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The Effects of Writing Anxiety on Writing Performance of Argumentative and Narrative Essays Among Intermediate EFL Learners in China

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Abstract
This study examined how writing anxiety and genre affect writing performance in group difference analysis among intermediate EFL learners in China, based on Hayes's revised writing model. Writing performance was assessed using measures of syntactic and lexical complexity, accuracy, and fluency. Using the Second Language Writing Anxiety Inventory, a total of 104 intermediate EFL students were categorized into high- and low-anxiety groups. Participants wrote both argumentative and narrative essays, analyzed with the second language (L2) Syntactic Complexity Analyzer, Lexical Complexity Analyzer, Grammarly Premium, and manual error coding following Polio and Shea's guidelines. Mixed analyses of variance and *t*-tests revealed significant impacts of writing anxiety on complexity and fluency, and genre effects on all complexity, accuracy, and fluency, except for interaction effects. These results highlight significant variations in performance due to anxiety and essay type, supporting Skehan's Limited Attention Capacity hypothesis and Biber and Conrad's functional explanations. The findings advocate tailored pedagogical strategies to reduce anxiety in EFL genre-specific writing and improve educational outcomes.

Keywords: Complexity, accuracy, and fluency, Chinese EFL learners, genre, second language writing, writing anxiety

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Introduction

Recent trends in second language acquisition (SLA) studies emphasize the central role of second language (L2) writing, particularly concerning individual differences (IDs) (Manchón & Sanz, 2023). Among various IDs, anxiety has been underexplored, necessitating further examination of its impact on L2 writing (Li, 2023). Writing, a complex cognitive and emotional activity, is significantly affected by anxiety (MacIntyre, 2017). This affective reaction can exacerbate the challenges faced by L2 writers, introducing additional physiological and psychological stresses associated with using a non-native language (Li, 2023).

In terms of the writing anxiety construct, instructional strategies to mitigate anxiety are a major area of interest, while their correlation with writing performance is still underdeveloped. Pedagogically, a coping strategy to appease this emotional tension is based on a better understanding of the links between writing anxiety and writing performance. Theoretically, a detailed description of the relationships with writing performance also makes clear the impact of affective IDs on L2 writing. Thus, this study seeks to deepen our understanding of how writing anxiety influences L2 writing performance, focusing on the constructs of complexity, accuracy, and fluency (CAF). These metrics, which are pivotal in writing assessment and indicative of proficiency, have not been extensively examined in relation to writing anxiety (Housen & Kuiken, 2009).

Furthermore, genre knowledge and selection of research subjects are crucial in studying writing anxiety. Different writing genres, such as argumentative and narrative, possess unique characteristics that can influence writing performance (Beers & Nagy, 2011; Crowhurst, 1990; Heng et al., 2023). In this study, we incorporate these two genres to explore their impact on the relationship between writing anxiety and performance and include Chinese EFL non-English majors— a group not previously focused on in this context— to explore the nuances of writing anxiety at an intermediate proficiency level.

The study aimed to investigate the effects of writing anxiety and genre on CAF measures among intermediate EFL learners in China. The impacts of writing anxiety and genre on writing performance and exploring any interaction effects between these variables will be assessed. This approach addresses gaps identified in the literature review and contributes new insights into the pedagogical strategies for L2 writing instruction.

Literature Review

In 1996, Hayes proposed a revised writing model to offer a clearer and more comprehensive framework for describing writing activity. This framework expands upon the initial model by Flower and Hayes (1980). This newer model accentuates the critical roles of emotion and genre, recognizing writing as a generative and intellectual process that interweaves these elements (Hayes, 1996). Building on this theoretical foundation, this study examines writing anxiety, a key emotional factor, to assess its influence alongside genre on L2 writing performance. Our literature review first provides an overview of writing anxiety and genre, followed by an examination of L2 writing performance with a particular focus on CAF measures. It then introduces the study's primary subjects— Chinese EFL non-English learners— and outlines the study's objectives by addressing sorted gaps in the existing research.

Overview of Writing Anxiety and Genre

Since Daly and Miller (1975) introduced the term "writing apprehension", the construct of

writing anxiety has been extensively explored, covering various dimensions over nearly five decades. These dimensions include its definition and conceptualization (Daly & Hailey, 1984; Latif, 2019), potential causes of anxiety (Abdel Latif, 2015; Aldrich, 1982), and its cognitive, somatic, and behavioral manifestations (Hassan, 2001; Pajares, 2003). Further studies have developed measurement scales (Cheng, 2004; Limpo, 2018), developed coping strategies to relieve anxiety (Alshehr, 2024; Zarrinabadi & Rezazadeh, 2020; Zhang, 2021), and investigated its correlations with other individual differences like self-efficacy, motivation, and attitudes (Almutairy, 2024; Papi et al., 2022; Woodrow, 2011), though research specifically linking writing anxiety with writing performance— particularly through CAF measures— remains relatively underdeveloped. Housen and Kuiken (2009) have underscored the multidimensional nature of writing performance, while major studies have focused on isolated components of CAF notions. Some studies have examined grammatical or syntactic complexities (Güvendir & Uzun, 2023; Haddad, 2018), while others have looked at fluency (Limpo, 2018; Machida & Dalsky, 2014) or combined elements of complexity and accuracy/ fluency (Rahimi & Zhang, 2019; Waked et al., 2023).

