 < 0.05$), signifying that at least one among control appraisal, intrinsic value appraisal, and extrinsic value appraisal could significantly predict empowerment. The model's

R² value was 0.259, implying that the three independent variables collectively explained 25.9% of the variance in empowerment. The regression equation is Empowerment = 15.915 + 1.171 × Control Appraisal + 0.984 × Intrinsic Value Appraisal + 0.260 × Extrinsic Value Appraisal. Among the three independent variables, control appraisal (regression coefficient=1.171, t=3.780, p=0.000<0.01) and intrinsic value appraisal (regression coefficient=0.984, t=4.381, p=0.000<0.01) significantly and positively predicted empowerment, whereas extrinsic value appraisal did not significantly predict empowerment (regression coefficient=0.260, t=1.417, p=0.158>0.05). Among the trio of independent variables, intrinsic value appraisal was the most influential, accounting for 14.4% of the variance in the dependent variable, namely learning empowerment. This was succeeded by control appraisal, which explained 10.8% of the variance, and extrinsic value appraisal, which

contributed the least with a mere 0.7% of the variance.

Table 6 shows that control-value appraisals significantly predicted 29.4% of the variance in enjoyment (R²=0.294, F=33.544, p<0.05). The model equation is Enjoyment = 6.137 + 0.715 × Control Appraisal + 0.480 × Intrinsic Value Appraisal + 0.190 × Extrinsic Value Appraisal. All three independent variables significantly and positively predicted enjoyment, with regression coefficients of 0.715 (t=4.525, p<0.01) for control appraisal, 0.480 (t=4.188, p<0.01) for intrinsic value appraisal, and 0.190 (t=2.032, p<0.05) for extrinsic value appraisal. Control appraisal emerged as the most impactful among the three independent variables, explaining 15.2% of the variance in the dependent variable, specifically foreign language enjoyment. Intrinsic value appraisal followed closely, accounting for 12.8% of the variance, while extrinsic value appraisal had the slightest effect, contributing to only 1.4% of the variance.

Table 6
Regression Results II (Enjoyment, N=268)

	<i>B</i>	<i>SE</i>	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>VIF</i>	<i>Tolerance</i>	<i>Contribution</i>
Constant	6.137	2.144	-	2.862	0.005**	-	-	-
Control	0.715	0.158	0.390	4.525	0.000**	1.353	0.739	15.2%
Intrinsic value	0.480	0.115	0.358	4.188	0.000**	1.534	0.652	12.8%
Extrinsic value	0.190	0.094	0.119	2.032	0.043*	1.177	0.850	1.4%
<i>R</i> ²					0.294			
<i>F</i>					<i>F</i> (3, 242) = 33.544, <i>p</i> = 0.000			

Dependent variable: enjoyment.

Table 7 demonstrates that control-value appraisals significantly and negatively predicted 23.9% of the variance in boredom (R²=0.239, F=25.284, p<0.05). The model equation is Boredom = 18.882 - 0.272 × Control Appraisal - 0.184 × Intrinsic Value Appraisal - 0.082 ×

Extrinsic Value Appraisal. All three variables significantly and negatively predicted boredom, with regression coefficients of -0.272 (t=-3.856, p<0.01) for control appraisal, -0.184 (t=-3.590, p<0.01) for intrinsic value appraisal, and -0.082 (t=-1.972, p<0.05) for extrinsic value appraisal.

Control appraisal stood out as the most potent influence among the three independent variables, elucidating 12.3% of the variance within the dependent variable (i.e., foreign language learning boredom). Intrinsic value

appraisal trailed by a narrow margin, encapsulating 10.2% of the variance, whereas extrinsic value appraisal exerted a minimal impact, with a mere 1.4% contribution to the variance of boredom.

Table 7
Regression Results III (Boredom, N=268)

	B	SE	Beta	t	p	VIF	Tolerance	Contribution
Constant	18.882	0.959	-	19.697	0.000**	-	-	-
Control	-0.272	0.071	-0.351	-3.856	0.000**	1.353	0.739	12.3%
Intrinsic value	-0.184	0.051	-0.320	-3.59	0.000**	1.534	0.652	10.2%
Extrinsic value	-0.082	0.042	-0.12	-1.972	0.040*	1.177	0.85	1.4%
R^2					0.239			
F					$F(3, 242) = 25.284, p = 0.000$			

Dependent variable: boredom.

