

AN INVESTIGATION INTO CHINESE WRITING ANXIETY, SELF-EFFICACY, AND PERFORMANCE AMONG CHINESE AS A FOREIGN LANGUAGE (CFL) STUDENTS AT A THAI UNIVERSITY

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ABSTRACT

Writing in Chinese as a Foreign Language (CFL) represents a multifaceted cognitive endeavor that is frequently obstructed by significant affective factors. Because the mastery of Chinese characters and grammar requires intense mental processing, understanding the complex interplay between psychological barriers and learner confidence is essential for improving writing outcomes. However, the specific mechanisms linking affective barriers to CFL learner confidence in the Thai context remain underexplored. To address this gap, this study investigated the correlations among writing anxiety, self-efficacy, and actual writing performance to identify primary anxiety sources and determine how distinct efficacy constructs correlate with exam results. A quantitative research design was employed involving 90 undergraduate students at a Thai university. The study assessed levels of writing anxiety, multidimensional self-efficacy (performance, language, and self-regulated), and writing performance through statistical correlation analysis. The findings revealed that participants experienced moderate to high levels of anxiety, with somatic symptoms presenting as the most severe manifestation. Primary triggers included the fear of character errors, vocabulary limitations, and pressure regarding grammatical perfectionism. Statistical analysis demonstrated significant negative correlations between writing anxiety and both exam scores and self-efficacy, whereas writing performance showed strong positive associations with all efficacy constructs, particularly language efficacy. These findings highlight the detrimental impact of anxiety on writing outcomes. Beyond these correlations, results indicated a critical paradox where high self-regulatory efficacy coexisted with high somatic anxiety, suggesting that the cognitive load of character retrieval under time constraints overrides the protective effects of self-regulation. The study concludes by proposing a 'Cognitive-Affective Scaffolding Framework' to mitigate these specific stressors.

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1. Introduction

Writing is widely recognized as one of the most complex cognitive activities in second language acquisition, requiring the simultaneous coordination of linguistic knowledge, cognitive processing, and discourse organization. When writing in a foreign language, learners often struggle not only with limited linguistic proficiency but also with significant affective barriers, such as insufficient writing competence and debilitating anxiety (Erkan & Saban, 2011). From an affective perspective, Horwitz et al. (1986) conceptualized foreign language anxiety as a situation-specific construct arising from learners' self-perceptions, beliefs, and emotional responses toward language learning. This anxiety can disrupt cognitive processing and hinder performance in language tasks. Building on this theoretical foundation, subsequent researchers have argued that writing, as a highly evaluative and cognitively demanding skill, constitutes a particularly anxiety-provoking context, leading to the conceptualization of second language writing anxiety as a distinct yet related construct (e.g., Cheng, 2004).

The affective dimension of writing is critical. As Cheng (2004) emphasized, writing involves not merely the cognitive act of generating text but also a complex interplay of emotions and attitudes. These affective factors strongly influence how learners approach writing tasks, often functioning as a psychological filter that either facilitates or hinders performance. Among these variables, anxiety—specifically Foreign Language Writing Anxiety (FLWA)—has been identified as a significant impediment to effective writing. It disrupts the writing process by making it difficult for students to organize ideas, retrieve vocabulary, and produce coherent texts.

Cheng (2004) conceptualized FLWA as a domain-specific anxiety that manifests distinctly during the writing process, differentiating it from general foreign language classroom anxiety. Because learning to write in another language is cognitively demanding, students frequently face a dual burden: mastering linguistic mechanics while coping with the emotional stress associated with performance evaluation (Rezaei & Jafari, 2014). This anxiety may manifest in somatic symptoms (e.g., nervousness), avoidance behaviors (e.g., procrastination), and cognitive interference (e.g., writer's block). As Reagan et al. (2023) observed, anxiety remains one of the most extensively studied affective

variables in second language acquisition research. High anxiety levels can occupy working memory capacity, thereby reducing the cognitive resources available for composing and ultimately degrading writing performance, which in turn reinforces negative emotional cycles.

Parallel to anxiety, the construct of self-efficacy plays a pivotal role in shaping writing outcomes. Rooted in Albert Bandura's Social Cognitive Theory (1997), foreign language writing self-efficacy refers to learners' beliefs in their capability to successfully perform writing tasks in a target language. These beliefs influence motivation, persistence, strategy use, and resilience when facing challenges (Raoofi & Maroofi, 2017; L. S. Teng et al., 2018). Empirical studies in English as a Foreign Language (EFL) contexts consistently demonstrate that higher levels of writing self-efficacy are associated with greater engagement, more strategic learning behaviors, and improved writing performance (Golparvar & Khafi, 2021; Med, 2026; Tsao, 2021). Conversely, low self-efficacy tends to intensify writing anxiety and contribute to poorer performance (Kirmizi & Kirmizi, 2015; Soleimani et al., 2020; Yoon, 2022).

Empirical evidence from the Thai EFL context further supports the close interrelationship among writing anxiety, writing self-efficacy, and writing performance. Research indicates that writing self-efficacy is positively associated with writing achievement, whereas writing anxiety is negatively associated with performance; moreover, these two constructs are significantly and inversely correlated (Vleeschauwer, 2023). Similar patterns have been observed across other EFL contexts, including Taiwan, mainland China, Iraq, and Kurdistan, where stronger writing self-beliefs are consistently linked to lower anxiety and better writing outcomes (Ho, 2016; Huang et al., 2024; Sabti et al., 2019; Soleimani et al., 2020).

Importantly, writing self-efficacy is not a fixed trait but a dynamic and malleable construct. It develops over time in response to both environmental and internal influences, particularly through mastery experiences, vicarious learning, social persuasion, and emotional regulation (Almutlaq & Etherington, 2018; Zhang & Zhang, 2024). Understanding and enhancing writing self-efficacy may serve as a practical pathway to mitigating anxiety and improving foreign language writing competence.

Despite the extensive body of research conducted in EFL contexts, comparatively limited attention has been paid to the relationship between writing anxiety and self-efficacy in Chinese as a Foreign Language (CFL), particularly

within Southeast Asian settings. This research gap is especially evident in Thailand, where Chinese language education has expanded rapidly over the past two decades.