Besides, studies have discussed the intact CAF triad correlates of writing anxiety. Zabihi (2017) regarded writing anxiety as a mediating factor to examine whether self-efficacy could indirectly affect CAF indices in regression analyses. Zabihi et al. (2020) explored correlations between writing anxiety and CAF measures where writing anxiety was conceptualized as somatic anxiety, cognitive anxiety, and avoidance behavior. Tahmouresi (2021) used path analysis to predict the impact of writing anxiety on writing quality and CAF performance, offering insights into the systemic effects of anxiety on writing. However, scarce research has examined the relationships between writing anxiety and CAF notions in group difference analysis, to explore the possible differences between high and low anxiety writers in CAF dimensions. This represents the first research gap addressed in this study.

The concept of genre encompasses “a class of communicative events, the members of which share some set of communicative purposes” (Swales, 1990, p. 58). Since its initial discussion in the 1980s (Swales, 1981), the study of the genre has expanded, particularly in how different genres require distinct linguistic features to communicate varied functions (Biber & Conrad, 2009). Research into genre-specific writing has demonstrated that different genres possess unique language features that may necessitate distinct approaches by writers (Yoon, 2021). However, many studies on writing anxiety and CAF performance examine only one genre, limiting generalizability (Güvendir & Uzun, 2023; Limpo, 2018; Rahimi & Zhang, 2019; Tahmouresi, 2021; Zabihi, 2017). Zabihi et al. (2020) uniquely included both argumentative and narrative genres in their correlational research on anxiety and CAF, but their emphasis was on the interaction between anxiety types and genre, rather than on how genre itself impacts CAF measures. Furthermore, most literature on genre and CAF performance has focused on how genre affects lexico-grammatical complexities rather than the broader CAF measures (Beers & Nagy, 2009; Heng et al., 2023; Qin & Uccelli, 2016). This study bridges the second research gap by investigating how both argumentative and narrative genres impact CAF achievements, examining the main effects of genre and its interaction with writing anxiety.

Complexity, Accuracy, and Fluency Measures in L2 Writing

In the field of L2 writing research, a learner’s writing competence is often reflected through their performance, which can be meticulously evaluated using CAF measures (Ellis & Barkhuizen,

2005; Housen & Kuiken, 2009). CAF encompasses elaborateness and variety, error-free proficiency, and "native-like rapidity" in writing (Lennon, 1990). This study adopts quantitative and general CAF indices to measure written drafts, categorizing them into syntactic complexity, lexical complexity, accuracy, and fluency measures. Syntactic complexity is analyzed based on length, subordination, coordination, and specific structures, with a recommendation for selecting multiple dimensions in different units to capture a broader perspective of syntactic intricacies (Norris & Ortega, 2009). Key indices such as mean length of clause (MLC) in the length unit, dependent clauses per clause (DC/C) in the subordination unit, and verb phrases per T-unit (VP/T) focusing on specific structures are used to assess syntactic complexity, identified as effective measures in recent studies (Kyle et al., 2021; Lu, 2011; Lu & Ai, 2015).

Lexical complexity measures concentrate on the density, sophistication, and diversity of written texts. This study employs measures like the ratio of the number of lexical words (N_{lex}/N, marked as LD), which serves as a primary indicator of lexical density (Lu, 2012), and the sophisticated word types (Ts/T, marked as LS2), which gauges lexical sophistication (Laufer, 1994; Yang et al., 2023). Diversity is evaluated through the type-token ratio ($T/\sqrt{N}$, marked as RTTR) and verb variations (T_{verb} /$\sqrt{2N_{verb}}$, marked as CVV1), both of which are highly regarded for their effectiveness in capturing lexical diversity (Hao et al., 2023; Lu, 2012).

Accuracy is commonly measured by the count of errors or error-free units (Polio & Shea, 2014). The number of error-free clauses (EFC/C) is used to ensure that every participant's output is assessable, avoiding instances of zero error-free T-units. Frequency measures, capturing the rapidity of writing, include the number of words per minute in untimed writing or the total number of words, clauses, or T-units under timed conditions, to reflect the spontaneous production capacity of the writers (Li, 2023). This study employs the total number of words (W) and the total number of clauses (C) to calculate fluency in timed written texts.

This systematic approach to adopting CAF measures ensures a comprehensive and detailed understanding of L2 writing ability, adhering strictly to the validated metrics in contemporary research. Table 1 displays all CAF measures selected in this study.

Chinese EFL Non-English Learners

Chinese EFL learners, particularly non-English majors, have been underrepresented as research subjects in existing literature (refer to *Overview of Writing Anxiety and Genre*), despite their significant relevance to scholarly inquiry. Non-English majors face substantial academic pressures, notably the requirement to pass the College English Test Band 4 (CET-4) to fulfill graduation criteria (Xie, 2021). The CET-4, a nationwide standardized test, assesses various English sub-skills and is tailored specifically for non-English majors. Previous studies (He & Niao, 2015; Li et al., 2012; Sang, 2017) indicated that writing anxiety impeded these students' ability to achieve higher CET-4 scores, highlighting a gap in understanding how writing anxiety affects performance in the two often tested genres of argumentative and narrative writing. This study addresses the third research gap by focusing on Chinese EFL non-English majors, specifically those who have reached an intermediate proficiency level as decided by a placement test. Detailed criteria for participant selection and the implications for research findings will be elaborated on *Participants*.

