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The Anxiety-Enjoyment-Boredom Triangle in Online Foreign Language Learning: A Review from the Perspective of Control-Value Theory

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Abstract: This review employs Pekrun's Control-Value Theory (CVT) to examine enjoyment, anxiety, and boredom in online foreign language learning. CVT distinguishes activity-related emotions (e.g., enjoyment, boredom) from outcome-related emotions (e.g., anxiety). Previous research has rarely explored whether these two types of emotions influence academic engagement and performance through different pathways. By examining the distinct relationships between enjoyment (activity-related), anxiety (outcome-related), and boredom (activity-related) and online foreign language learning effectiveness, this review aims to clarify differences in their underlying mechanisms. Regarding the research gap on the sense of value: English-language literature focuses on the sense of control, while the operational definition of the sense of value is insufficient; Chinese-language literature generally covers both, aligning more closely with CVT's dual-antecedent framework. Both Chinese and English studies agree that positive emotions predict academic outcomes positively, while negative emotions predict them negatively. However, three key discrepancies remain. First, instructional organization and culture may moderate the relationship between emotions and academic outcomes. Second, when multiple emotions are incorporated into the same model, they may exert competing effects on one another. Third, anxiety may either promote or hinder academic engagement. To address these gaps, this review proposes a "sense of value-emotion-outcome" tripartite framework and emphasizes individual differences in the sense of value.

Key words: Anxiety-Enjoyment-Boredom Triangle; Control Value Theory; Online Foreign Language Learning

1. Introduction

As digital and intelligent technologies have developed rapidly and artificial intelligence has become deeply integrated into the field of education—particularly driven by the post-pandemic era—online learning has gradually become the norm. However, academic emotions in online learning contexts exhibit a distinct duality, with positive and negative emotions coexisting. Existing research has found that Chinese EFL learners experience both high levels of enjoyment and moderate levels of boredom in online English classes, while Wang and Li (2022) also reported that learners exhibited relatively high levels of enjoyment

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and moderate levels of boredom after transitioning from face-to-face to online instruction.¹ Existing empirical research consistently indicates that academic emotions are closely associated with learning engagement, academic self-efficacy, and academic performance.^{2,3,4} Nevertheless, current research still faces numerous discrepancies and shortcomings regarding measurement tools, dimensional categorization, and situational adaptability, necessitating systematic review and integration.⁵ Existing research on academic emotions often employs a dichotomous framework of positive versus negative emotions or focuses on the independent examination of a specific emotion (such as anxiety, pleasure, or boredom).^{6,7} However, as online learning is a phased, dynamically evolving process in which different stages are intertwined, academic emotions are often not static or mutually exclusive but rather exhibit complex characteristics of overlap, alternation, and interaction.⁸

It is worth noting that both positive and negative emotions can be situated within the explanatory framework of Control-Value Theory (CVT) and viewed as emotional reactions, states, or expressions arising from an individual's cognitive evaluation of a learning situation.^{9,10} This review focuses on three typical academic emotions in online learning contexts: anxiety, boredom, and enjoyment. Drawing on the analytical framework of Control-Value Theory (CVT), it interprets the mechanisms underlying these three emotions: anxiety is an emotional response that arises when an individual perceives high task value and low sense of control.⁶ Boredom refers to an emotional state that stems from a perception of low task value or an imbalanced sense of control. Specifically, existing evidence suggests that boredom has a curvilinear relationship with control appraisals—both excessively high and excessively low levels of control can trigger boredom.^{5,6} Enjoyment is an emotional expression resulting from the combined effects of a high perception of value and a high sense of control.^{11,12} Based on this, this paper conducts a systematic review of studies on typical academic emotions in online learning contexts from the perspective of the Control-Value Theory, with the aim of providing an integrated reference for theoretical deepening and empirical advancement in this field. Omissions are inevitable, and we welcome feedback, criticism, and corrections from colleagues in the field and the general readership.

2. The Core Concepts

2.1 Control-Value Theory

Control-Value Theory (CVT), proposed by Pekrun in 2006, is a key theoretical framework for academic emotion research.¹² This theory posits that academic emotions arise from two core cognitive evaluations individuals make of learning activities and their outcomes: a sense of control, referring to an individual's judgment of whether they can direct learning activities and predict learning outcomes, and a sense of value.^{3,6,10} Different combinations of these two dimensions give rise to distinct types of academic emotions.⁵

2.2 Academic Emotions

According to the Control-Value Theory, when learners have a high sense of control over learning activities and perceive them as highly valuable, they tend to experience positive emotions, the most representative of which is pleasure—which reflects the individual's interest in and engagement with the learning content, as well as their sense of achievement.^{2,4} When learners face situations of high value but low sense of control (such as feeling unprepared before an important exam), they are prone to anxiety—a typical negative, high-arousal emotion stemming from concerns about the consequences of failure and a sense of uncertainty.^{3,11} Conversely, when learners are exposed to learning situations characterized by both low perceived value and low perceived control over an extended period, these factors gradually accumulate into boredom—a negative, low-arousal emotion manifested as inattention,

a sense of time dragging, and diminished motivation to learn.^{5,14}

The selection of pleasure, anxiety, and boredom as the focus of this review is not only due to their clear theoretical positioning within the Control-Value Theory but also because they precisely cover the most typical and widely studied aspects of academic emotions in online learning contexts.^{1,7} The autonomy and flexibility characteristic of online learning can lead to a learning experience marked by a high sense of control and a high sense of value, thereby fostering feelings of pleasure.^{4,11}