Building upon the *Research Report for Developing the Chinese Language Teaching and Learning System in Thailand: Higher Education Level* (Office of the Education Council Thailand, 2017) and the recently implemented *Guide to Opening Special Chinese Classrooms* (OBEC, 2024), national policy has shifted toward aligning curricula with international standards (HSK) and ensuring instructional continuity. Consequently, under the Thailand 4.0 initiative, Chinese proficiency has become increasingly aligned with national economic development and professional employability (Kaewmanee et al., 2022). Thailand serves as a critical case study for CFL research in Southeast Asia due to its unique position: it has one of the largest populations of Chinese learners globally (Arphattananon, 2018; Yang & Sikakaew, 2025), yet the transition from a phonetic mother tongue (Thai) to a logographic target language (Chinese) creates a unique cognitive-affective friction that is not fully captured by EFL theories (Wasinanon, 2022). Nevertheless, empirical research examining the interplay among writing anxiety, writing self-efficacy, and writing performance among Thai university CFL students remains limited (Ning & Tananuraksakul, 2024).

Thai learners face a considerable orthographic transition from their native phonetic writing system to the logographic Chinese character system. This shift imposes substantial cognitive demands and renders writing accuracy highly evaluative (Wasinanon, 2022). Consequently, writing anxiety in this population often exceeds anxiety associated with other language skills (Lin, 2024). Furthermore, this affective experience is shaped by Thai socio-cultural values, particularly face-saving norms and social deference, which may heighten sensitivity to correction and public error (Ning & Tananuraksakul, 2024).

University students in Thailand represent a high-stakes learning environment where Chinese proficiency is directly linked to career competitiveness. Therefore, their writing anxiety and self-efficacy are not just academic hurdles but professional determinants, making this sample highly representative of the broader regional trend in functional Chinese acquisition. As university-level writing tasks become increasingly complex, discrepancies between task demands and learners perceived self-efficacy may intensify. Examining these dynamics is therefore theoretically and pedagogically

significant, as it contributes to a deeper understanding of the affective mechanisms underlying writing development in a prominent Southeast Asian CFL context.

Previous studies in Thai CFL settings suggest that writing anxiety often surpasses listening, speaking, and reading anxieties. However, existing research has largely focused on general foreign language anxiety or overall CFL learning challenges, without systematically investigating the interrelationships among writing anxiety, writing self-efficacy, and actual writing performance among Thai university students.

Accordingly, this study aims to address this gap by exploring the intricate relationships among CFL writing anxiety, writing self-efficacy, and writing performance within the specific cultural and educational context of Thai university students. Employing a quantitative research design, this study seeks to examine the prevalence and sources of writing anxiety, assess levels of writing self-efficacy, and analyze how these constructions interact to influence writing outcomes.

Specifically, the research questions guiding this study are: RQ1: What is the level of writing anxiety among Thai CFL university students? RQ2: What are the predominant causes of writing anxiety in Thai CFL university students? RQ3: What is the level of writing self-efficacy among Thai CFL university students? RQ4: What is the relationship between writing anxiety, writing self-efficacy, and writing performance among Thai CFL university students?

2. Literature Review

2.1 Theoretical Framework: Affective Dynamics in L2 Writing

To systematically understand the psychological mechanisms underlying foreign language writing, this study is grounded in an integrated theoretical framework encompassing Pekrun's (2006, 2024) Control-Value Theory (CVT) of achievement emotions, Bandura's (1997) Social Cognitive Theory, and cognitive processing perspectives on anxiety. Traditionally, writing anxiety and self-efficacy have been studied as parallel variables; however, broader affective learning theories posit that they are deeply interconnected within a learner's cognitive-emotional system.

Pekrun's Control-Value Theory provides a robust overarching lens for this interplay. According to CVT, achievement emotions—such as writing anxiety, are primarily triggered by learners' cognitive appraisals of two factors: control and value (Pekrun, 2024). In the context of writing in Chinese as a Foreign Language (CFL), "value" refers to the perceived importance of the writing task (e.g., academic success or future employability), while "control" is fundamentally synonymous with writing self-efficacy (Bandura, 1997). When Thai university learners place high value on Chinese proficiency but appraise their control over the complex logographic writing system as low (Wasinanon, 2022), negative achievement emotions like anxiety are strongly activated. Conversely, high self-efficacy acts as a positive control appraisal, which down-regulates anxiety and fosters productive engagement.

This affective dynamic directly impacts cognitive execution. Drawing upon Krashen's (1982) Affective Filter Hypothesis, heightened anxiety acts as a psychological block that prevents learners from fully utilizing their acquired linguistic competence during composition. Furthermore, from a cognitive processing standpoint—such as Eysenck et al. (2007) Attentional Control Theory—severe writing anxiety consumes limited working memory capacity. Because composing in Chinese requires intense cognitive resources for character retrieval, grammatical structuring, and discourse organization (Kellogg, 1996), the intrusion of anxiety-induced worry significantly depletes the cognitive bandwidth available for actual writing (Güvendir & Uzun, 2023).

2.2 Foreign language writing anxiety and causes

The acquisition of foreign language writing is a complex process. Learners often face challenges in developing writing skills and managing the psychological burden of anxiety, which can significantly hinder their progress and performance (Cheng, 2004; Rezaei & Jafari, 2014). Foreign language writing anxiety is a negative emotional response experienced by learners when writing in a non-native language. It is characterized by somatic, cognitive, and avoidance symptoms (Cheng, 2004), and is influenced by factors such as self-confidence, linguistic competence, writing proficiency, and task complexity. These factors often contribute to reduced writing performance and greater difficulty in writing tasks (Güvendir & Uzun, 2023; Han & Hiver, 2018; Teimouri et al., 2019). Empirical studies have revealed how anxiety impacts writing performance. High levels of anxiety can lead to a range of negative outcomes, including reduced

motivation, avoidance of writing tasks, wrote simpler and shorter pieces of writings with less quality than the low-anxious peers and achieve poor scores (Blasco, 2016; Y. Cheng, 2002; Güvendir & Uzun, 2023; Kirmizi & Kirmizi, 2015; Soleimani et al., 2020). Anxiety can also impair cognitive functions such as memory and attention, which are crucial for organizing and articulating ideas in writing. Furthermore, studies have shown that anxiety can create a vicious cycle: learners who experience anxiety while writing are likely to perform poorly, which in turn increases their anxiety and further hampers their writing ability (Mavrou, 2020; Rahimi & Zhang, 2019; Zabihi, 2018). Several causes of foreign language writing anxiety have been identified. These causes can be categorized into learner-related and environment-related factors. Learner-related causes: linguistic difficulties, low self-confidence, lack of writing practice, fear of negative comments, pressure for perfection, and lack of topical knowledge. Environment-related causes: time pressure, frequency of writing tasks, task complexity, negative evaluation, and insufficient writing instruction (Cheng, 2004; Jian & Xin, 2019; Kirmizi & Kirmizi, 2015; Rezaei & Jafari, 2014).