The Current Study

Building on the outlined context, this study is designed to investigate the impacts of writing anxiety (high and low levels) and genre (argumentative and narrative essays) on the ten CAF measures (MLC, DC/C, VP/T, LD, LS2, RTTR, CVV1, EFC/C, W, and C) among intermediate Chinese EFL learners. Specifically, we first examine the impact of anxiety levels on CAF performance. Previous research suggests a detrimental effect of high anxiety on writing achievements (Beers & Nagy, 2011; Yoon & Polio, 2017). Thus, learners with lower anxiety may outperform their higher anxiety counterparts across all CAF dimensions. Secondly, we assess the impact of genre on CAF outcomes, hypothesizing significant disparities between argumentative and narrative essays based on mixed findings from past research. Lastly, we explore the potential interaction effects between writing anxiety and genre on CAF dimensions. Drawing on analogous studies in L1 contexts, such as the work by Faigley et al. (1981), we anticipate that these interactions may significantly impact CAF performance.

Based on the three research objectives outlined above, the current study proposes the following research questions:

1. Does the low anxiety group perform better than the high anxiety group in all measures of complexity, accuracy, and fluency among Chinese intermediate EFL learners?
2. Are there any main effects of the genre on the measures of complexity, accuracy, and fluency among Chinese intermediate EFL learners?
3. Is there an interaction effect between writing anxiety and genre on any of the CAF measures among Chinese intermediate EFL learners?

Table 1. *Targeted syntactic complexity, lexical complexity, accuracy, and fluency measures*

Construct	Measure	Formula
Syntactic complexity	Mean length of clause (MLC)	# of words / # of clauses
	Dependent clause ratio (DC/C)	# of dependent clauses / # of clauses
	Verb phrases per T-unit (VP/T)	# of verb phrases / # of T-units
Lexical complexity	Lexical density (LD)	# of lexical words / # of words
	Lexical sophistication-II (LS2)	# of sophisticated word types / # of word types
	Root TTR (RTTR)	# of word types / # of square root of words ($T/\sqrt{N}$)
	Corrected VV1 (CVV1)	Based on the number of verb types ($T_{verb}/\sqrt{2N_{verb}}$)
Accuracy	Error-free clauses (EFC/C)	# of error-free clauses / # of clauses
Fluency	Total number of words (W)	# of words / # of texts
	Total number of clauses (C)	# of clauses / # of texts

Methods

Our methods introduced the participants and the placement test (Oxford Quick Placement Test) for screening, then outlined the involved instruments and materials including Second Language Writing Anxiety Inventory (SLWAI), argumentative and narrative writing prompts, L2 Syntactic Complexity Analyzer (L2SCA), Lexical Complexity Analyzer (LCA), Grammarly and Polio & Shea's coding guidelines. It provided a summary of the two-day data collection procedure and elaborated on the adopted statistical methods in R Studio and SPSS.

Participants

Participants were recruited from a top private university in Central China based on the following eligibility criteria. i) freshman status: participants were first-semester, non-repeat

freshmen to ensure no prior exposure to the research instruments used in this study. ii) non-English majors: all participants were non-English majors required to take a standard English course comprising listening, reading, translation, and writing sections. This course, aligned with the writing genres studied here (argumentative and narrative), prepares students for the CET-4 exam, minimizing sampling bias by enrolling students with similar college entrance exam scores across various majors. iii) language proficiency: participants were required to achieve an intermediate level (30-39 points) on the Oxford Quick Placement Test (OPT) (Syndicate, 2001), which correlates with the B1 level of the Common European Framework of Reference for Languages (CEFR) (Vasylets & Marin, 2020). Although the initial plans of our study considered selecting upper-intermediate students in line with previous research, the average proficiency level of first-year non-English EFL learners led to the selection of those at the intermediate level (Li et al., 2022).

Based on the three criteria, following a call for participants in classes taught by the same English teacher (Class of 2023, over 300 students), nearly 200 volunteered. After initial screening with the OPT, 167 students qualified (114 males, 53 females), ages ranging from 17 to 21 years (M = 18.40, SD = 0.73). All were native Chinese speakers, with an average of 9 years of English learning. The standard CET-4 course was the only context involving L2 writing for these students. Participants were awarded credits for their involvement.

Instruments

Second Language Writing Anxiety Inventory

The SLWAI, developed based on data from Chinese EFL learners, is a 22-item, 5-point Likert scale, with items 1, 4, 7, 17, 18, 21, and 22 requiring reverse coding (Cheng, 2004). As one of the most commonly used instruments for measuring L2 writing anxiety (Rabadi & Rabadi, 2020; Sun & Fan, 2022), SLWAI demonstrates high internal consistency (α = .91) and test-retest reliability (r = .85) (Cheng, 2004). The Chinese version of SLWAI was utilized in this study, provided directly by the developer via email.