However, they can also induce anxiety due to factors such as technical barriers, lack of interaction, and uncertainty regarding assessment.^{3,6} Meanwhile, prolonged exposure to screen-based, fragmented learning content is highly likely to lead to the accumulation of boredom.^{5,16} These three types of emotions all exhibit high prevalence and significant influence in online learning contexts and, supported by a substantial body of empirical research, are well-suited to serve as the core focus of this review.^{1,4,6,7}

3 Methods

3.1 Search Strategy and Information Sources

The data retrieval for this review was completed in September 2026. Web of Science, Scopus, and China National Knowledge Infrastructure (CNKI) were selected as literature sources, with the search period covering the time from the inception of each database through August 31, 2026. The actual search combined subject headings with free-text terms, constructing search criteria around the three dimensions of emotion, context, and learning. Consequently, the search required that the literature address both burnout and at least one other emotion. When adapting the search to the Scopus and CNKI databases, we adjusted the corresponding search fields, replacing them with matching Chinese and English terms. The Chinese keywords primarily included academic emotions, online learning, foreign languages, pleasure, anxiety, and burnout.

3.2 Inclusion and Exclusion Criteria

Explicit inclusion criteria were developed for literature screening. Eligible studies were required to meet three standards: first, the research setting must be an online foreign language learning or blended learning environment; second, the research subjects must be foreign language learners at any educational level; third, the study must be empirical research that explicitly specifies emotion-related measurement tools. The language of the literature was limited to Chinese or English. The corresponding exclusion criteria were defined as follows: studies focusing exclusively on traditional in-person classroom settings were excluded. Purely theoretical or speculative work without empirical data support was directly eliminated; and duplicate publications and conference abstracts were not considered for inclusion. Given that the definition of online foreign language instruction itself encompasses multiple dimensions, and since the entire literature screening process was conducted independently by two researchers, with each one individually verified for compliance with the established inclusion criteria. After a secondary review, a total of 22 articles were ultimately selected.

4. Research Progress on Academic Emotions in Online Foreign Language Learning from the Perspective of Locus of Control Theory

4.1 Reflections on the Dimensions of the Online Academic Emotion Observation Phase

Pekrun's (2006) Theory of Control and Value offers an explanation of academic emotions that can be focused on the following dimensions, among which object focus directly relates to different "moments" in learning when emotions arise. Activity-related emotions—such as pleasure and boredom, as listed in the literature—occur during learning

activities and are triggered by perceptions of control and value regarding the learning activity or process.^{2,4} Positive, high-arousal activities tend to elicit pleasure, while the opposite tends to elicit boredom.^{3,11} Anxiety, on the other hand, is related to learning outcomes or expectations of those outcomes and falls under the category of outcome-related emotions.^{4,5}

In relevant empirical studies, English-language literature on online academic emotions has primarily focused on valence (positive vs. negative) and arousal (high vs. low), without clearly distinguishing between diachronic and phasic time periods. Activity emotions pertain to the “learning process”—e.g., enjoyment, boredom, frustration. Outcome emotions refer to “success/failure”—e.g., joy, pride, anxiety, shame, hopelessness. Although relevant empirical studies are all based on the Control Value Theory, the “stage” dimension—object focus—embedded within this theoretical framework has not been fully reflected in specific cases, and most empirical studies have not adequately explored this dimension.^{4,6}

Horwitz et al. (1986) argued that anxiety, including test anxiety—the fear of assessment outcomes—is the most direct “post-outcome” emotion.¹⁵ Dewaele and MacIntyre (2016) depicted pleasure as a complex emotion arising from the interaction between challenge and perceived competence, especially when learners surpass their own expectations.¹⁶ This in-the-moment psychological state resembles the “flow” experience.⁴ In the study by Wang and Li (2022), pleasure was defined as a positive state in which challenges are well-matched with coping skills and psychological needs are met, also focusing on the dynamic balance during the learning process.¹ Li and Han (2022) found in an online Chinese EFL context that, among foreign language enjoyment (FLE), foreign language classroom anxiety (FLCA), and foreign language boredom (FLB), only FLCA significantly and negatively predicted actual exam scores, whereas FLE and FLB did not.⁸ This pattern is consistent with the view that FLCA is an outcome-related achievement emotion more directly tied to performance appraisal.⁴