In the Thai EFL context, this anxiety is pervasive. University students often experience moderate to high levels of apprehension, primarily driven by concerns over grammatical precision and a deep-seated fear of negative evaluation (Vleeschauwer, 2023; Akkakoson, 2016). This affective barrier is historically rooted in Thailand's traditional pedagogical landscape, where a long-term emphasis on grammar-translation and exam-oriented instruction has undermined communicative confidence (Prapunta, 2017). Consequently, such anxiety manifests as functional struggles in idea development and paragraph structuring (Pitukwong & Saraiwang, 2024). Crucially, research identifies writing self-efficacy as a key protective factor: learners with higher self-belief not only report lower anxiety but achieve significantly better outcomes (Sabti et al., 2019; Soleimani et al., 2020).

Transitioning to the domain of Chinese as a Foreign Language (CFL), similar psychological dynamics are observed. Jian and Xin (2019) examined CFL learners in China and identified two major factors affecting writing anxiety: (1) insufficient language expression and writing skills and (2) fear of evaluation. The study found that increasing writing practice could alleviate writing anxiety. Students with a positive outlook believed that overcoming language difficulties could reduce anxiety, whereas others felt that higher writing skill demands would maintain or even increase their anxiety. In the Thai CFL context, research has shown that writing anxiety is more severe than listening, speaking, or reading

anxieties. This is primarily due to the complexity of Chinese characters and grammar (Lin, 2024; Ning & Tananuraksakul, 2024). However, while these studies provide a general overview of CFL learning anxiety, they do not specifically address writing anxiety and its impact on writing performance among Thai learners.

2.3 Foreign language writer writing self-efficacy

Self-efficacy theory, proposed by Bandura (1997), suggests that individuals' beliefs in their capabilities affect their actions and achievements. In the context of foreign language writing, foreign language writer's writing self-efficacy refers to a learner's confidence in their ability to perform writing tasks in a second language. This concept is crucial because it influences how learners approach writing tasks, writing performance, engage with feedback, and ultimately improve their writing skills (Teng et al., 2018).

Bruning et al. (2013) identified three dimensions of writing self-efficacy: ideation, writing conventions, and self-regulation. Based on this model, Teng et al. (2018) developed a validated instrument measuring three dimensions of L2 writing self-efficacy: (1) Linguistic Self-Efficacy: Learners' judgments about their language and discourse skills needed for writing. (2) Self-Regulatory Efficacy: Learners' ability to set goals, monitor, and evaluate their writing processes. (3) Performance Self-Efficacy: Learners' confidence in completing writing tasks and assignments successfully.

Writing self-efficacy serves as a motivational engine in academic settings. (M. F. Teng & Wang, 2022) found that L2 learners' writing self-efficacy were strong predictors of EFL students' academic writing outcomes in China. Learners with high efficacy tend to produce more coherent and linguistically accurate compositions. And the role of self-efficacy becomes more prominent when students write in a second language, during which they often face increased cognitive, emotional, and social challenges. A strong sense of efficacy helps buffer against the stress of writing in a foreign language, enabling learners to view errors as part of the learning process rather than failures (Hirvela et al., 2016; Tsao, 2021; Xu et al., 2023).

2.4 The correlation between foreign language writing anxiety, writing self-efficacy and writing performance

Empirical research has extensively explored the tripartite relationship between anxiety, self-efficacy, and performance in EFL contexts. The literature suggests a complex interplay characterized by three key dynamics.

First, studies show that foreign writing anxiety is negatively correlated with writing performance. This anxiety can lead to poorer outcomes in writing tasks, reducing both the complexity and fluency of written work (Cheng, 2004). Moreover, writing anxiety can result in avoidance behaviors, where students may delay or avoid writing tasks altogether (Surur & Dengela, 2019).

Second, writing self-efficacy demonstrates a strong positive correlation with writing performance. Across diverse cultural EFL contexts—including Thai, Iraqi, Chinese, and Turkish learner populations—students who believe in their writing capabilities consistently achieve higher scores (Zhou et al., 2022; Kirmizi & Kirmizi, 2015; Soleimani et al., 2020; Vleeschauwer, 2023). Efficacy fuels persistence, allowing learners to sustain effort during the cognitively demanding task of L2 composition.

Third, writing anxiety and self-efficacy are negatively correlated, with higher levels of self-efficacy generally associated with lower levels of anxiety. This negative correlation was observed in the study on Spanish, Thai, Turkish, Iraqi, Korean, and Chinese EFL learners (Blasco, 2016; Kirmizi & Kirmizi, 2015; Zhou et.al, 2022; Soleimani et al., 2020; Vleeschauwer, 2023; Yoon, 2022).

Within the specific educational landscape of Thailand, writing self-efficacy has been extensively explored in the EFL domain, providing a critical comparative baseline for CFL research. Thai university students often face significant affective hurdles in academic writing, historically stemming from traditional instructional methods that heavily emphasize grammar-translation and error correction over expressive fluency (Prapunta, 2017). Consequently, building robust writing self-efficacy is paramount for these students. Empirical evidence from the Thai EFL context demonstrates that writing self-efficacy is positively associated with writing achievement and serves as a crucial buffer against writing anxiety (Vleeschauwer, 2023). Studies by local scholars further illuminate this dynamic; for instance, recent research by Payaprom and Payaprom (2025) found a significant positive relationship among writing self-efficacy, metacognitive strategy use, and overall proficiency, noting that self-efficacy acts as a catalyst for effective planning and revision. Similarly, Akkakoson (2016)

emphasized that when Thai students lack confidence in their linguistic resources, their affective filter rises, impeding their ability to organize discourse effectively.

However, while these efficacy-performance dynamics are well-documented for Thai learners acquiring alphabetic languages like English, it remains largely unexplored whether this strong protective effect translates to the Chinese as a Foreign Language (CFL) context. The transition from a phonetic mother tongue to the logographic Chinese characters (Hanzi) system introduces unique orthographic and lexical friction. Therefore, it is imperative to investigate whether high self-efficacy can similarly mitigate the intense anxiety associated with CFL writing among Thai university students, thereby extending existing EFL paradigms into the realm of logographic language acquisition.