Argumentative & Narrative Essays

Two argumentative and two narrative writing prompts were selected from CET-4 writing tasks from the past five years (Appendix A). The argumentative prompts were taken from one exam set, and the narrative prompts from another. Each participant was required to complete one argumentative and one narrative task. To avoid potential topic confounding and experimental effects, the tasks were assigned randomly. Half of the participants drafted an argumentative essay first, followed by a narrative essay, while the other half completed the tasks in reverse order. Essays were collected on a digital platform under timed conditions, and participants were unfamiliar with the platform and writing prompts. Each participant was permitted a single submission.

L2 Syntactic Complexity Analyzer

The L2SCA (Lu, 2010) is a computational system designed to automatically analyze the syntactic complexity of written English. Frequently used in syntactic complexity research (Heng et al., 2023; Yoon, 2021), L2SCA generates 9 basic structures and 14 syntactic complexity indices, including MLC, DC/C, VP/T, W, and C, which were used in this study. L2SCA has high reliability (.83 to 1.0) for identifying indices and a high correlation (.83 to 1.0) with manual coding (Lu,

2010). Compared to other analyzers, L2SCA is more transparent and consistent in its measurement computations (Polio & Yoon, 2018). This study used L2SCA (version 4.2.2) to calculate the syntactic complexity measures MLC, DC/C, VP/T, and the fluency measures W and C.

Lexical Complexity Analyzer

The LCA (Lu, 2012) is another computational system that automates the measurement of lexical complexity in written English. The system produces 8 basic structures and 25 lexical production units. Previous studies (Hao et al., 2023; Spring & Johnson, 2022) have validated LCA as an advanced and effective lexical analyzer. Using the Part-Of-Speech (POS) tagger TagAnt (version 2.0.5) (TagAnt, 2024), this study employs LCA (version 2.0) to analyze the lexical complexity measures LD, LS2, RTTR, and CVV1.

Grammarly Premium and Polio & Shea's Guidelines for Coding Errors

To semi-automate the measurement of error-free clauses (EFC/C) for accuracy, Grammarly Premium (Grammarly, 2024) was utilized to detect general errors in each essay. Grammarly is used by L2 writers for error identification due to its reported reliability (Pfau et al., 2023; Phuoc & Barrot, 2022). In this study, Grammarly was configured with audience (knowledgeable), formality (neutral), and domain (general) settings to identify critical and advanced issues in each essay. Following this, two raters manually coded errors based on Polio & Shea's Guidelines for coding errors (Polio & Shea, 2014). The first rater coded errors in all samples, while the second rater coded errors in a randomly selected 50% of the samples. The inter-rater reliability was .96 (Pearson's *r*). Finally, all clauses containing errors were removed to calculate the ratio of error-free clauses.

Procedure

Data collection occurred in a designated classroom over two non-consecutive days. Initially, following a concise introduction to the study, all volunteer students undertook the timed OPT version 1 (Syndicate, 2001) for preliminary screening. One week subsequently, those who achieved intermediate scores on the OPT were reconvened in the same classroom. During this session, they were required to: i) complete the SLWAI via Microsoft Forms; and ii) write one argumentative and one narrative essay on an online writing platform, allocating 40 minutes for each task (Zhang, 2023). A 10-minute break was allowed between the two writing tasks to minimize fatigue. To ensure the integrity of the responses, the use of electronic devices was prohibited during the session, and students were allowed only a single submission opportunity per task. Essays were downloaded directly from the platform for complexity, accuracy, and fluency (CAF) analyses. In total, 167 students successfully submitted both essays within the allocated time. All data were treated with strict confidentiality to protect participants' privacy.

Analysis

The objective of this study is to statistically compare the mean differences between high and low-anxiety writers across argumentative and narrative genres and to investigate the interaction between writing anxiety and genre, as well as their independent effects. Writing anxiety and genre are treated as categorical variables with two levels each, and all CAF measures serve as continuous dependent variables. Initially, a series of two-way mixed ANOVAs were conducted to evaluate the interaction effects posited in the third research hypothesis. Subsequently, independent samples

and paired-sample *t*-tests were employed to assess the main effects hypothesized for writing anxiety and genre.

To ensure robust statistical procedures, the 167 participants were grouped into three quantiles based on their SLWAI scores ($p < .001$), focusing on the high anxiety ($n = 55$) and low anxiety ($n = 56$) groups. After excluding seven outliers based on Z scores and studentized residuals (beyond ± 3.00), each group was adjusted to 52 participants ($\bar{x}_{(high)} = 84.92$; $\bar{x}_{(low)} = 55.37$). Given concerns about sample size adequacy for multivariate analysis (Young III, 2006), mixed ANOVAs were specifically structured with writing anxiety (high *vs.* low) as a between-subjects factor and genre (argumentative *vs.* narrative) as a within-subjects factor. All statistical analyses were calculated in R (version 4.3.2) and SPSS (version 27.0.1).