Discussion

This study concluded that learners’ control appraisal and empowerment were at a moderate level, while their value appraisals and enjoyment were at an upper-middle level, and boredom was at a lower-middle level. These findings partially align with those of Li (2021) and Cui and Meng (2023). Li (2021) reported that non-English majors in Chinese universities exhibited moderate levels of perceived controllability over the English course, high levels of intrinsic and extrinsic value appraisals of English learning, and low levels of boredom experienced in English classrooms. However, Li’s study focused primarily on learners’ boredom experience and their control over and value appraisals of English learning without investigating foreign language learning enjoyment. Cui and Meng (2023) found that the enjoyment experienced by non-English majors was at a moderate level. The current study's findings exhibit subtle variations from the outcomes reported by Li (2021) and Cui and

Meng (2023), which can be primarily attributed to the distinct samples employed in each research endeavor. However, when these findings are collectively examined, the alignment between the present study and the works above indicates a remarkable consistency in the perceptions of non-English major university students from diverse geographical and institutional backgrounds regarding their English learning experiences at the tertiary level. Specifically, these students tend to report a comparable degree of enjoyment and boredom and a shared consensus on their control and value appraisals of English learning. This uniformity in perception is likely a consequence of the shared academic milestones that shape the educational trajectory of students across China. All students must navigate two critical English proficiency assessments during their secondary education: the *Zhongkao*, a province-level senior high school entrance examination administered in the ninth grade, and the *Gaokao*, the nationwide college entrance examination undertaken in the 12th grade. They

are subsequently obligated to participate in the CET-4 and CET-6 examinations at the university level. The pervasive impact of an examination-centric educational paradigm suggests that these students are likely to form congruent control-value judgments and to experience analogous emotional responses to English learning. As for learners' empowerment, the findings obtained in the current study conform to those of Dağgöl (2020), who also found empowerment to be moderate among Turkish higher vocational students. This observation may suggest a cross-cultural commonality among English learners. It implies that EFL learners across various learning contexts may share a similar perception regarding the meaningfulness of learning tasks, their capability to accomplish these tasks, and the extent to which they can influence their learning trajectories and outcomes. This convergence in empowerment levels could reflect a universal aspect of EFL learners' experiences, highlighting the importance of considering empowerment in educational strategies designed to enhance the effectiveness of English language instruction. Few studies have investigated these constructs (i.e., L2 learners' control and value appraisals of language learning, academic emotions, and empowerment) in a single study. Therefore, further empirical studies are needed to validate the findings obtained in the present study.

The correlation and regression analyses demonstrated a significant association between learners' academic emotions and their appraisals of controllability over and value in English learning, with these appraisals also predicting empowerment. Furthermore, academic emotions were found to predict empowerment significantly. This finding

supports CVT, which posits that learners' perceived control over learning and the value they assign to learning activities or outcomes catalyze achievement emotions (Pekrun, 2006). Specifically, if learners view a learning activity or outcome as moderately controllable and place high intrinsic and extrinsic value on it, they will likely perceive the activity or outcome as more meaningful. This perception is likely to generate more positive emotional experiences (e.g., enjoyment) and fewer negative ones (e.g., boredom) during the learning process (Pekrun & Perry, 2014). Moreover, the results of the present study echo Li's (2021) finding that moderate levels of perceived control over academic activities are associated with lower levels of boredom. Conversely, extreme levels of perceived control, namely too high or too low levels of controllability, can lead to perceptions of under- or over-challenging activities, both of which may heighten boredom. According to the mentioned theory, learners who engage in over- or under-challenging tasks experience a mismatch between their available mental resources and the demands of the task environment (Davies & Fortney, 2012), potentially leading to heightened boredom and diminished enjoyment. This may partially explain the significant and strong negative correlation between boredom and enjoyment.