Overall, the literature suggests that foreign language writing self-efficacy and writing anxiety are critical in influencing writing performance, strategy use, motivation, and engagement. In traditional alphabetic language acquisition, higher self-efficacy generally leads to better writing outcomes and predictably lower anxiety. However, viewing these variables solely through a one-dimensional, linear lens—where high efficacy automatically neutralizes all forms of anxiety—may oversimplify the cognitive realities of learning a logographic language. The intense orthographic demands of Chinese character retrieval, particularly under time constraints, may create a paradoxical dynamic where high self-regulatory efficacy (e.g., strong goal-setting and self-imposed expectations) coexists with, or even exacerbates, high physiological pressure. While standard correlations are well-documented in EFL contexts, there remains a paucity of research examining these specific, potentially non-linear dynamics among Thai learners of Chinese. Investigating this complex relationship is essential for developing nuanced pedagogical interventions that do not merely aim to boost general efficacy but specifically address the unique somatic friction of CFL writing.

3. Methodology

3.1 Research Design and Participants

This study employed a quantitative research design to investigate the levels and causes of Chinese as a Foreign Language (CFL) writing anxiety, assess

writing self-efficacy, and examine the correlations among anxiety, efficacy, and writing performance.

Participants were recruited using purposive sampling, targeting students actively engaged in advanced writing tasks. The final sample consisted of 90 third-year undergraduate students (10 males, 80 females) majoring in Chinese Language and Culture at Mae Fah Luang University (MFU) in northern Thailand. The participants had an average age of 20.99 years and an average Chinese learning history of 5.77 years. These students were enrolled in a compulsory Chinese writing course during the second semester (January – May 2025) of the 2024 academic year.

This specific institutional context strengthens the sample's representativeness, as MFU serves as a prominent hub for Chinese language education in the region. Third-year students were deliberately selected because they possess a proficiency ranging from intermediate to advanced levels (HSK 4–5). This transitional phase is critical; intermediate-level learners possess adequate linguistic resources for discourse-level writing while continuing to develop strategic abilities (Kellogg, 1996; Manchón, 2011). Furthermore, the progression to advanced levels requires substantial lexical expansion (Ministry of Education of the People's Republic of China, 2021), making this demographic ideal for observing the cognitive and affective friction that occurs during complex academic composition.

A sample size of 90 is statistically robust for the intended correlational design. Based on established statistical power guidelines (Cohen, 2016), a minimum sample size of 85 participants is sufficient to reliably detect a medium effect size ($r = .30$) with a statistical power of .80 at a standard alpha level of .05.

3.2 Instruments

3.2.1 Questionnaire I: Foreign Language Writing Anxiety (FLWA)

The first questionnaire, adapted from Cheng (2004), contains 22 items rated on a five-point Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). Items 1, 4, 17, 18, and 22 are negatively worded and were reverse-scored prior to analysis. Higher total scores reflect greater levels of writing anxiety. The scale measures three dimensions: Cognitive Anxiety (e.g., fear of negative evaluation), Somatic Anxiety (e.g., physiological tension), and Avoidance Behavior (e.g., tendency to evade writing tasks). The Cronbach's

alpha for the FLWA in this study was 0.89, indicating high internal consistency reliability (Taber, 2018).

3.2.2 Questionnaire II: Causes of Foreign Language Writing Anxiety (CFLWA)

To investigate the specific causes of anxiety for Thai CFL learners, a 17-item questionnaire was adapted from Kirmizi and Kirmizi (2015). The items were modified to specifically address the Chinese writing context (e.g., challenges with Chinese characters). The scale covers five factors: language/structural challenges, psychological factors, writing skills, feedback/evaluation, and environmental factors. The Cronbach's alpha for the CFLWA was 0.75.

3.2.3 Questionnaire III: Writing Self-Efficacy

The self-efficacy questionnaire, developed and validated by Teng et al. (2018), comprises 20 items distributed across three dimensions: Linguistic Self-Efficacy (7 items), Self-Regulatory Efficacy (6 items), and Performance Self-Efficacy (7 items). These subscales measure learners' confidence in their linguistic skills, goal-setting abilities, and overall task success, respectively. The Cronbach's alpha for this scale was 0.83.

3.2.4 Writing Assessments

Writing performance was measured through four compositions (one narrative, one expository, and two argumentative), each requiring approximately 400 Chinese characters. The scoring rubrics were adapted from Brown (2006) to evaluate three primary dimensions: Content, Organization, and Language Use. Additionally, recognizing the specific challenges of the logographic script, a fourth dimension—Chinese Character Proficiency—was incorporated to assess stroke order and orthographic accuracy (Yan & Lin, 2023).

Consequently, writing performance was assessed across these four distinct dimensions on a five-point scale (1 to 5), ensuring a comprehensive evaluation of the test-takers' proficiency. The compositions were independently scored by two experienced writing instructors, each with a minimum of five years of expertise in evaluating student compositions. Prior to scoring, the raters underwent a calibration session to ensure consistency in interpreting the rubrics and evaluating text coherence. Each rater assigned a score ranging from 1 to 5 for each of the four dimensions. The inter-rater reliability was calculated using Pearson's

correlation coefficient, yielding a strong agreement ($r = .89$). The final score for each composition was calculated as the mean of the two raters' evaluations.

3.3 Procedures

To ensure comprehension, all original English questionnaires were translated into Thai by two bilingual experts. Data collection occurred after the completion of the writing assessments to prevent the survey questions from influencing the students' writing performance. The questionnaires were administered via Google Forms, yielding 90 valid responses.

3.4 Data Analysis

Data analysis was conducted using JASP (Version 0.18.3). Descriptive statistics, including means and standard deviations, were calculated to determine the levels of writing anxiety and self-efficacy among the participants. Pearson product-moment correlation analysis was performed to examine the relationships among writing anxiety, self-efficacy, and writing performance.