For normally distributed and variance-homogeneous measures (DC/C, LD, LS2, RTTR, CVV1, EFC/C, W, and C), mixed-effects ANOVA models were executed via the *lmer()* function from the *lme4* package in R, noted for its computational efficiency and flexibility (Douglas Bates et al., 2015), then main effects with effect sizes (Cohen's *d*) were determined using *t*-tests in SPSS. Measures (MLC, VP/T) that did not meet normality ($p_{(MLC)}$ = .666, .197, .000, .082; $p_{(VP/T)}$ = .045, .009, .448, .078) or homogeneity ($p_{(MLC)}$ = .466; $p_{(VP/T)}$ = .388) prerequisites were analyzed using robust methods. The *bwtrim()* function for 20% trimmed means and the *sppba()* and *sppbb()* functions for percentile bootstrap analyses were utilized to compute the interactions and main effects, adhering to recommendations for robust statistical analysis in mixed designs (Field et al., 2012; Wilcox, 2023). Effect sizes (ξ) were calculated using the Xi explanatory measure (Wilcox & Tian, 2011), with procedures from the *WRS2* package in R.

Results

The descriptive results for 10 adopted CAF measures by writing anxiety and genre are presented in Table B in Appendix B, where writing anxiety is divided into two groups: low (WA-L) and high (WA-H), and genre is divided into two types: narrative (Nar) and argumentative (Arg). The inferential results of Writing Anxiety * Genre mixed ANOVA are presented in Table 2; no significant interaction effect was observed, but prevalent main effects for both writing anxiety and genre were determined. The report of the inferential results is as follows.

The ANOVA revealed significant main effects of writing anxiety on several performance measures. The results indicated:

- Syntactic complexity, measured by the dependent clause ratio (DC/C), was significantly affected by writing anxiety ($F(1, 102) = 7.62$, $p = .007$).
- Lexical complexity, captured by the root type-token ratio (RTTR), showed notable differences ($F(1, 102) = 5.55$, $p = .02$); Corrected verb variation (CVV1) also indicated significant differences due to anxiety levels ($F(1, 102) = 5.64$, $p = .019$).
- Fluency, measured by the total number of words (W) and total number of clauses (C), was both statistically significant (W: $F(1, 102) = 14.44$, $p < .001$; C: $F(1, 102) = 6.12$, $p = .015$).

Subsequent independent samples *t*-tests compared low and high anxiety groups, revealing that the low anxiety group generally performed better across all measured indices:

- DC/C: $M = 0.3$, $SD = 0.09$ for low anxiety *vs.* $M = 0.26$, $SD = 0.11$ for high anxiety ($t(206) = 2.795$, $p = .006$, $d = .39$).
- RTTR: $M = 7.56$, $SD = 0.89$ for low anxiety *vs.* $M = 7.22$, $SD = 0.75$ for high anxiety ($t(206) = 2.953$, $p = .004$, $d = .41$).
- CVV1: $M = 2.97$, $SD = 0.47$ for low anxiety *vs.* $M = 2.78$, $SD = 0.46$ for high anxiety ($t(206)$

= 2.82, p = .005, d = .39).

- Total words (W): M = 209.13, SD = 39.51 for low anxiety *vs.* M = 184, SD = 38.42 for high anxiety (t(206) = 4.649, p < .001, d = .65).
- Total clauses (C): M = 22.93, SD = 5.08 for low anxiety *vs.* M = 20.7, SD = 5.96 for high anxiety (t(206) = 2.904, p = .004, d = .40).

The total number of words (W) reached the medium effect size (d = .65), indicating a noticeable impact of writing anxiety on fluency (Table 2 and Table 3).

Table 2. *Inferential statistics of two-way mixed ANOVA (writing anxiety * genre)*

	Measure	***SS/MS***	***F***	***p***	**Measure**	***SS/MS***	***F***	***p***
WA	DC/C	0.07	7.62	.007**	EFC/C	0.00	0.18	.671
Genre		0.12	13.43	< .001***		0.12	7.92	.006**
WA*Genre		0.00	0.46	.500		0.01	0.68	.413
WA	LD	0.00	0.95	.331	W	7165.1	14.44	< .001***
Genre		0.00	2.48	.118		30168.4	60.79	< .001***
WA*Genre		0.00	0.28	.600		154.0	0.31	.579
WA	LS2	0.00	1.08	.301	C	78.66	6.12	.015*
Genre		0.13	61.71	< .001***		686.94	53.41	< .001***
WA*Genre		0.00	2.01	.159		6.23	0.48	.488
WA	RTTR	1.40	5.55	.020*	MLC		1.34	.251
Genre		4.90	19.40	< .001***			5.01	.029*
WA*Genre		0.17	0.67	.415			0.15	.695
WA	CVV1	0.65	5.64	.019*	VP/T		0.55	.462
Genre		1.85	16.20	< .001***			13.29	< .001***
WA*Genre		0.01	0.13	.722			0.01	.941

writing anxiety; SS, sum of squares; MS, Mean square.
*** p < .001. ** p < .01. * p < .05.

Table 3. *Independent samples t-tests for statistically significant CAF measures between anxiety groups*

Category	**Measure**	**Low Anxiety**	**High Anxiety**	***t***	***p***	***d***
		M(SD)	*M(SD)*			
Syntactic complexity	DC/C	0.30(0.09)	0.26(0.11)	2.795	.006**	.39
Lexical complexity	RTTR	7.56(0.89)	7.22(0.75)	2.953	.004**	.41
	CVV1	2.97(0.47)	2.78(0.46)	2.820	.005**	.39
Fluency	W	209.13(39.51)	184.00(38.42)	4.649	< .001***	**.65**
	C	22.93(5.08)	20.70(5.96)	2.904	.004**	.40

M, mean; SD, standard deviation; d, Cohen's d, |δt| = 0.2, 0.5, and 0.8 represent small, medium, and large effects.
*** p < .001. ** p < .01. * p < .05.