Notably, the relationship between control-value appraisals and learner empowerment implies that learners perceive a learning activity or outcome as more meaningful when they have increased control over it, especially if they consider it important and valuable. This perception enhances their sense of capability in performing the tasks and their influence on the English course. Frymier et al. (1996)

conceptualized learner empowerment as encompassing learners' motivation to participate in learning tasks and their degree of control over those tasks. A critical dimension of learner empowerment is the meaningfulness of the learning activity or outcome, which fits nicely with the intrinsic value posited by CVT. Although empowerment and control appraisal are fundamentally different constructs—with the former categorized under motivation (Glasser, 1990) and the latter as cognitive appraisal—there is a significant interrelation between the two. Additionally, the present study found that learners experienced a higher sense of empowerment when they felt greater enjoyment and less boredom. This finding lends support to the observation made by Pekrun et al. (2010) and Artino et al. (2012) that provided empirical evidence to CVT: learners' perceived control over and value in learning are integrally connected to their academic emotions, which exert an enormous impact on their motivation to learn (Pekrun, 2006; Pekrun & Perry, 2014).

Lastly, this study found that the predictive power of extrinsic value appraisal for learner empowerment was insignificant. One possible explanation for this result is that learner empowerment is fundamentally an intrinsic construct closely tied to learners' intrinsic motivation (Glasser, 1990; Schrodts et al., 2008). In contrast, extrinsic value appraisal aligns more with externally acquired expectations, such as test scores or teacher rewards. Consequently, empowerment and extrinsic value appraisal theoretically represent two distinct constructs. However, further evidence is necessary to substantiate this interpretation.

Conclusion

In the present study, we unearthed the interplay among Chinese English learners' control-value appraisals of English learning, academic emotions, and the empowerment sensed in their learning process. The findings revealed that learners' foreign language learning enjoyment and value appraisals of English were generally at an upper-middle level, while control appraisals and feelings of empowerment were at a moderate level. Conversely, boredom was reported at a lower-middle level. Furthermore, these variables exhibited significant correlations with one another. Additionally, the study demonstrated that control-value appraisals significantly predicted learners' academic emotions and their sense of empowerment in English learning.

This study holds significant theoretical and pedagogical implications. From a theoretical perspective, it lends empirical support to the application of CVT within the field of L2 acquisition. Furthermore, by digging into the concept of learner empowerment, this research enriches existing literature relevant to L2 research. Pedagogically, the findings offer valuable insights for enhancing college-level English instruction. To achieve effective teaching outcomes, English educators can focus on fostering students' self-efficacy and self-confidence in language learning. This can be achieved by designing engaging and enjoyable teaching activities, preparing stimulating learning materials, and practicing positive interpersonal communication styles, thereby boosting students' sense of empowerment in the language learning trajectory (Derakhshan, 2022).

This study, however, is not without limitations. Firstly, the exclusive use of a

quantitative research method reflected group characteristics and failed to account for individual differences among learners. Secondly, manipulating all variables as isometric data may have resulted in an incomplete and inaccurate capture of learners' control-value appraisals of English learning, academic emotions, and sense of empowerment. Lastly, the generalizability of the research findings might be constrained by the small sample size and the homogeneity of the subjects. Future studies should adopt a more rigorous research design to address these shortcomings. Specifically, employing mixed research methods and collecting diverse data from interviews, diaries, classroom observations, and psychological experiments can facilitate the triangulation of results. Furthermore, conducting large-scale surveys on diverse groups of learners would raise the generalizability of the findings.