4. Results

4.1 The results of CFL writing anxiety

Table 1 The level of CFL writing Anxiety

Writing Anxiety	Low		Medium		High	
	N.	%	N.	%	N.	%
Cognitive Anxiety			52	57.78%	38	42.42%
Somatic Anxiety			34	37.78%	56	62.22%
Avoidance Behavior			73	81.11%	17	18.89%

The first primary aim of the present study (RQ1) was to measure the writing anxiety levels of tertiary CFL learners. To achieve this, the survey results of the 90 participants were categorized into low, medium, and high levels. In accordance with the method proposed by Kirmizi and Kirmizi (2015), the maximum scores for each variable were divided into three equal intervals to establish the cut-off points. Based on this classification, the thresholds for the variables are defined as follows: cognitive anxiety (low=1-13, medium=13-26, high=26-40), somatic anxiety (low=1-12, medium=12-24, high=24-35), and avoidance behavior (low=1-12, medium=12-24, high=24-35).

The results, presented in Table 1, indicate that none of the students reported low levels of cognitive or somatic anxiety. The data reveals that somatic anxiety is the most severe form of writing anxiety among this demographic, with 62.22%

of participants reporting high levels. Cognitive anxiety—which involves worries and negative thoughts about writing—is predominantly experienced at a medium level (57.78%). Avoidance behavior, encompassing tendencies to evade writing tasks entirely, is mostly observed at a medium level (81.11%), with the absence of any students reporting low levels of avoidance.

Table 2 The descriptive statistics of CFL writing anxiety

CFL Writing Anxiety	Mean	SD
Cognitive anxiety (CA)		
CA1. While writing compositions in Chinese, I'm not nervous at all.	2.70	0.87
CA2. While writing Chinese compositions, I feel worried and uneasy if I know they will be evaluated.	4.08	1.05
CA3. I don't worry that my Chinese compositions are a lot worse than those of other students.	3.09	1.07
CA4. If my Chinese compositions are to be evaluated, I would worry about getting a very poor grade.	4.00	1.19
CA5. I'm afraid that other students would mock my Chinese compositions if they read them.	2.80	1.23
CA6. I don't worry at all about what other people would think of my Chinese compositions.	3.53	1.00
CA7. I'm afraid of my Chinese compositions being chosen as the sample to be discussed in class.	3.87	0.97
CA8. I'm not afraid at all that my Chinese compositions would be rated as very poor.	2.68	1.07
Somatic Anxiety		
SA1. I feel my heart pounding when I write Chinese compositions under time constraints.	4.67	0.85
SA2. My mind often goes blank when I start to work on a Chinese composition.	3.26	1.08
SA3. I tremble or perspire when I write Chinese compositions under time pressure.	3.41	1.14
SA4. My thoughts become jumbled when I write Chinese compositions under time constraints.	4.03	0.87
SA5. I often feel panic when I write Chinese compositions under time constraints.	4.01	0.98
SA6. I freeze up when unexpectedly asked to write Chinese compositions.	3.83	0.94
SA7. I usually feel my whole body become rigid and tense when I write Chinese compositions.	3.28	1.00

CFL Writing Anxiety	Mean	SD
Avoidance Behavior (AB)		
AB1. I often choose to write down my thoughts in Chinese.	3.81	0.83
AB2. I usually do my best to avoid writing Chinese compositions.	2.79	1.09
AB3. I do my best to avoid situations in which I have to write in Chinese.	2.77	1.13
AB4. Unless I have no choice, I would not use Chinese to write compositions.	2.80	0.94
AB5. I would do my best to excuse myself if asked to write Chinese compositions.	3.05	1.02
AB6. I usually seek every possible chance to write Chinese compositions outside of class.	3.00	1.02
AB7. Whenever possible, I would use Chinese to write compositions.	3.26	1.09

The results indicate that students experienced moderate to high levels of cognitive anxiety, particularly concerning evaluation apprehension. As shown in Table 2, the highest mean scores were observed for items related to teacher evaluation and grading. Specifically, Item CA2 (While writing Chinese compositions, I feel worried and uneasy if I know they will be evaluated) yielded the highest mean ($M = 4.08$, $SD = 1.05$), followed closely by Item CA4 ("If my Chinese composition is to be evaluated, I would worry about getting a very poor grade"; $M = 4.00$, $SD = 1.19$). Additionally, students expressed significant concern about their work being publicly scrutinized in class (Item CA7; $M = 3.87$, $SD = 0.97$). In contrast, items reflecting fear of peer derision or general confidence showed relatively lower anxiety levels. For instance, Item CA5 (I'm afraid that other students would mock my Chinese compositions if they read them) had a mean of 2.80 ($SD = 1.23$), suggesting that fear of negative evaluation from teachers contributes more to cognitive anxiety than fear of peer judgment.

Analysis of the Somatic Anxiety subscale reveals that time constraints are a primary trigger for physiological symptoms. Item SA1 ("I feel my heart pounding when I write Chinese compositions under time constraints") reported the highest mean score across the entire survey ($M = 4.67$, $SD = 0.85$), indicating a severe physiological response to timed writing tasks. Similarly, students reported that their thoughts became jumbled (Item SA4; $M = 4.03$, $SD = 0.87$) and they felt panicked (Item SA5; $M = 4.01$, $SD = 0.98$) under time pressure. The lowest score in this category was for general somatic tension (Item SA2; $M =$

3.26, SD = 1.08), further supporting the inference that somatic anxiety in this context is highly situational and heavily dependent on time constraints.

Despite reporting high levels of somatic anxiety and evaluation apprehension, the participants reported relatively low levels of avoidance behavior. Interestingly, the item with the highest mean in this category was positively phrased: Item AB1 (I often choose to write down my thoughts in Chinese) (M = 3.81, SD = 0.83), indicating a willingness to engage in writing tasks. Conversely, items explicitly describing avoidance strategies received lower ratings, such as Item AB3 (I do my best to avoid situations in which I have to write in Chinese; M = 2.77, SD = 1.13) and Item AB2 (I usually do my best to avoid writing Chinese compositions; M = 2.79, SD = 1.09). This discrepancy suggests that while students experience anxiety, it does not necessarily translate into active behavioral avoidance of writing tasks.