The ANOVA showed significant genre effects on multiple performance metrics. The mean length of clause (MLC) had a main effect (F(1, 61) = 5.01, p = .029). Significant differences were also observed in the dependent clause ratio (DC/C, F(1, 102) = 13.43, p < .001), verb phrases per T-unit (VP/T, F(1, 62) = 13.29, p < .001), and several measures of lexical complexity: lexical sophistication-II (LS2, F(1, 102) = 61.71, p < .001), root type-token ratio (RTTR, F(1, 102) =

19.40, $p < .001$), and corrected verb variation (CVV1, $F(1, 102) = 16.20$, $p < .001$). Fluency measures such as total number of words (W, $F(1, 102) = 60.79$, $p < .001$) and clauses (C, $F(1, 102) = 53.41$, $p < .001$), along with error-free clause ratio (EFC/C, $F(1, 102) = 7.92$, $p = .006$), also showed significant genre-related differences (See Table 2).

Subsequent paired samples *t*-tests explored differences between argumentative and narrative essays, independent of writing anxiety. Syntactic complexity was greater in argumentative essays, with DC/C and VP/T showing higher values than in narrative essays (DC/C: $t(103) = -3.674$, $p < .001$, $d = -.36$; VP/T: $t = -2.908$, $p < .001$, $\xi = .58$). However, narrative essays scored higher on lexical complexity measures such as LS2, RTTR, and CVV1 (LS2: $t(103) = 7.817$, $p < .001$, $d = .77$; RTTR: $t(103) = 4.412$, $p < .001$, $d = .43$; CVV1: $t(103) = 4.042$, $p < .001$, $d = .40$). In terms of fluency and accuracy, argumentative essays also performed better, displaying higher numbers in word count, clauses, and error-free clause ratio (W: $t(103) = -7.823$, $p < .001$, $d = -.77$; C: $t(103) = -7.327$, $p < .001$, $d = -.72$; EFC/C: $t(103) = -2.819$, $p = .006$, $d = -.28$). These effects ranged from medium to large, showing substantial genre influences on writing performance (See Table 4).

Table 4. *Paired-sample t-tests for statistically significant CAF measures between genre types*

Category	**Measure**	**Narrative** *M(SD)*	**Argumentative** *M(SD)*	***t***	***p***	***d***
Syntactic complexity	DC/C	0.26(0.10)	0.30(0.10)	-3.674	< .001***	-.36
Lexical complexity	LS2	0.34(0.05)	0.29(0.06)	7.817	< .001***	**.77**
	RTTR	7.55(0.83)	7.24(0.82)	4.412	< .001***	.43
	CVV1	2.97(0.49)	2.78(0.44)	4.042	< .001***	.40
Accuracy	EFC/C	0.59(0.18)	0.63(0.15)	-2.819	.006**	-.28
Fluency	W	184.52(38.70)	208.61(39.57)	-7.823	< .001***	**-.77**
	C	20.00(5.51)	23.63(5.18)	-7.327	< .001***	**-.72**
Category	Measure	Narrative *Mt(Mt.se)*	Argumentative *Mt(Mt.se)*	*t*	*p*	*ξ*
Syntactic complexity	MLC	9.39(0.20)	8.87(0.16)	1.941	.048*	.29
	VP/T	1.92(0.04)	2.10(0.05)	-2.908	< .001***	**.58**

M, mean; SD, standard deviation; Mt, 20% trimmed mean; Mt.se, standard error for the 20% trimmed mean; d, Cohen's d, Values of |δt| = 0.2, 0.5, and 0.8 represent small, medium, and large effects; ξ, Values of ξˆ = 0.10, 0.30, and 0.50 represent small, medium, and large effects (Mair & Wilcox, 2020).
*** $p < .001$. ** $p < .01$. * $p < .05$.

Discussion

Main Effects of Writing Anxiety

Consistent with previous studies, this research substantiates the negative correlations between writing anxiety and L2 writing achievements; the low anxiety group outperformed the high anxiety group across all significant CAF measures (DC/C, RTTR, CVV1, W, & C) (Teimouri et al., 2019; Zhang, 2019). DC/C ($p = .007$) emerged as a critical syntactic complexity measure, where high-anxiety writers showed a significantly lower ratio of dependent clauses than their low-anxiety counterparts. Compared to the unit length (e.g., MLC) or the structure (e.g., VP/T), high anxiety writers perform worse in the subordination unit, which aligns with Norris and Ortega (2009), who theorized syntactic development through systemic functional linguistics and suggest that subordination is a key developmental stage. Thus, DC/C distinguishes between the high and low anxiety groups at this intermediate stage.