References

- Artino Jr, A. R., Holmboe, E. S., & Durning, S. J. (2012). Control-value theory: Using achievement emotions to improve understanding of motivation, learning, and performance in medical education: AMEE guide No. 64. *Medical Teacher*, 34(3), e148-e160. <https://doi.org/10.3109/0142159X.2012.651515>
- Bereiter, C., & Scardamalia, M. (2013). Cognitive coping strategies and the problem of "inert knowledge". In S. F. Chipman, J. W. Segal, & R. Glaser (Eds.), *Thinking and Learning Skills* (pp. 65-80). London: Routledge.
- Boekaerts, M., & Pekrun, R. (2015). *Handbook of educational psychology*. London: Routledge.
- Boekaerts, M., Zeidner, M., & Pintrich, P. R. (2000). *Handbook of self-regulation*. San Diego, CA: Academic Press.
- Brooks, C. F., & Young, S. L. (2011). Are choice-making opportunities needed in the classroom? Using self-determination theory to consider student motivation and learner empowerment. *International Journal of Teaching and Learning in Higher Education*, 23(1), 48-59.
- Carver, C. S., & Scheier, M. (1990). Principles of self-regulation: Action and emotion. In E. Higgins, & R. M. Sorrentino (Eds.), *Handbook of Motivation and Cognition: Foundations of Social Behavior* (pp. 3-52). New York: The Guilford Press.
- Chapman, K. E. (2013). *Boredom in the German foreign language classroom*. Madison: The University of Wisconsin-Madison.
- Christophel, D. M. (1990). The relationships among teacher immediacy behaviors, student motivation, and learning. *Communication Education*, 39 (4), 323-340. <https://doi.org/10.1080/03634529009378813>
- Conger, J. A., & Kanungo, R. N. (1988). The empowerment process: Integrating theory and practice. *Academy of Management Review*, 13(3), 471-482. <https://doi.org/10.5465/amr.1988.4306983>
- Cui, Y., & Meng, Y. R. (2023). The relationship between self-efficacy, foreign language enjoyment and English proficiency from the perspective of positive psychology. *Foreign Languages Research*, 40(1), 75-80. <https://doi.org/10.13978/j.cnki.wyyj.2023.01.005>
- Dağgöl, G. D. (2020). Perceived academic motivation and learner empowerment levels of EFL students in Turkish context.

- Participatory Educational Research, 7 (3), 21-37. <https://doi.org/10.17275/per.20.33.7.3>
- Daniels, L. M., Tze, V. M., & Goetz, T. (2015). Examining boredom: Different causes for different coping profiles. *Learning and Individual Differences*, 37, 255-261. <https://doi.org/10.1016/j.lindif.2014.11.004>
- Derakhshan, A. (2022). The 5Cs positive teacher interpersonal behaviors: Implications for learner empowerment and learning in an L2 context. Heidelberg: Springer Nature.
- Derakhshan, A., Kruk, M., Mehdizadeh, M., & Pawlak, M. (2021). Boredom in online classes in the Iranian EFL context: Sources and solutions. *System*, 101, 102556. <https://doi.org/10.1016/j.system.2021.102556>
- Dewaele, J. M., & MacIntyre, P. D. (2014). The two faces of Janus? Anxiety and enjoyment in the foreign language classroom. *Studies in Second Language Learning and Teaching*, 4(2), 237-274. <https://doi.org/10.14746/ssl.2014.4.2.5>
- Diaz, A., Cochran, K., & Karlin, N. (2016). The influence of teacher power on English language learners' self-perceptions of learner empowerment. *College Teaching*, 64(4), 158-167. <https://doi.org/10.1080/87567555.2015.1126801>
- Dong, L. Q. (2022). Predictive effects of control-value appraisals on foreign language classroom anxiety and enjoyment. *Foreign Language World*, 3, 79-88.
- Elahi Shirvan, M., & Talebzadeh, N. (2020). Tracing the signature dynamics of foreign language classroom anxiety and foreign language enjoyment: A retrodictive qualitative modeling. *Eurasian Journal of Applied Linguistics*, 6(1), 23-44. <https://doi.org/10.32601/ejal.710194>
- Feng, E., Wang, Y., & King, R. B. (2023). Achievement goals, emotions and willingness to communicate in EFL learning: Combining variable- and person-centered approaches. *Language Teaching Research*, 13621688221146887. <https://doi.org/10.1177/13621688221146887>
- Frymier, A. B., Shulman, G. M., & Houser, M. (1996). The development of a learner empowerment measure. *Communication Education*, 45(3), 181-199. <https://doi.org/10.1080/03634529609379048>
- Gao, Y. L., Zhang, Z. Y., & Ni, C. B. (2022). Flow experience in foreign language reading and its relationship between reading performance. *Foreign Language World*, 3, 70-78.
- Graesser, A. C., D'MELLO, S. K., & Strain, A. C. (2014). *International handbook of emotions in education*. London: Routledge.
- Gravetter, F. J., Wallnau, L. B., Forzano, L. A. B., & Witnauer, J. E. (2021). *Essentials of statistics for the behavioral sciences*. Boston: Cengage Learning.
- Hayat, A. A., Shateri, K., Amini, M., & Shokrpour, N. (2020). Relationships between academic self-efficacy, learning-related emotions, and metacognitive learning strategies with academic performance in medical students: A structural equation model. *BMC Medical Education*, 20, 1-11. <https://doi.org/10.1186/s12909-020-01995-9>
- Heckel, C., & Ringeisen, T. (2017). Enjoyment and boredom in academic online-learning: Relations with appraisals and learning

