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Writing Anxiety and L2 Writing Performance: A Systematic Literature Review

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Abstract
This systematic literature review examines the relationship between writing anxiety and L2 writing performance. Complying with the PRISMA guidelines, 34 studies were collected from ERIC, ProQuest, LLBA, WoS, and fifteen well-known international journals, covering the period from 1975 to the present. By addressing key research questions regarding the methods employed in these studies and the recommendations offered for further research on the relationship between writing anxiety and L2 writing performance, this review sets preconditions for anxiety-relieving pedagogical strategies and contributes to the widespread application of research synthesis in SLA. The findings demonstrate that i) the joint examination of writing anxiety alongside other IDs has become a major trend; ii) correlational studies remain the primary research method, while experimental designs are relatively scarce; iii) research predominantly focuses on English majors in tertiary education, though these studies often lack sufficient demographic and proficiency details; iv) holistic measures are adopted in most research while analytic measures focus on CAF; v) critical statistical indexes of reliability and validity are commonly underreported in sample portrayal, proficiency levels, writing measurements, and data analysis. Future research is suggested to explore the integration of writing anxiety with additional IDs, use more experimental designs, include primary and secondary participants, employ more analytic measures for writing outcomes, and increase the transparency of scientific reporting. Future reviews are also recommended to meta-analyze the anxiety-L2 writing relationships, offering more robust review findings.
Keywords: Complexity, accuracy, and fluency, second language, systematic literature review,–writing anxiety, writing performance

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Introduction

Some people enjoy the experience of writing, while others find it troublesome or even fearful. In Second Language Acquisition (SLA), a subject-specific individual difference that refers to individuals' tendencies to approach or avoid writing when evaluated is termed writing apprehension (Daly & Wilson, 1983). During the past five decades, extensive literature has investigated the impact of writing anxiety[1], particularly within the area of Second Language (L2) writing, due to the additional physiological and psychological stresses experienced by L2 learners in non-native language writing. This study conducts a systematic literature review synthesizing studies on writing anxiety and L2 writing, exploring both the current research status and future directions. Pedagogically, a systematic understanding of the relationship between writing anxiety and L2 writing can help develop strategies to alleviate anxiety. Theoretically, this research synthesis contributes to the expanding application of systematic literature reviews in SLA. Despite the rapid growth of theoretical and empirical studies on writing anxiety since Daly and Miller's (1975b) seminal work, it is surprising that no comprehensive systematic review focusing on writing anxiety in L2 contexts has yet been conducted. While some studies (MacIntyre, 2017; Papi & Khajavy, 2023; Teimouri et al., 2019; Zhang, 2019) have reviewed L2 anxiety and its corresponding achievements, these works primarily focus on general language anxiety rather than writing-specific anxiety. This study, therefore, conducts a focused synthesis on writing anxiety, partially addressing the challenges of information overload posed by the rapidly growing body of research in L2 writing anxiety.

Specifically, this study aims to achieve two main objectives: first, to synthesize the methodological features used in studies on writing anxiety and L2 writing, and second, to offer practical suggestions for future research to better explore writing anxiety in L2 settings. According to Latif (2020), writing research can generally be categorized into process-focused and product-focused research. Process-focused research concentrates on the specific subprocesses of writing, such as planning and translating, collectively termed the writing process. In contrast, product-focused research emphasizes the final writing output, commonly referred to as writing performance. Given the constraints of the manuscript's length, this study focuses on the latter — examining the impact of writing anxiety on final written outcomes.

The study seeks to present a systematic literature review of the relationship between writing anxiety and L2 writing performance by addressing the following research questions:

i. What methods have been used to examine the relationship between writing anxiety and L2 writing performance?
ii. What recommendations can be made for future research to advance studies on writing anxiety and L2 writing performance?

Literature Review

Writing Anxiety

As one of the most widely researched Individual Differences (IDs) in Second Language Acquisition (SLA), writing anxiety has been extensively studied for nearly five decades (Daly & Miller, 1975b). Over time, research on writing anxiety can generally be categorized into four major areas. The first area involves conceptualization, which introduces key notions to the field, examines its distinct dimensions, and offers methods for its measurement (Papi & Khajavy, 2023). While the terms *writing apprehension* and *writing anxiety* are occasionally distinguished in research (e.g., Latif, 2019; Wynne et al., 2014), the conceptual overlap between the two terms is

widely acknowledged (e.g., Guan et al., 2023; Khosravi et al., 2023; MacIntyre & Wang, 2022; Papi, 2021). Accordingly, both terms are used interchangeably in this study to refer to the general anxiety associated with writing activities. The second area focuses on the measurement development of writing anxiety. Over the past five decades, a number of scales have been created to quantitatively assess writing anxiety in general (Cheng, 2004; Daly & Miller, 1975b; Limpo, 2018) or in specific contexts, such as technological English (Tsai, 2008), control strategy use (Tankó, 2017), or self-regulation (Han & Hiver, 2018). Among these, the most widely used scales are Daly and Miller's (1975b) *Writing Apprehension Test* (WAT) for L1 research and Cheng's (2004) *Second Language Writing Anxiety Inventory* (SLWAI) for L2 research.