4.2 The causes of CFL writing anxiety

Table 3 The descriptive statistics of the causes of writing anxiety

The causes of writing anxiety	Mean	SD
1. Problems with topic selection.	3.40	0.97
2. Inadequate mastery of vocabulary.	4.44	0.71
3. Sentence structures	3.87	0.86
4. Grammatical errors.	4.33	0.90
5. Chinese Characters errors.	4.34	0.70
6. Negative evaluation of the teacher.	3.66	1.22
7. Negative evaluation of the classmates.	2.98	1.19
8. Lack of writing skills.	3.87	1.06
9. Lack of sufficient writing practice inside the classroom.	3.40	0.94
10. Lack of sufficient writing practice outside classroom.	3.84	1.00
11. Lack of writing techniques.	4.00	0.98
12. Teacher's feedback is sufficient and effective.	2.76	0.92
13. Fear of writing Chinese writing tests.	3.78	1.15
14. Lack of confidence.	4.02	0.93
15. Pressure for perfect writing work.	4.35	0.70
16. Time pressure.	4.26	0.75
17. Frequency of writing assignments.	3.75	0.84

To address the second research question (RQ2), the findings in Table 3 reveal several high-anxiety triggers. The highest-rated factor was inadequate

vocabulary mastery (mean = 4.44, SD = 0.71). The data also shows notably high scores for Chinese character errors (mean = 4.34, SD = 0.70) and grammatical errors (mean = 4.33, SD = 0.90). Furthermore, the pressure to produce perfect writing (mean = 4.35, SD = 0.70) and time pressure (mean = 4.26, SD = 0.75) were identified as significant environmental and psychological stressors. Additionally, a lack of specific writing techniques (mean = 4.00, SD = 0.98) contributed heavily to the students' reported anxiety.

4.3 The results of CFL writing self-efficacy

Table 4 The level of CFL writing self-efficacy

Self-writing efficacy	Low		Medium		High	
	N.	%	N.	%	N.	%
Linguistics efficacy	2	2.22%	43	47.78%	45	50%
Self-regulatory efficacy			26	28.89%	64	71.11%
Performance efficacy	2	2.22%	60	66.67%	28	31.11%

The third aim of the study (RQ3) was to determine the level of Thai CFL students' writing self-efficacy. In order to analyze CFL learners' writing self-efficacy with the sub-dimensions, the results of 90 participants were grouped as low, medium, and high. To determine the cut-off points, the maximum scores were divided into three equal ranges, following the method outlined by Kirmizi & Kirmizi (2015). Based on this approach, the thresholds for each variable are as follows: linguistics efficacy (low=1-12, medium=12-24, high=24-35), self-regulatory efficacy (low=1-10, medium=10-20, high=20-30), and performance efficacy (low=1-12, medium=12-24, high=24-35).

The results in Table 4 reveal that the majority of students exhibit a high level of self-regulatory efficacy (71.11%). Linguistic efficacy is also relatively high, with 50% of students reporting high confidence in their language knowledge, and 47.78% report a medium level. In contrast, performance efficacy shows a more moderate distribution: 66.67% of students reported medium confidence and only 31.11% expressed high confidence. Very few students reported low efficacy across any dimension, with only 2.22% in both linguistic and performance areas, and none in self-regulatory efficacy.

Table 5 The descriptive statistics of the students' self-writing efficacy

Self-Writing Efficacy	Mean	SD
Language Self -efficacy (LS)		
LS1 I can correctly use parts of speech (e.g. nouns, verbs, adjectives) in writing.	3.89	0.80
LS2 I can write a simple sentence with grammatical structure.	4.07	0.74
LS3 I can write compound and complex sentences with grammatical structures.	3.19	1.04
LS4 I can write a composition with a clear organization or structure.	3.30	0.94
LS5 I can revise wordy or confusing sentences of my writing.	3.12	0.76
LS6 I can revise my composition to make it better organized.	3.39	0.94
LS7 I can revise basic grammar errors in my writing.	3.42	0.87
Self-regulatory Efficacy (SRE)		SD
SRE1 I can realize my goal to improve my writing.	3.66	0.70
SRE2 I can think of my goals before writing.	3.90	0.67
SRE3 I can think of different ways to help me to plan before writing.	4.00	0.70
SRE4 I can evaluate whether I achieve my goal in writing.	3.23	0.80
SRE5 I can evaluate my strength and weakness in writing.	3.59	1.00
SRE6 I can evaluate whether the composition is good or bad.	3.40	0.91
Performance efficacy (PS)		
PS1 I can understand the most difficult material presented in writing courses.	2.78	1.04
PS2 I can understand the basic concepts taught in writing courses.	3.45	0.86
PS3 I can understand the most complex material presented by the instructor or writing courses.	2.98	0.96
PS4 I can do an excellent job on the assignments in writing courses.	3.33	1.00
PS5 I can master the writing knowledge and strategies being taught in writing courses.	2.90	1.00
PS6 I can use the writing knowledge and strategies being taught in writing courses.	3.48	0.71
PS7 Considering the difficulty of the writing course, the teacher, and my skill, I can perform well in writing courses.	3.07	1.02

Table 5 presents the descriptive statistics about students' writing self-efficacy. Students generally reported confidence in their basic grammatical skills (LS1, mean =3.89, SD=0.80; LS2, mean=4.07, SD=0.74). Notably, LS2 reflects a high level of confidence in writing simple sentences with correct grammatical structures. However, confidence scores are lower in tasks such as composing

complex sentences (LS3, mean=3.19, SD=1.04) and revising written work for clarity (LS5, mean=3.12, SD=0.76).

In terms of self-regulation, students demonstrated greater confidence in planning and goal setting for writing tasks (SRE2, mean=3.90, SD=0.67; SRE3, mean=4.00, SD=0.70). However, confidence in evaluating goal achievement (SRE4, mean=3.23, SD=0.80) was lower. Regarding performance efficacy, students reported moderate confidence in understanding basic concepts and applying knowledge and strategies taught in writing courses (PS2, mean=3.45, SD=0.86; PS6, mean=3.48, SD=0.71). However, they expressed lower confidence in comprehending the most difficult material in writing courses (PS1, mean=2.78, SD=1.04) and fully mastering writing strategies (PS5, mean=2.90, SD=1.00).