Lexical complexity analysis revealed that measures like RTTR (p = .020) and CVV1 (p = .019) significantly differed between the groups, which shows that lexical diversity, particularly verb variation, is more affected by anxiety than lexical sophistication, which is in line with Lu (2012), where lexical variation especially verb variation displayed the strongest effect on L2 quality. Findings suggest emphasizing a broader range of vocabulary and prioritizing verb learning in instructional settings. Lexical density (LD) showed no significant differences, aligning with previous studies (Eckstein & Ferris, 2018; Lu, 2012; Yang et al., 2023).

Fluency measures, specifically W and C, indicated significant differences, with W achieving a medium effect size (d = .65), which suggests that higher anxiety leads to shorter essays, corroborating earlier meta-analyses (Teimouri et al., 2019; Zhang, 2019) and indicates a strong effect of fluency on writing proficiency (Phuoc & Barrot, 2022).

Viewing complexity, accuracy, and fluency as a triad, the main disparities between the high and low anxiety groups lie in the complexity (DC/C, RTTR, CVV1) and fluency (W & C) domains. This observation is in line with MacIntyre and Gardner (1994), who have found that language anxiety negatively impacts complexity and fluency at the output stage. A possible explanation for this might be from a cognitive psychological perspective. Cognitive interference, as discussed by Eysenck et al. (2007) and Schwarzer (2013), limits available cognitive resources, particularly under timed conditions. According to Skehan's (1998, 2009) Limited Attention Capacity hypothesis, a limited processing capacity is directed to a "trade-off" within the CAF triad: enhanced one area might be associated with compromised two others, and a concern to avoid error leads to raised accuracy but lower complexity and fluency. In this study, writers' primary attention was allocated to avoiding writing errors to get good grades for credit. The more anxious students were, the more attentional resources they possibly committed to avoiding mistakes. Therefore, no significant difference was observed in accuracy between high and low anxiety groups.

The observed disparities in CAF performance between high- and low-anxiety groups underscore significant pedagogical implications for enhancing writing proficiency. On the one hand, it is essential to implement tailored instructional strategies specifically designed to mitigate the impact of writing anxiety. These strategies should be informed by a nuanced understanding of how anxiety influences writing performance, facilitating the development of interventions tailored to learners at various anxiety levels. On the other hand, it is also worth exploring unified coping strategies that motivate all students to achieve optimal writing proficiency, regardless of their individual anxiety levels. Such approaches have been empirically validated in the context of language aptitude (Payne & Whitney, 2019; Vatz et al., 2013), suggesting that similarly "unified" strategies targeting another individual difference— writing anxiety, which are effective in reducing its impact across all levels, may also be worth further investigation.

Main Effects of Genre

The results showed significant main effects of the genre on all assessed measures of complexity, accuracy, and fluency. Argumentative essays demonstrated higher syntactic complexity, accuracy, and fluency, whereas narrative essays exhibited greater lexical complexity. This divergence is in line with Biber and Conrad's (2009) assertions on genre effects— each genre has different functional demands, requiring distinct linguistic approaches.

The syntactic complexity findings align with previous research, indicating that argumentative writing incorporates more complex syntactic structures than narrative writing (Lu, 2011; Yoon, 2021; Yoon & Polio, 2017). This was evidenced by significantly higher DC/C and

VP/T scores in argumentative tasks ($p < .001$), suggesting greater use of dependent clauses and verb phrases to construct arguments and support viewpoints. Conversely, the MLC results contradicted some earlier findings, with narrative writing displaying slightly higher mean lengths (*Mt* = 9.39) compared to argumentative writing (*Mt* = 8.87), although the significance was marginal ($p = .048$). This variance echoes the mixed results in the literature (Beers & Nagy, 2009; Yoon, 2021; Yoon & Polio, 2017). Norris and Ortega (2009) suggested that MLC might be most indicative of syntactic complexity at more advanced writing levels due to its focus on subclausal and phrasal modifications.

The study's findings on syntactic complexity for intermediate L2 writers suggest a tendency to construct longer sentences by stringing together clauses rather than employing sophisticated phrasal modifications (the following excerpts highlight two examples). This performance reflects their limited proficiency and suggests a need for pedagogical approaches that enhance their ability to employ more complex grammatical structures. Thus, teaching should focus on expanding students' capabilities in creating intricate subclausal constructions, which could include utilizing writing templates featuring complex dependent clauses or engaging in challenging writing tasks that reward more sophisticated sentence construction.

Excerpts of two argumentative essays:

i. *First of all, I want to say that our library has only one exit. It is not convenient to enter into it and it will cost us more time. … Next, if we stay too long in the library, we will want to drink, but there is no water. It is not friendly to us.* (Student 39)

ii. *First, we should organize an activity named Bahe. Do this, we can organize many students. Then we can begin. … What's more, it can also strengthen the body.* (Student 50)

Contrary to syntactic complexity outcomes, narrative essays consistently demonstrated higher lexical sophistication (LS2) and diversity (RTTR, CVV1) than argumentative essays. This finding aligns partially with Yoon and Polio (2017), who noted higher lexical diversity in narratives but suggested that argumentative texts typically show greater sophistication due to prevalent nominalization. Their study involved nearly advanced students, illustrating the challenges intermediate students face in employing sophisticated vocabulary in complex writing contexts. Further analysis revealed that narrative essays contained nearly double the occurrences of nominalized suffixes (e.g., *-ty, -ance*) compared to argumentative essays (412 *vs.* 212 tokens), while transitional phrases (e.g., *first of all, last but not least*) were more common in argumentative contexts (131 *vs.* 95 tokens). This suggests that narrative writing may be less demanding, enabling the use of more sophisticated vocabulary and varied expressions. Consequently, enhancing pedagogical focus on argumentative writing could benefit students by challenging them to develop more complex linguistic structures.