The third area explores pedagogical strategies for alleviating writing anxiety, contributing to improved writing instruction. Recent strategies for reducing anxiety have increasingly focused on the use of information technologies (e.g., Huang et al., 2021; Huang et al., 2024), which help create a less stressful writing environment while enhancing individuals' autonomy in their writing. The final area examines the correlational studies of writing anxiety, identifying links with both Individual Difference (ID) factors and performance factors. ID factors incorporate affective, conative, cognitive, and sociodemographic dimensions (Li et al., 2022), while performance factors primarily pertain to writing processes and performance (Latif, 2020). However, compared to other aspects, the relationship between writing anxiety and writing performance has been less studied, and no systematic literature review on this topic in L2 contexts has been conducted to date.

Writing performance reflects individuals' writing competence and the way skilled writers perform greatly influences their linguistic knowledge during writing (Ellis & Barkhuizen, 2005). Examining the relationship between writing anxiety and writing performance could deepen our understanding of the impact of affective IDs on L2 writing. Such examination could also provide a foundation for developing tailored strategies to relieve anxiety. Therefore, synthesizing studies on anxiety and performance is essential to offer a comprehensive overview of the current research and to outline future directions in this field.

Writing Anxiety and L2 Writing Performance

The initial exploration of the relationship between writing anxiety and writing performance began in L1 research, which generally revealed a small but consistently significant negative correlation between anxiety and performance among native writers (Daly, 1985). In the 1990s, Cheng et al. (1999) attempted the correlations between L2 classroom anxiety and L2 writing anxiety, as well as their relationships with writing performance. Their findings demonstrated that L2 classroom anxiety and L2 writing anxiety are two independent constructs, with a weak negative correlation observed between writing anxiety and writing performance. Subsequent research has increasingly focused on the nuanced relationship between writing anxiety and writing performance in L2 contexts. Contributions in this area have also been mentioned in prior systematic literature reviews of L2 anxiety. For example, MacIntyre (2017) categorized writing anxiety as a type of skill-specific anxiety but did not provide a detailed review of this kind of language-related anxiety. Teimouri et al. (2019) highlighted a strong correlation between writing anxiety and writing performance, while Zhang (2019) argued that writing anxiety, compared to other forms of skill-specific anxiety, deserves greater research attention due to its underexploration in general anxiety reviews. More recently, Papi and Khajavy (2023) attempted to review L2 anxiety by examining its conceptualization, impacts, and sources; however, they did not go deeper into writing anxiety as a specific construct. To address this gap, this systematic review focuses on writing-specific anxiety,

reviewing its impact on L2 writing performance by examining both study characteristics and methodological aspects.

Li (2023) indicated that among the various coding variables used to assess the effects of ID factors on L2 writing, performance measures and research design should be given primary consideration. Performance measures can be evaluated either holistically or analytically. Holistic evaluations assess the overall quality of writing using standardized proficiency tests or academic writing program scores. Analytical evaluations focus on specific dimensions of writing, such as Complexity, Accuracy, and Fluency (CAF). In this review, performance measures are categorized as either holistic or analytic, with detailed content attached to assess the impacts of writing anxiety on L2 writing performance.

As for the research design, in L1 research, two primary research designs have been employed to explore the impacts of writing anxiety: the comparative design and the correlational design. In the comparative method, anxious writers are typically divided into two (high and low) or three (high, medium, and low) groups according to their anxiety scores. The objective is to determine whether significant differences in writing performance exist between anxiety groups. This method often uses *t*-tests or analysis of variance (ANOVA) (e.g., Daly, 1978; Daly & Miller, 1975a, 1975c). The correlational method, on the other hand, examines the relationship between writing anxiety and writing quality, using methods such as simple correlation, multiple regression, or Structural Equation Modeling (SEM) (e.g., Daly & Miller, 1975c; Daly & Wilson, 1983). These designs can also be applied in L2 writing research to examine both differences and correlations between writing anxiety and L2 writing performance. Therefore, the research designs in this review are categorized as comparative, correlational, or both.

Method

This systematic literature review was conducted complying with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. PRISMA, one of the most commonly employed reporting guidelines, ensures transparency and completeness in the reporting of research reviews (Sarkis-Onofre et al., 2021). The PRISMA statement consists of a reporting checklist and a four-phase flow diagram, which guide researchers in explicitly identifying and selecting literature, critically appraising relevant research, and analyzing and summarizing the reviewed findings (Moher et al., 2009). To comply with the PRISMA guidelines, this method first outlines the literature search procedures, then provides a detailed account of the included studies and the inclusion/exclusion criteria applied in each phase, and finally summarizes the coding schemes used to describe the primary characteristics of the recorded studies.

Literature Search

We conducted the literature review by searching four databases and fifteen well-known international journals. The databases included the Education Resources Information Center (ERIC), Web of Science (WoS), Linguistics and Language Behavior Abstracts (LLBA), and ProQuest Dissertations and Theses Database (ProQuest). The journals were categorized into three relevant fields: applied linguistics (*Applied Linguistics*, *The Modern Language Journal*, *Assessing Writing*, *Studies in Second Language Acquisition*, *Journal of Second Language Writing*, *Journal of Writing Research*, and *System*), educational psychology (*Contemporary Educational Psychology*, *Educational Psychologist*, *Educational Psychology Review*, and *Journal of Educational Psychology*), and language education (*Language Learning*, *Language Teaching Research*, *Learning and Instruction*, and *TESOL Quarterly*). These databases and journals were

searched using a combination of key terms, including i) *writing anxiety*, *writing apprehension*; and ii) *writing performance*, *writing proficiency*, *writing achievement*, *writing quality*, *writing development*, *writing competency*, *writing product*, *complexity*, *accuracy*, *fluency*, and *CAF*. The literature retrieval was completed in October 2024. All relevant studies published after 1975 were included, as this was the year when Daly and Miller (1975b) initially introduced the term "writing apprehension" in first language (L1) research.