- outcomes. In K. Moore, & P. Buchwald (Eds.), *Stress and anxiety: Coping and resilience* (pp. 27-136). Berlin: Logos Berlin.
- Krashen, S. (1985). *The input hypothesis*. Beverly Hills: CA Laredo Publishing Company.
- Lei, L. (2016). *Applied linguistics research: Design and statistics*. Wuhan: Huazhong University of Science & Technology Press.
- Lewinski, P. (2015). Effects of classrooms' architecture on academic performance in view of telic versus paratelic motivation: A review. *Frontiers in Psychology*, 6, 746. <https://doi.org/10.3389/fpsyg.2015.00746>
- Li, C. (2021). A control-value theory approach to boredom in English classes among university students in China. *The Modern Language Journal*, 105(1): 317-334. <https://doi.org/10.1111/modl.12693>
- Li, C. (2022). Foreign language learning boredom and enjoyment: The effects of learner variables and teacher variables. *Language Teaching Research*, 13621688221090324. <https://doi.org/10.1177/13621688221090324>
- Li, C., & Dewaele, J. M. (2020). The predictive effects of trait emotional intelligence and online learning achievement perceptions on foreign language class boredom among Chinese university students. *Foreign Languages and Their Teaching*, 5, 33-44. <https://doi.org/10.13458/j.cnki.flatt.004711>
- Li, C., & Han, Y. (2022). The predictive effects of foreign language enjoyment, anxiety, and boredom on learning outcomes in online English classrooms. *Modern Foreign Languages*, 45(2), 207-219.
- Li, C., Jiang, G. & Dewaele, J. M. (2018). Understanding Chinese high school students' foreign language enjoyment: Validation of the Chinese version of the foreign language enjoyment scale. *System*, 76, 183-196. <https://doi.org/10.1016/j.system.2018.06.004>
- Li, C. & Wei, L. (2023). Anxiety, enjoyment, and boredom in language learning amongst junior secondary students in rural China: How do they contribute to L2 achievement? *Studies in Second Language Acquisition*, 45(1), 93-108. <https://doi.org/10.1017/s0272263122000031>
- MacIntyre, P. D., & Mercer, S. (2014). Introducing positive psychology to SLA. *Studies in Second Language Learning and Teaching*, 4(2), 153-172. <https://doi.org/10.14746/SSLT.2014.4.2.2>
- Mazer, J. P. (2013). Student emotional and cognitive interest as mediators of teacher communication behaviors and student engagement: An examination of direct and interaction effects. *Communication Education*, 62(3), 253-277. <https://doi.org/10.1080/03634523.2013.777752>
- Mierzwa, E. (2018). The relationship between foreign language enjoyment and gender among secondary grammar school students. *The Journal of Education, Culture, and Society*, 9(2), 117-135. <https://doi.org/10.15503/jecs20182.117.135>
- Nie, Y. J. (2015). Influence of flipped classroom on learner's empowerment: A study based on English writing courses in China. *Journal of Literature, Languages and Linguistics*, 12(1), 1-7.
- Paulsel, M. L. (2005). Classroom justice as a predictor of students' perceptions of