4.4 The correlation among CFL writing anxiety, writing self-efficacy and writing performance

Table 6 Pearson's Correlations

Variable		Exam	Anxiety	PS	SRE	LS
1. Tests	Pearson's r	—				
	p-value	—				
2. Anxiety	Pearson's r	-0.554 ***	—			
	p-value	< .001	—			
3. PS	Pearson's r	0.410 ***	-0.365 ***	—		
	p-value	< .001	< .001	—		
4. SRE	Pearson's r	0.412 ***	-0.206	0.546 ***	—	
	p-value	< .001	0.052	< .001	—	
5. LS	Pearson's r	0.708 ***	-0.485 ***	0.448 ***	0.500 ***	—
	p-value	< .001	< .001	< .001	< .001	—

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 6 presents the Pearson correlation coefficients addressing the final research question (RQ4) regarding the relationships among anxiety, self-efficacy, and writing scores. The most notable finding is the strong negative correlation between exam scores and total writing anxiety levels ($r = -0.554$, $p < 0.001$), indicating that higher anxiety is significantly associated with lower exam performance. Additionally, higher anxiety levels are negatively correlated with both performance efficacy ($r = -0.365$, $p < 0.001$) and linguistic efficacy ($r = -0.485$, $p < 0.001$)

Conversely, exam scores show robust positive correlations with all three efficacy dimensions: performance efficacy ($r = 0.410, p < 0.001$), self-regulatory efficacy ($r = 0.412, p < 0.001$), and linguistic efficacy ($r = 0.708, p < 0.001$). Furthermore, the study identified significant positive correlations *among* the different forms of efficacy. Performance efficacy was positively correlated with both self-regulatory efficacy ($r = 0.546, p < 0.001$) and linguistic efficacy ($r = 0.448, p < 0.001$). Similarly, self-regulatory efficacy was positively correlated with linguistic efficacy ($r = 0.500, p < 0.001$).

5. Discussion

5.1 Discussion of CFL Writing Anxiety

The present study investigated learners' cognitive anxiety, somatic anxiety, and avoidance behavior when writing Chinese compositions. The data revealed that while cognitive and somatic anxiety were relatively high, avoidance behavior remained low. This pattern indicates that learners experience substantial internal stress—both psychological and physiological—yet continue to engage with writing tasks.

Somatic anxiety scores were the highest among the three categories (62.22% high), indicating that physical manifestations of anxiety, such as a pounding heart and tension, are a severe concern for Thai CFL students. Viewed through Pekrun's (2024) Control-Value Theory (CVT), this intense physiological arousal occurs because Thai university students place a high value on Chinese proficiency for their future employability (Yang & Sikakaew, 2025), but experience a sudden loss of control when forced to retrieve complex logographic characters rapidly. Heightened arousal disrupts cognitive flow, leading to blank minds or jumbled thoughts, confirming that timed writing places learners into a high-pressure environment that amplifies somatic anxiety (Tian, 2018).

While cognitive anxiety is less severe compared to somatic anxiety, its prevalence—particularly the fear of poor evaluation and peer criticism—aligns with foreign language anxiety theory (Horwitz et al., 1986). Learners appear especially sensitive to evaluative pressure, which often raises their affective filter and disrupts idea generation (Teimouri et al., 2019; Cheng, 2023). However, the presence of moderate-to-low avoidance behavior indicates that students in this

study maintain a positive orientation toward Chinese writing, engaging with the tasks because they recognize their necessity for academic progress (Hu, 2021).

5.2 Discussion of Anxiety Causes

The high ratings for inadequate vocabulary mastery (mean=4.44, SD=0.71) and Chinese character errors (mean=4.34, SD=0.70) underscore the unique “orthographic friction” of learning CFL. Unlike EFL learners who use an alphabetic system, Thai learners must transition to the logographic Chinese character system. From a cognitive processing standpoint (Eysenck et al., 2007), retrieving character stroke orders and structures consumes an immense amount of limited working memory capacity. When students are burdened by the expectation to produce flawless work (perfectionism, mean=4.35, SD=0.70) under strict time pressure (mean=4.26, SD=0.75), this cognitive load exceeds their processing limits, triggering anxiety (Jian & Xin, 2019). Collectively, these factors reflect core issues in writing proficiency, compounded by external pressures and internalized expectations (Zhang, 2011; Wang, 2021).

5.3 Discussion of CFL Writing Self-Efficacy

The results indicate strong abilities in managing writing processes, with 71.11% of students reporting high self-regulatory efficacy (planning, goal-setting, and self-monitoring). This high self-regulation is consistent with recent Thai EFL research, which suggests that Thai students often feel in control during the preparatory stages of writing and are highly motivated to use metacognitive strategies (Payaprom & Payaprom, 2025).

However, lower confidence in advanced tasks aligns with previous research indicating that while foundational grammar is often well-internalized, higher-order writing skills like revision and structural coherence remain challenging (Tsao, 2021). The lower confidence in evaluating goal achievement may reflect a lack of feedback mechanisms, which are crucial for effective self-assessment (Teng et al., 2018). This distinction between basic and advanced confidence underlines the developmental nature of writing ability and the need for explicit instruction in advanced writing strategies (Golparvar & Khafi, 2021).

5.4 Discussion of Correlations: Contrasting EFL Baselines with the CFL Paradox

The correlational analysis reveals a striking paradox within the Thai CFL learner experience, directly challenging the one-dimensional assumption that high self-efficacy universally neutralizes anxiety. To understand the significance

of this finding, it is essential to compare it against the established baseline of Thai EFL research.

Recent studies involving Thai university students learning English (an alphabetic language) consistently demonstrate a straightforward, inverse relationship: robust writing self-efficacy acts as a highly effective buffer against writing anxiety. For instance, Vleeschauwer (2023) found that Thai EFL learners with high efficacy experience predictably lower anxiety and higher achievement. Similarly, Payaprom and Payaprom (2025) demonstrated that in the Thai EFL context, high self-regulatory efficacy seamlessly catalyzes the use of metacognitive writing strategies, reducing stress. In these alphabetic contexts, confidence in planning and goal-setting directly translates to emotional control during the writing task.

However, the data from the current CFL study diverges sharply from this Thai EFL baseline. While our participants demonstrated high self-regulatory efficacy (71.11%)—mirroring the strong goal-setting and motivation seen in successful Thai EFL learners—62.22% simultaneously reported high somatic anxiety. Specifically, the highest anxiety trigger across the entire study was the physiological sensation of a pounding heart under time constraints (Item SA1, mean = 4.67, SD=0.85).