Study Selection

The PRISMA flow diagram comprises four phases for conducting a systematic review: identification (to identify relevant literature), screening (to apply inclusion and exclusion criteria), eligibility (to assess the suitability of studies), and inclusion (to finalize the studies included in the review). In the identification stage, a total of 880 studies were collected from the databases and journals. After removing duplicates, 768 records remained for screening. In the screening and eligibility stages, we examined the titles and abstracts of each record based on inclusion/ exclusion criteria, and then conducted a full-text review to determine eligibility. Ultimately, 34 articles fulfilling all criteria were incorporated into this systematic literature review (see Figure One). The following inclusion/ exclusion criteria were used in this review:

i) Studies must have been published after 1975.
ii) Studies must focus on the relationship between writing anxiety and L2 writing performance; studies examining additional variables were not excluded if they also reported correlations between writing anxiety and L2 writing performance.
iii) Studies must be accessible online.
iv) Studies must be published in English.
v) Only journal articles and dissertations were included. If dissertation findings were reported in journal articles, only the journal articles were included.

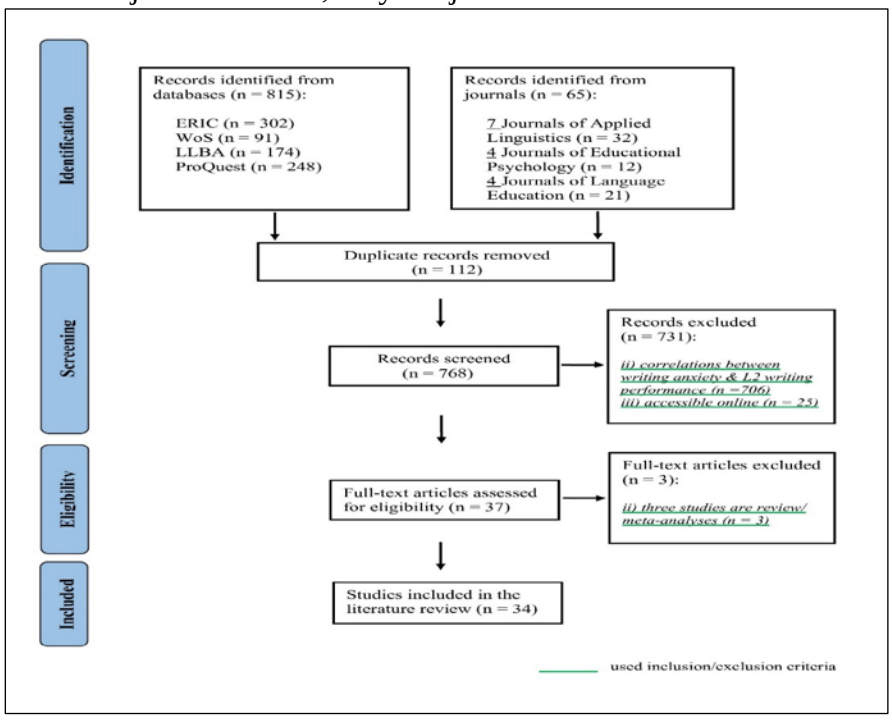


Figure 1. PRISMA flow diagram (Moher et al., 2009 p. 267)

Coding Scheme

Complying with the PRISMA guidelines, we conducted the review in three iterations, ultimately selecting 34 relevant studies. These studies were analyzed and coded by two coders following a three-step procedure. In the first step, the first coder coded five randomly chosen articles from the sample database, while the second coder coded another five randomly selected samples. Informed by previously reported coding variables (Li, 2023; Teimouri et al., 2019; Zhang, 2019), they discussed and determined the broad categories of coding features (see Table One). In the second step, after several rounds of discussion and refinement, the two coders finalized the specific items to be coded under each feature (see Appendix A — Table Two) and piloted the coding with ten coded articles to calculate inter-coder reliability. In the final step, the first coder completed coding the remaining studies, and the data were organized into Appendix B — Table Three. The inter-coder reliability was .91 (Pearson's *r*).

For example, a disagreement arose when the two coders coded the performance measure in Waer (2021) during the second step. In this study, Waer (2021) evaluated the correlations between writing anxiety and the Grammatical Knowledge Test (GKT), where GKT was coded as a performance measure to evaluate writing. The disagreement concerned whether GKT should be classified as a holistic or analytic measure. The first coder categorized GKT as a holistic measure because it is a standardized proficiency test scored by raters, whereas the second coder classified it as an analytic measure because it solely assessed grammatical components of writing. To resolve this issue, two coders reviewed the definitions in Appendix A and applied consensus coding to the examples in Appendix B, ultimately concluding that holistic measures were subjective while analytic measures were objective. Holistic scoring evaluates overall writing performance using standardized rating scales, while analytic scoring evaluates specific dimensions of writing. The GKT consisted of 30 objective questions drawn from structure and written expression sections of the TOEFL test. Participants were asked to select the right one from multiple options, with only one correct response per question. Therefore, GKT was coded as an analytic measure, highlighting grammatical proficiency in writing.