There are no systematic and comprehensive longitudinal or cross-sectional empirical studies in the relevant Chinese literature that simultaneously examine the dynamic relationships among pleasure, anxiety, and boredom or burnout.^{10,17} Relevant studies have focused on the effects of positive or negative emotions—from the perspective of the Control Value Theory—on academic engagement, grades, and learning motivation, with research participants ranging from middle school students to high school students and college students.^{14,18,19} Furthermore, there is no clear articulation of the phasic dimensions of academic emotions.^{10,20}

4.2 Reflections on the Concept of Value in Research on Online Academic Emotions

The similarities among previous empirical studies have primarily focused on the repeated validation of the basic antecedents (sense of control → emotions) and basic effects (anxiety → academic performance) of the Theory of Control; whereas the differences have centered on three key points: (1) the strength of the relationships between emotions is moderated by instructional organization (stratified/non-stratified) and cultural context;^{4,9} (2) When all three emotions are included in the model simultaneously, their respective net effects on academic performance are significantly weaker than when examined individually, indicating competition among these emotional effects;^{4,21} (3) the influence of teacher behavior on emotions is culture-specific, requiring caution when generalizing findings across cultures.^{4,22} Relevant empirical research in English-language literature tends to focus on control appraisal. In contrast, value appraisal is largely mentioned in theory but requires further development in terms of empirical data collection and model construction.^{11,25} Value appraisal is a crucial component of the Control-Value Theory

According to the control-value theory (Pekrun, 2006; 2014; 2018),^{12,24,25} value appraisals reflect the subjective importance or desirability that learners attribute to achievement

activities and their outcomes. Within this framework, intrinsic value refers to the interest, enjoyment, or curiosity aroused by the learning activity itself—here, online or AI-supported foreign language tasks. It can be divided into three categories: first, intrinsic value, which refers to the interest, pleasure, or curiosity that learners derive from online learning tasks or activities themselves;^{2,4} second, utility value, which refers to the practical utility of learning activities in achieving external goals such as passing exams, securing employment, or advancing to higher education;²⁶ and third, attainment value, which refers to the significance of task completion or academic achievement in the construction of personal identity and self-concept.^{11,27}

In the literature cited above, references to a sense of control mostly appear in the context of theoretical support; neither models nor empirical studies have established a corresponding measure for a sense of value or provided a detailed breakdown of this concept. A sense of value (value appraisal) is itself a composite concept comprising multiple subdimensions—such as intrinsic value, instrumental value, and achievement value—and lacks a mature, “standardized” scale like the self-efficacy scale used to measure a sense of control. Most relevant empirical studies use the original CVT version by Pekrun (2006),¹² which provides a more thorough and clear theoretical exposition of the sense of control. In contrast, the internal structure of value appraisal (intrinsic value, achievement value, instrumental value, etc.) was only systematically organized in Pekrun’s 2018 and 2024 articles.^{24,25} Furthermore, when assessing a sense of value, we typically assume that choosing to learn a foreign language implies attributing a certain significance to it.

Although previous literature has not specifically subdivided the sense of value, it has generally been measured using the concept of “attitude.” Wu (2025) correlates the sense of value with attitudes, categorizing relevant attitudes into three dimensions: attitudes toward the foreign language itself, attitudes toward the culture associated with the foreign language, and attitudes toward foreign language teachers.²⁸ A positive attitude toward the foreign language itself implies that learners recognize the significance and value of learning it; a positive attitude toward the culture associated with the foreign language implies that learners attribute value to their foreign language learning at the level of cultural identity; and a positive attitude toward foreign language teachers implies that learners value the learning opportunities provided through the teacher as a channel.²⁹ Learners with positive attitudes toward the foreign language and its culture experience significantly higher levels of enjoyment in the classroom. This is because positive attitudes lead them to perceive learning activities as “worth doing” (high value), and this high-value assessment, combined with a certain sense of control, triggers enjoyment.

In contrast, learners with negative attitudes toward the foreign language perceive learning activities as meaningless. This low-value assessment directly triggers boredom, even when their sense of control is moderate. Thus, a learner with a high level of proficiency (high locus of control) but a negative attitude toward the foreign language culture (low perceived value) may exhibit a “low anxiety but high boredom” emotional pattern; a negative attitude toward the foreign language also increases the likelihood of anxiety. When learners perceive learning outcomes as important (exams are valuable) but lack intrinsic interest in the process, the combination of “high outcome value + low process value” tends to induce worry and anxiety about the outcomes.

As evidenced by the various combinations of processes and values in the research findings above, there are significant individual differences in students’ value appraisals of learning tasks (including intrinsic value, instrumental value, and achievement value) in online foreign language learning contexts. Even when technological resources and interactive conditions (control resources) are sufficient, a low sense of intrinsic value may still lead to negative academic emotions such as boredom, which in turn can undermine learning

outcomes. Therefore, the research framework for online learning effectiveness must be expanded from the traditional “technology-interaction-achievement” model to a tripartite interactive model of “sense of value-emotion-outcome,” focusing on students’ subjective construction of meaning regarding online learning content.

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