This contradiction—why high self-regulatory efficacy successfully buffers anxiety for Thai EFL students but fails to offset somatic anxiety for Thai CFL students—lies at the intersection of self-imposed expectations and the immense cognitive load of logographic retrieval. Because these CFL students possess high self-regulatory efficacy, they hold themselves to rigorous academic standards and actively set ambitious performance goals. Yet, when they transition from their phonetic mother tongue to writing complex Chinese characters under strict time constraints, a severe cognitive bottleneck occurs. Their strong desire to achieve their self-regulated goals clashes with the working memory limits required to rapidly execute Chinese characters. Consequently, rather than mitigating stress as it does in the EFL context, high self-imposed expectations in the cognitively taxing CFL environment actually precipitate acute physiological pressure. Therefore, in the advanced CFL context, self-regulatory efficacy and somatic anxiety are not mutually exclusive; they coexist as dual manifestations of a highly engaged, yet cognitively overburdened, language learner.

5.5 Comparative Analysis with Previous Literature

To contextualize the study's contribution to international CFL pedagogy and the broader second language acquisition field, Table 7 summarizes how the current findings both align with and extend existing research paradigms, particularly comparing Thai EFL contexts with Asian CFL contexts.

Table 7 Comparison of the Current Study with Previous Literature

Domain & Context	Previous Studies	Findings of the Current Study	Similarities & Differences
Thai EFL Context (Alphabetic)	Vleeschauwer (2023); Payaprom & Payaprom (2025)	High self-regulatory efficacy; strong negative correlation between anxiety and performance.	Similarity: Both confirm that efficacy drives motivation and correlates positively with performance. Difference: EFL studies show efficacy effectively buffers all anxiety; this study proves CFL writing introduces unique somatic friction that escapes this buffer.
Asian CFL Context (Logographic)	Jian & Xin (2019); Lin (2024)	Vocabulary deficits, Chinese character complexity, and fear of evaluation are primary anxiety drivers.	Similarity: Confirms Chinese character and vocabulary are the primary cognitive burdens. Difference: Extends prior work by identifying that time constraints are the specific catalyst turning cognitive burden into severe somatic anxiety.
Theoretical Frameworks	Bandura (1997); Pekrun (2024)	High self-efficacy (Control) mitigates achievement anxiety.	Similarity: Language and performance efficacy still operate negatively against general anxiety. Difference: Challenges the linear model by revealing a non-linear paradox: high self-regulation can exacerbate physiological stress if task demands (Chinese

Domain & Context	Previous Studies	Findings of the Current Study	Similarities & Differences
			character retrieval) exceed working memory.

As illustrated in Table 7, while this study supports the general consensus that linguistic competence and fear of evaluation dictate L2 writing emotions, it significantly extends the EFL-based research paradigm. It proves that transitioning to a logographic language fundamentally alters the affective experience. The findings highlight a unique pedagogical challenge in international CFL education: teachers cannot simply rely on boosting a student's general motivation or goal-setting (self-regulation) to lower anxiety, as highly motivated students are often the ones experiencing the most severe somatic stress.

6. Conclusion and Pedagogical Implications

6.1 Conclusion

This study investigated the complex interrelationships among Chinese writing anxiety, self-efficacy, and writing performance among Thai university CFL learners. The findings reveal that writing anxiety is a severe impediment, with most students experiencing moderate to high levels across cognitive, somatic, and behavioral dimensions. Crucially, somatic anxiety emerged as the most intense manifestation, triggered primarily by strict time constraints and the cognitive burden of Chinese character retrieval and vocabulary limitations.

Furthermore, the study uncovered a significant paradox regarding self-efficacy in the logographic language context. While the Thai CFL learners reported high levels of self-regulatory efficacy (e.g., strong motivation and goal-setting capabilities), this did not offset their physiological stress. Instead, the clash between their high self-imposed expectations and the immense working memory demands of executing Chinese character rapidly created a cognitive bottleneck, leading to acute somatic anxiety. Ultimately, the correlational analysis confirmed that while higher anxiety significantly degrades actual exam performance, robust linguistic and performance self-efficacy act as positive predictors of academic achievement.

6.2 Pedagogical Implications: The Cognitive-Affective Scaffolding Framework

To address the unique somatic and cognitive friction identified in this study, it is evident that simply encouraging students to “set goals” is insufficient. Instructors must actively dismantle the specific triggers of anxiety. Based on these empirical findings, this study proposes a three-step Cognitive-Affective Scaffolding Framework for CFL writing instruction:

Step 1: Pre-writing cognitive offloading (Addressing Chinese character anxiety)

Because inadequate vocabulary and character errors were identified as primary anxiety triggers, instructors must separate the cognitive load of character retrieval from the cognitive load of discourse organization. Before drafting begins, teachers should utilize “lexical priming” activities (e.g., collaborative brainstorming or mind-mapping vocabulary and key Chinese character structures on the board). By activating the necessary linguistic network beforehand, students do not have to split their working memory between remembering how to write a character and figuring out what to say (Güvendir & Uzun, 2023).

Step 2: Low-stakes, untimed drafting (Addressing perfectionism)

To combat the intense pressure for perfectionism that paralyzed many participants, the initial drafting phase must strictly remove both time constraints and evaluative grading. Students should be encouraged to write for fluency and idea generation, with explicit permission to use Pinyin or leave blanks if a specific Chinese character cannot be immediately recalled. By removing the fear of negative evaluation and the immediate demand for orthographic perfection, the affective filter is lowered, and somatic anxiety is prevented from taking root (Wang, 2021).

Step 3: Gradual time-constraint integration (Addressing somatic panic)

Because "heart pounding under time constraints" was the highest reported anxiety variable, time limits cannot be reserved solely for high-stakes exams. Instructors must bridge the gap between untimed practice and timed testing through gradual integration. For example, teachers can introduce short, 10-minute “freewriting” sessions where the goal is simply word count, not grammatical perfection. Once students build physiological resilience to the timer, metacognitive checkpoints can be introduced, teaching students how to allocate their time (e.g., 5 minutes planning, 20 minutes writing, 5 minutes revising) so

that their high self-regulatory efficacy can be effectively applied under pressure (Payaprom & Payaprom, 2025).

6.3 Limitations and Future Research Directions

While this study provides critical insights into the affective dynamics of Thai CFL learners, it is limited by its cross-sectional quantitative design and a sample drawn from a single institution. Future research should prioritize longitudinal studies to observe how CFL writing anxiety and self-efficacy evolve as students' progress from intermediate to advanced proficiency levels. Additionally, empirical intervention studies testing the effectiveness of the proposed Cognitive-Affective Scaffolding Framework in live classroom settings would provide valuable data on the most effective strategies for mitigating somatic anxiety in logographic language acquisition.

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