This study categorized the coding features into seven broad categories: bibliographic information, research foci, sample characteristics, performance measures, writing types, data analysis, and retrieval sources. Bibliographic information is coded by year of publication, title, and author(s). Research foci document the research aim(s) or objective(s) of each study. Sample characteristics are coded by research context and proficiency level, capturing the characteristics of the subjects in each study. Research contexts include the number of subjects, educational stages (e.g., primary school, secondary school), English major/ non-English major status, first language (L1), age, and years of English learning. Proficiency level refers to the L2 proficiency level of the subjects. Performance measures are classified as either holistic measures, which evaluate overall writing performance (e.g., course grades or writing tests), or analytic measures, which assess specific aspects of written products. Writing types refer to the selected genre. Data analysis records the types of inferential statistical tests used. Retrieval sources indicate the databases or journals from which the paper was retrieved. Table One and Appendix A provide brief descriptions and definitions of the coding scheme.

Table 1. *Coding scheme*

Category	Variables	Coding Items
Study Characteristics	Bibliographic information	Year of publication Title Author(s)
	Research foci	Aim(s) / Objective(s)
	Sample characteristics	Research context Proficiency level
Methodological Characteristics	Performance measures	Holistic measures Analytic measures
	Writing types	Genre
	Data analysis	Inferential statistical test(s)
	Retrieval sources	Databases / Journals

Results

Appendix B presents the main information from the synthesized studies on writing anxiety and L2 writing performance, including the study ID, foci, context and proficiency, performance measures, genre, data analysis, and source. Regarding research design, five out of 34 studies adopted a comparative design to determine whether statistically significant differences exist between writers with varying anxiety levels. Twenty-six studies used correlational designs to examine the relationships between writing anxiety and L2 written products. The remaining three studies utilized a combination of both designs to investigate the effect of writing anxiety on L2 writing achievement. This indicates that similar to first language (L1) research, comparative and correlational designs are widely used in L2 writing research. The predominance of quantitative methods highlights their central role in examining the correlation between anxiety and performance.

Study ID and Research Foci

Of the 34 studies, 26 were published in the past 10 years, particularly in the last 5 years (see Figure Two). Regarding research foci, few studies (e.g., Macayan et al., 2018; Zabihi et al., 2020) concentrated exclusively on writing anxiety and its correlations with written outcomes. Most studies also examined additional cognitive or affective IDs, such as working memory, self-efficacy, motivation, or learning strategies (e.g., Abdi Tabari & Goetze, 2024; Gibriel, 2019; Güvendir & Uzun, 2023; Rahimi & Zhang, 2019). These studies either aimed to predict the contributions of these composite variables to outcome measures or examined the indirect effects of writing anxiety on written texts, where the role of writing anxiety depends on other variables.

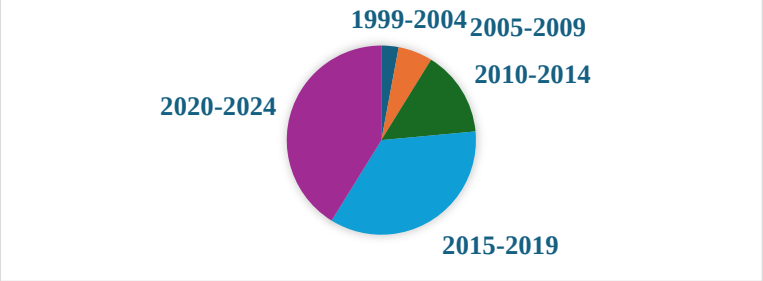


Figure 2. Years of publication

Sample Characteristics

Sample characteristics were categorized by research context and proficiency level. In terms of research context, the participants in these studies ranged from fewer than 50 to more than 1,000. Among the 34 studies, 27 involved university students, three involved adult learners, two involved middle school students, one involved participants from middle school to university levels at a language institute, and one did not specify the educational stage of the participants. The target second/foreign language in all studies was English. Of the 23 studies that explicitly reported participants' majors, 16 involved English majors, six involved non-English majors, and one study recruited an equal number of English and non-English majors. Of the 21 studies that reported the first languages (L1s) of participants, six focused on Chinese, five on Persian, two on Turkish, two on Arabic, one on Portuguese, one on Korean, and four on participants with mixed native languages. Regarding the proficiency level, only 21 out of the 34 studies reported participants' English proficiency, with 10 of them using widely accepted language qualifications such as CEFR or IELTS, both known for their reliability and validity.

Performance Measures and Writing Types

Twenty-four out of 34 studies adopted holistic measures to evaluate writing performance, including research-specific writing tests, writing course finals, national proficiency tests (e.g., Malaysian University English Test (MUET), College English Test (CET), and English Proficiency Level Test (EPLT)), and international English language tests (e.g., TOEFL, IELTS, and Cambridge A2 Key for Schools English Test). Among these 24 studies, only 10 reported the genre of writing tasks, which included argumentative, narrative, and descriptive writing, as well as combinations of genres such as descriptive and argumentative, narrative and descriptive, and argumentative and expository. Additionally, 12 studies specified the rating standards used to score these holistic tests: seven used two raters, one used one rater, two used three raters, and two missed the rater numbers. Of these 12 studies, seven also documented the rating rubrics they followed, such as the Test of Written English for the Test of English as a Foreign Language (Bailey & Brown, 1999), IELTS Writing band descriptors (IELTS, 2019), ESL Composition Profile (Jacobs et al., 1981), CAEL assessment (Payant et al., 2019), and TOEFL rubrics (Lee, 2020).