- empowerment and emotional response. Morgantown: West Virginia University ProQuest Dissertations Publishing.
- Pavlenko, A. (2013). The affective turn in SLA: From affective factors to language desire and commodification of affect. In D. Gabrys-Barker, & J. Belska (Eds.), *The affective dimension in second language acquisition* (pp. 3-28). Bristol: Multilingual Matters.
- Pawlak, M., Kruk, M., & Zawodniak, J. (2022). Investigating individual trajectories in experiencing boredom in the language classroom: The case of 11 Polish students of English. *Language Teaching Research*, 26 (4), 598-616.
<https://doi.org/10.1177/1362168820914004>
- Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. *Educational Psychology Review*, 18, 315-341.
<https://doi.org/10.1007/s10648-006-9029-9>
- Pekrun, R., Goetz, T., Frenzel, A. C., Barchfeld, P., & Perry, R. P. (2011). Measuring emotions in students' learning and performance: The achievement emotions questionnaire (AEQ). *Contemporary Educational Psychology*, 36(1), 36-48.
<https://doi.org/10.1016/j.cedpsych.2010.10.002>
- Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist*, 37(2), 91-105.
https://doi.org/10.1207/S15326985EP3702_4
- Pekrun, R., & Stephens, E. J. (2010). Achievement emotions: A control-value approach. *Social and Personality Psychology Compass*, 4(4), 238-255. <https://doi.org/10.1111/j.1751-9004.2010.00259.x>
- Rodríguez-Gómez, G., & Ibarra-Sáiz, M. S. (2014). *Sustainable learning in higher education: Developing competencies for the global marketplace*. Cham: Springer International Publishing.
- Schrodt, P., Witt, P. L., Myers, S. A., Turman, P. D., Barton, M. H., & Jernberg, K. A. (2008). Learner empowerment and teacher evaluations as functions of teacher power use in the college classroom. *Communication Education*, 57(2), 180-200.
<https://doi.org/10.1080/03634520701840303>
- Shao, K., Pekrun, R., Marsh, H. W., & Loderer, K. (2020). Control-value appraisals, achievement emotions, and foreign language performance: A latent interaction analysis. *Learning and Instruction*, 69, 101356.
<https://doi.org/10.1016/j.learninstruc.2020.101356>
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Allyn & Bacon/Pearson Education.
- Taştan, S. B. (2013). The relationship between psychological empowerment and psychological well-being: The role of self-efficacy perception and social support. *Öneri Dergisi*, 10(40), 139-154.
<https://doi.org/10.14783/od.v10i40.1012000360>
- Teimouri, Y., Goetze, J., & Plonsky, L. (2019). Second language anxiety and achievement: A meta-analysis. *Studies in Second Language*

- Acquisition, 41(2), 363-387.
<https://doi.org/10.1017/S0272263118000311>
- Wang, J., & Zhang, T. Y. (2022). An overview of the empirical research on foreign language learning boredom (from 2013 to 2022). *Advances in Social Sciences*, 11(10), 4199-4209.
<https://doi.org/10.12677/ass.2022.1110572>
- Xia, Y., & Chen, X. M. (2022). The relationship between perceived classroom affordance and boredom in CLI classrooms: The mediating role of control-value appraisals. *Foreign Language Education*, 43(3), 44-49.
<https://doi.org/10.16362/j.cnki.cn61-1023/h.2022.03.014>
- Xia, Y., & Xu, Y. (2018). On the influence of classroom environment on negative academic emotions of English majors. *Foreign Languages and Their Teaching*, 3, 65-76.
<https://doi.org/10.13458/j.cnki.flatt.004493>
- Xiong, J. M., Gong, S. Y., & Frenzel, A. C. (2012). High school students' attitude to math and learning strategy and math performance. *Educational Research and Experiment*, 6, 89-92.
- Xu, H. C. (2019). *Structural equation modeling in second language studies: Case analysis*. Beijing: Foreign Language Teaching and Research Press.
- Zawodniak, J., Kruk, M., & Pawlak, M. (2023). Boredom as an aversive emotion experienced by English majors. *RELC Journal*, 54(1), 22-36.
<https://doi.org/10.1177/0033688220973732>
- Zhu, Y., Xu, S., Wang, W., Zhang, L., Liu, D., Liu, Z., & Xu, Y. (2022). The impact of online and offline learning motivation on learning performance: The mediating role of positive academic emotion. *Education and Information Technologies*, 27(7), 8921-8938.
<https://doi.org/10.1007/s10639-022-10961-5>

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