The other 10 studies used analytic measures to assess writing quality, with most employing complexity, accuracy, and fluency (CAF) metrics. Specifically, four studies used the intact CAF triad, four used one or two elements of CAF, one examined readability, and one assessed grammatical knowledge using the Grammatical Knowledge Test (GKT). Of these 10 studies, five reported the genre of writing tasks: three used argumentative writing, one used narrative writing, and one used both narrative and argumentative writing. Concerning the time and word limits of writing tasks, 20 out of 34 studies stated the time allocated for participants to complete the task,

ranged from 11 minutes to 2 hours, with only four of them piloting the writing time. Additionally, nine studies specified word limits, ranging from 150 to 350 words, with only two of them piloting the word limits.

Data Analysis and Sources

Five comparative studies used *t*-tests or analysis of variance (ANOVA) to determine mean differences among high, medium, and low anxiety groups. Twenty-six correlational studies primarily used correlation, multiple regression, structural equation modeling, or path analysis to calculate the correlations between writing anxiety and writing proficiency. The remaining three studies employed both analysis methods to compute variances and associations between the two variables.

Among the correlational studies, Fan and Wang (2024) employed a less conventional method referred to as fuzzy-set qualitative comparative analysis (fsQCA). FsQCA is a configurational approach that investigates the specific combinations of factors leading to particular results, presenting a detailed description of the collective effects of multiple variables on performance. Unlike traditional statistical analysis methods focusing on the impact of isolated factors, fsQCA examines how combinations of variables influence writing performance. In their study, Fan and Wang (2024) investigated the contributions of writing anxiety, writing difficulty, and self-regulated writing strategies to L2 writing performance. FsQCA identified several configurations related to writing performance, revealing six factors leading to high performance and four factors leading to low performance. The results yielded complex impacts of writing anxiety, writing difficulty, and self-regulated writing strategies on writing outputs.

Regarding retrieval sources, four studies were collected from ERIC, six from LLBA, nineteen from WoS, two from *Journal of Second Language Writing*, two from *Language Learning*, and one from *Learning and Instruction*. No relevant studies were retrieved from ProQuest.

Discussion

RQ1: What methods have been used to examine the relationship between writing anxiety and L2 writing performance?

First, the integration of writing anxiety with other IDs has become a prominent trend to examine the relationship between writing anxiety and L2 writing performance. Over recent years, the increasing number of publications has highlighted the growing interest in investigating writing anxiety and its impact on L2 writing, which aligns with the increasing focus on L2 anxiety within the field of IDs (Bryfonski et al., 2024). In terms of research foci, few studies have focused exclusively on writing anxiety, while most have incorporated other examined variables, especially cognitive/ affective IDs. This indicates that exploring writing anxiety together with other variables has become a major trend, enabling researchers to examine both the direct effect of writing anxiety as well as its interactions with other factors on writing performance. This approach echoes Li's (2023) view to "unveil the joint and unique contributions of different learner traits and dispositions to L2 writing" (p. 677), contributing to a stronger focus on the role of IDs in SLA research.

Second, compared to experimental studies, correlational studies are a preferred method to examine the relationship between writing anxiety and L2 writing performance. Among the 34 studies reviewed, most descriptively examined the anxiety-performance relationship as it naturally occurs, without altering the environment or manipulating factors. Only a few incorporated experimental designs. For instance, Payant et al. (2019) investigated the potential differences

between encouraged planning and required planning before writing, while Güvendir and Uzun (2023) compared the impacts of high and low anxiety on writing performance across varying cognitive demands. Both studies focused on examining the indirect influences of writing anxiety on writing outcomes, mediated by a manipulated variable, rather than directly manipulating writing anxiety as an experimental factor. Further research is suggested to directly manipulate the anxiety variable within experimental frameworks, such as by experimenting the differences between anxiety-arousal and anxiety-relief groups, highlighting significant implications for causal interpretations and pedagogical strategies.

Third, most studies recruit undergraduate English majors with insufficient demographic details and proficiency reliability to examine the relationship between writing anxiety and L2 writing performance. Participants are primarily centered on higher education rather than on primary or secondary school levels, aligning with previous reviews on L2 anxiety (Teimouri et al., 2019; Zhang, 2019). A possible explanation for this might be from practical considerations, such as easier access to participants and fewer ethical barriers to data collection among adult learners. Furthermore, studies on university students tend to emphasize English majors, with fewer addressing non-English majors. In many countries, English is a compulsory course for non-English majors in tertiary education. For example, in China, all EFL non-English majors must study English during their freshman and sophomore years and pass the College English Test (CET) to graduate. Non-English majors may experience writing anxiety to the same extent as, or even more than, English majors (He & Niao, 2015; Sang, 2017), yet they remain underrepresented in research.

In addition, existing studies primarily target English as the L2, indicating the need for research exploring other languages as L2s. Many studies also fail to provide a comprehensive overview of the research context, including details such as participant numbers, educational stages, majors, first language, age, and learning experiences. This lack of details, consistent with prior synthesis reports (Li, 2023; Teimouri et al., 2019), makes it difficult to make well-informed sampling decisions and perform thorough interpretations of results. Finally, many studies do not report the reliability of the tests used to measure proficiency levels, or they do not measure proficiency at all, which impacts the replicability and credibility of research outcomes.

Fourth, in terms of performance measures, more than two-thirds of the studies used holistic rather than analytic measures to examine the relationship between writing anxiety and L2 writing performance. Pertaining to holistic measures, the construct validity of writing measurements is a major concern. Each scoring of writing should report its writing prompts, rating rubrics, raters, and measurement procedures. Robust validity in writing assessments requires clear justification of rubrics, standardized rater training, consistent application of scoring criteria, and procedures that accurately reflect the measurement objectives in each context. Two examples of strong validity in writing assessments are Sarkhoush (2013) and Lee (2020). Sarkhoush (2013) enrolled IELTS students in an IELTS writing course, scoring their ongoing writing performance using IELTS Writing Band Descriptors. Two IELTS instructors were invited as raters, achieving a high inter-rater reliability of 0.94. Lee (2020) predicted the contribution of writing anxiety to descriptive and argumentative essays among EFL eighth graders, with two essays scored by two raters based on a standardized secondary-level six-criteria rubric adapted from Williams and Cui (2005) and Educational Testing Service (2014). The rating procedure included holistic evaluations, grouping, pilot analytic scoring, independent scoring, and additional scoring for substantial differences, yielding high reliability. In contrast, most of the 24 studies using holistic measures failed to adequately report measurement procedures, suggesting the need for future research to enhance

transparency.

Concerning the 10 studies that used analytic measures, complexity, accuracy, and fluency (CAF) framework was the primary approach for assessing written texts, which aligns with general trends in the study of other IDs in L2 writing, such as motivation and working memory (Bryfonski et al., 2024). Of the eight studies using CAF metrics, half (Güvendir & Uzun, 2023; Haddad, 2018; Rahimi & Zhang, 2019; Waked et al., 2023) employed only one or two elements of the triad. Additionally, seven studies did not include lexical complexity as part of the complexity dimension, and none of the studies used nuanced metrics to evaluate CAF. Complexity, accuracy, and fluency characterize elaborateness, error-free proficiency, and native-like rapidity in writing, respectively, and the complete triad is necessary for a comprehensive assessment of written outcomes (Housen & Kuiken, 2009). Future research should utilize the complete CAF framework to assess anxious writers' drafts. Lexical complexity plays a critical role in the CAF notions, and studies (Housen et al., 2012; Yoon, 2021) indicate that nuanced measures (e.g., word frequency or modifier frequency) are more statistically sensitive. Future research should include lexical complexity measures, especially nuanced measures, in analytic evaluations.

Fifth, fewer than half of the studies reported critical statistical practices, such as assumption checks and effect sizes, to examine the relationship between writing anxiety and L2 writing performance. Among the 34 studies reviewed, thirteen reported the assumptions (e.g., normality checks, outlier detection, linearity) they needed to verify before reporting results, and fifteen reported effect sizes (e.g., Cohen's d, η^2, β coefficients). Overall, the reporting rates for these statistical practices were below 50%. Future research necessitates increasing transparency in reporting critical statistical indexes in the preliminary analysis (to verify assumptions), statistical analysis (to compute and interpret key descriptive and inferential statistics), post-hoc analysis or model fit assessments in variances/ regression, and estimation of effect sizes.

RQ2: What recommendations can be made for future research to advance studies on writing anxiety and L2 writing performance?

Several recommendations can be made to facilitate further research on writing anxiety and L2 writing performance. First, to align with the current trends, researchers should explore more variables in combination with writing anxiety to investigate both its immediate and underlying influences on writing performance, considering other contributing factors. Future research could investigate variables beyond affective or individual differences (IDs), incorporating conative (e.g., mindsets, goal complexes), cognitive (e.g., learning strategies, cognitive styles), or sociocultural factors (e.g., grade, identity).

Second, writing anxiety could be manipulated as an experimental factor to assess its effects in different experimental conditions. For example, researchers could compare an anxiety-arousal group with an anxiety-relief group or establish causal relationships between writing anxiety and other factors, which would require experimental designs.

Third, regarding sample characteristics, future research should focus more on primary and secondary school students, on non-English majors rather than on English majors, and on languages other than English as the L2. One reason English dominates in the current synthesized studies is that most of the participants (27 out of 34) are from Asian countries, where English is the most commonly learned second language in education (Copeland et al., 2023; Edwards & Li, 2011; Jafary et al., 2024). Further research is encouraged to explore writing anxiety in individuals learning non-English L2s, improving knowledge about the interplay between anxiety and

performance in other languages.

Fourth, more nuanced measures should be incorporated into performance evaluations, such as using discrete scoring to calculate multi-dimensional proficiency (e.g., structure, expression, content) or employing more sophisticated analytic measures (e.g., modals frequency, tensed forms frequency) to compute certain aspects of writing. These methods could yield more detailed insights into the relationship between writing anxiety and L2 writing performance.

Finally, transparency in reporting should be enhanced across all aspects of methodology, including sample portrayal, proficiency levels, the construct validity of writing measurements, and data analysis approaches, which are often underreported in the reviewed studies.

Conclusion

This study conducted a systematic review on the relationship between writing anxiety and L2 writing performance, providing an overview of the current trends of research and offering recommendations for future studies. Following PRISMA guidelines, a total of 34 studies were retrieved from four databases and fifteen international journals, spanning from 1975 to the present. The research synthesis was organized into seven broad coding categories and presented across four main reporting sections: study ID and research foci, sample characteristics, performance measures and writing types, and data analysis and retrieval sources. This study critiques existing research, focusing on both study and methodological characteristics, emphasizing the need for greater transparency throughout the methodology.

By filling a gap in the systematic literature review of writing anxiety and L2 writing performance, this study contributes to the understanding of the construct of writing anxiety and encourages wider practices of systematic literature reviews in the field of second language acquisition (SLA). Given the methodological gaps identified in this review, future research should perform a meta-analysis on the effect of writing anxiety on L2 writing performance to present a more comprehensive landscape of this relationship, offering stronger conclusions and guiding future research directions.

Endnotes

1. Writing anxiety and writing apprehension are usually treated as synonyms in the literature, and no effort is made to differentiate between these two terms here.

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Appendices

Appendix A

Variables and Definitions of Items in the Coding Scheme

Table 2. *Variables and definitions (examples) of items in the coding scheme*

Variables	Definitions (Examples)
Bibliographic Information	
Title	The title of the article
Author(s)	Scholar(s) who conducted and wrote the paper
Year of publication	Year when the paper was published (1999, 2013, 2024, etc.)
Research Foci	
Aim(s) / Objective(s)	Specific themes/ issues that are the primary concern of the research
Sample Characteristics	
Sample size	Number of subjects in the research (186, 57, 1036, etc.)
Educational stage	The schooling stage of subjects (primary school, secondary school, university, etc.)
Major	The primary study area where subjects specialize (English major, non-English major)

First language	The native language of subjects (Chinese, Persian, Arabic, etc.)
Age	Mean age or age range of subjects (18, 19, 16-21, etc.)
Years of English learning	The total/ average amount of time subjects have spent in studying English (5-8, 9, 12, etc.)
Proficiency level	The degree of competence subjects have in using English, which is usually defined by a standardized framework (intermediate, upper-intermediate, advanced, etc.)
Performance Measures	
Holistic measures	Measures assessing writing performance as a whole, typically based on a single scale (TOEFL, IELTS, Cambridge English Test, etc.)
Analytic measures	Measures calculating specific components/ aspects of writing performance separately (complexity, accuracy, and fluency, etc.)
Writing Types	
Genre	The writing is characterized by a particular style, form, or content (argumentative, narrative, descriptive, etc.)
Data Analysis	
Inferential statistical test(s)	Quantitative methods are used to infer conclusions about a population from the sample data (*t*-tests, ANOVA, regression, etc.)
Retrieval Sources	
Databases / Journals	Digital collections and periodical publications that store and disseminate scholarly research (4 databases & 15 journals)

Appendix B
Studies on the Relationships Between Writing Anxiety and L2 Writing Performance

Table 3. *Studies on the relationships between writing anxiety and L2 writing performance*

Study	Foci	Context & Proficiency	Holistic / Analytic Measures	Genre	Data Analysis	Source
Cheng et al. (1999)	links between classroom anxiety, WA, & speaking and writing achievement	433 freshman, sophomore & senior English majors; self-perceived proficiency	H: the final course grade for writing class		correlation, regression	Language Learning
Daud et al. (2005)	a correlational study on WA and writing performance	186 non-English major students; intermediate to upper-intermediate	H: the written essays in the final; SPM; the grade obtained in the prior semester's English tests		correlation	WoS
Lee (2005)	the contributions of WA, writer's block, free reading, self-initiated writing, students' beliefs, and	270 freshmen to junior English majors; low - high intermediate	H: a short essay		structural equation modeling	Language Learning

	attitudes to writing					
Dracopoulos and Pichette (2011)	relationships among WA, computer anxiety, and ESL performance in both classroom &distance environments	45 Canadian ESL adult learners; B2 in CEFR	H: 300-350 written essay, business letter		correlation, regression	ERIC
Erkan and Saban (2011)	correlations between writing performance, WA, self-efficacy & attitudes toward writing	188 undergraduates at a Turkish Univ.; intermediate	H: writing section in achievement tests		ANOVA, correlation	LLBA
Singh and Rajalingam (2012)	the influences of WA and self-efficacy on writing proficiency	320 undergraduates enrolling in pre-university program	H: writing section in MUET		correlation	ERIC
Sarkhoush (2013)	relationships among WA, self-efficacy, attitudes toward writing, and performance	50 IELTS students	H: IELTS writing	Ar	ANOVA, correlation	LLBA
Saadat and Dastgerdi (2014)	relationships among L2 proficiency, WA, emotional intelligence, writing strategy use, and writing proficiency	62 English major juniors at Shiraz University; upper-intermediate: OPT	H: three writing tasks		correlation, regression	WoS
Liu and Ni (2015)	Chinese EFL's WA: Pattern, Effect, and Causes	1174 non-English majors from 3 universities in China	H: an argumentative essay on a TOEFL topic	Ar	correlation, regression	ERIC
Abdel Latif (2015)	sources of Egyptian EFL WA	57 English-majored seniors at an Egyptian University	H: three sample writing topics of the TOEFL	Ar	correlation	WoS
Yu (2017)	the relationship between WA & CET-4 writing	154 non-English at Jilin Agricultural Uni.	H: four writing tests		correlation	WoS
Haddad (2018)	the correlation between WA and grammatical complexity	87 freshmen & senior English majors at Al-Balqa Applied University	A: overall count of subordinate clauses; mean number of subordinate clauses per test		ANOVA	LLBA
Macayan et al. (2018)	the differences in high, average, and low anxious writers	162 freshmen non-English at an engineering University in Manila	H: entry-level writing test	Na	ANOVA	LLBA
Khelalfa (2018)	associations among WA, self-efficacy, effort, and writing	148 freshmen, sophomore, and junior EFL at L'arbi	H: average of three scores on writing tests		correlation	WoS

	achievement	Ben M'hidi University, Algeria				
Zabihi (2017)	The impacts of working memory, WA & self-efficacy on CAF	232 English majors at three Univ. in the northeast of Iran; upper-intermediate: OPT	A: Complexity: ratio of subordinate clauses to T-units; Accuracy: ratio of error-free T-units to the total number of T-units; Fluency: average number of words per T-unit	Na	path analysis	WoS
Limpo (2018)	The contributions of WA on writing frequency, process, & performance	62 undergraduates in Psychology of language course	H: argumentative essay	Ar	regression	Learning and Instruction
Rahimi and Zhang (2019)	the relationships among task complexity, motivation, WA and performance	60 English majors in central Iran; upper-intermediate: OPT	A: Complexity: Mean Length of Clauses, subordinate clauses per clause, and phrasal coordination; Accuracy: the number of error-free t-units to total t-units, the number of errors per t-unit	Ar	correlation	LLBA
Sabti et al. (2019)	the difference in writing performance across three levels of WA, self-efficacy & motivation	100 freshmen English majors in 3 colleges at two Univ. intermediate	H: writing topics of 2015 English Proficiency Level Test (EPLT)	De	ANOVA	WoS
Gibriel (2019)	correlations between writing strategies, WA & writing performance	53 English major seniors in Egypt	H: an essay of a selected topic		regression	WoS
Payant et al. (2019)	contributions of source comprehension, prewriting planning, IDs	111 non-English major EFL students in Montreal; English-medium	H: the topic of long-range weather forecast		regression	WoS
Lee (2020)	how much variance in two essays can be explained by 5 affective variables (WA included)	270 EFL (142 boys, 128 girls) at middle school in South Korea; secondary school level	H: two essays	De; Ar	structural equation modeling	LLBA
Zabihi et al. (2020)	the associations between WA & CAF in narrative & argumentative essays	102 EFL in Nishapur; upper-intermediate: OPT	A: Complexity: ratio of clauses to T-units, DC/C; Accuracy: EFT/T, EFC/C; Fluency: W/T/C per text	Na; Ar	correlation	WoS
Tahmouresi and Papi (2021)	contributions of future selves, enjoyment, and anxiety to achievement	85 sophomore & junior English major students in Iran; lower-intermediate to intermediate	H: writing course grade in a required course		regression	Journal of Second Language Writing

Majeed et al. (2022)	influences of WA, motivation, self-efficacy, and reading habits	300 English-majored undergraduates in 3 Univ. in Pakistan	H: an argumentative writing essay	Ar	correlation, ANOVA	WoS
Abolhasani et al. (2022)	contributions of WA & strategy use to graph-based writing	209 junior & senior English majors in 2 Univ. in Iran; upper-intermediate to advanced level	H: a graph-based essay		structural equation modeling	WoS
Zhang and Zhang (2022)	the impacts of academic procrastination on writing performance mediated by WA	55 sophomore English majors from a China; excellent proficiency in the pre-study writing program	A: readability		correlation, regression, structural equation modeling	WoS
Waer (2021)	the relationship between WA and GKT at pre- and post- AWE intervention	103 Egyptian English majors; intermediate to upper-intermediate levels	A: participant selects the word / phrase matching each incomplete sentence; participant identifies the incorrect underlined word or phrase in each sentence		correlation	ERIC
Li et al. (2023)	develop foreign language writing enjoyment (WE) and boredom (WB) questionnaires; contributions of WA, WE & WB	1036 eighth graders in eastern China; Cambridge A2 Key for Schools English Test	H: Cambridge A2 Key for Schools English Test: an email writing (25 words) & a picture-based story-telling task; writing section of final English exam; self-perceived English	1) Na; De 2) De	correlation, regression	WoS
Khosravi et al. (2023)	the correlations between perfectionism, WA, and IELTS	68 English majors at the University of Zanjan; intermediate - early advanced	H: IELTS Writing Task 2		correlation, regression	WoS
Waked et al. (2023)	WA and its correlates in quality and quantity	409 female freshmen in a Saudi Arabian University; modest to competent users: IELTS 6.0 in overall score & 5.5 in writing	A: Complexity: average sentence length, average number of modifiers per noun phrase, dependent clauses, sentence depth measure; Fluency: W/ S / W per sentence		correlation	WoS
Güvendir and Uzun (2023)	the impacts of WA on syntactic complexity mediated by working memory under cognitive demands	132 English majors at a public Univ.; B2 in CEFR	A: Complexity: MLC, DC/C, the ratio of complex nominal per clause, the overall measure of syntactic complexity	Ar	ANOVA	Journal of Second Language Writing
Fan and Wang (2024)	relationships among WA, self-regulated writing strategy, writing difficulty and	94 undergraduate & postgraduate L2 learners from a university in Eastern	H: 2022 FLTRP ETIC Cup English Writing Contest	Ar; Ex	Fuzzy-set qualitative comparative analysis	WoS

	writing performance	China			(fsQCA)	
Wu and Halim (2024)	the contributions of task complexity, WA, enjoyment & boredom to writing performance	84 sophomore English majors at a Univ. in Hubei province	A: Complexity: total T-unit clauses / subordinate conjunctions, MLT, lexical diversity; Accuracy: EFT; Fluency: total words produced per minute		ANOVA	WoS
Abdi Tabari and Goetze (2024)	the impacts of task complexity, WA, and self-efficacy on L2 writing	100 undergraduate ESL (53 females and 47 males) at a large university in the U.S.; C1 in CEFR	A: Complexity: MLTU, DC/T, CN/T and CN/C, VocD, WRDFRQmc; Accuracy: EFC/C, correct verb forms; Fluency: total words	Ar	correlation, regression	WoS

Note: WA, writing anxiety; H, holistic measure; A, analytic measure; CAF, complexity, accuracy, and fluency; Ar, argumentative; Na, narrative; De, descriptive; Ex, expository