Regarding accuracy and fluency, argumentative essays outperformed narratives, with higher counts of error-free clauses (EFC/C) and overall words (W). Argumentative texts averaged 24 words more than narratives ($M_{(Arg)} = 208.61$ *vs.* $M_{(Nar)} = 184.52$), reflecting a denser use of clauses. This supports the notion that argumentative writing, by its nature, requires more extensive word usage to develop and support arguments compared to the more linear, chronological structure of narrative writing. An additional hypothesis emerged from these findings: the lack of significant differences in word count across genres might suggest similar levels of accuracy, underscoring the interconnectedness of fluency and accuracy in L2 writing assessments.

Interaction Effects of Writing Anxiety and Genre

The investigation into the third hypothesis revealed no significant interaction effects between writing anxiety and genre. This outcome may be explained by several factors. The English proficiency levels of the intermediate Chinese EFL non-English majors may have played a critical role. Faigley et al. (1981) have documented an interaction effect of writing anxiety and genre on MLC among L1 first-year undergraduates. The comparative linguistic capabilities of L2 writers at the intermediate level are lower than those of L1 writers, which could diminish the likelihood of observing significant interaction effects in such contexts.

The constrained essay lengths in this study may have influenced the nonsignificant findings. Whereas other studies often allow word limits ranging from approximately 250 to 350 words (Qian, 2023; Yoon, 2021), the essays in this study averaged nearly 200 words, limiting the depth of analysis possible within the given variances. Furthermore, the sample size also posed limitations. The relatively small sample (n = 52 in 2×2 cells) under the conditions of data collection has further restricted the capacity to detect significant interactions.

Conclusion

This study examined the influence of writing anxiety and genre on complexity, accuracy, and fluency measures among Chinese intermediate EFL learners. The analyses revealed that the low anxiety group outperformed the high anxiety group in significant CAF measures and identified differences between argumentative and narrative essays across all CAF dimensions. Theoretically, the findings underscore the profound impact of affective factors on L2 writing, aligning with current trends in SLA research that emphasize the interplay of identity and language learning. They also confirm that different genres, due to their varied linguistic demands, necessitate distinct writing strategies. Pedagogically, this study highlights the need for tailored instructional strategies to support intermediate L2 learners with varying levels of writing anxiety, particularly in genre-specific writing tasks.

However, the study's scope is confined to intermediate students from a single university, restricting the generality of these findings. Also, the CAF measures used might not have captured subtle linguistic features impacted by affective IDs, advocating for more granular linguistic analyses in future research. Besides, since the study focused on written outputs, further studies should consider the stages of writing anxiety to clarify its effects. Finally, expanding the scope to include various communication modalities— such as speech production and integrated oral-written tasks— could provide deeper insights into how affective factors influence multimodal language performance.

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Appendix A

WRITING PROMPTS

Argumentative Essays

i. ***Directions:*** Suppose you are going to write a proposal to your school library for improving its service. You are to write about its current problems and possible solutions to these problems. You should write at least 150 words.

ii. ***Directions:*** Suppose you are going to write a proposal to your student union for enriching students' extracurricular activities. You are to write about what activities to organize and why. You should write at least 150 words.

Narrative Essays

i. ***Directions:*** For this part, you are allowed to write a news report to your campus newspaper on a visit to a volunteer activity organized by your Student Union to assist elderly people in the neighborhood. You should write at least 150 words.

ii. ***Directions:*** For this part, you are allowed to write a news report for your campus newspaper on a visit to a Hope elementary school organized by your Student Union. You should write at least 150 words.

Appendix B

Descriptive Results of Effects of Writing Anxiety and Genre on CAF Performance

Table B. *Descriptive statistics for complexity, accuracy, and fluency measures by writing anxiety (WA-L/WA-H) and genre (Nar/Arg)*

Category	Measure	WA-L / Nar (*n* = 52)		WA-L / Arg (*n* = 52)		WA-H / Nar (*n* = 52)		WA-H / Arg (*n* = 52)	
		M(SD)	95% CI	*M(SD)*	95% CI	*M(SD)*	95% CI	*M(SD)*	95% CI
Syntactic complexity	DC/C	0.28 (0.08)	0.28-0.26	0.32 (0.10)	0.32-0.29	0.23 (0.12)	0.23-0.20	0.29 (0.09)	0.29-0.26
Lexical complexity	LD	0.51 (0.04)	0.51-0.50	0.52 (0.04)	0.52-0.51	0.52 (0.04)	0.52-0.51	0.52 (0.04)	0.52-0.51
	LS2	0.34 (0.06)	0.34-0.32	0.30 (0.06)	0.30-0.28	0.34 (0.05)	0.34-0.32	0.28 (0.06)	0.28-0.26
	RTTR	7.74 (0.85)	7.74-7.51	7.38 (0.90)	7.38-7.13	7.35 (0.78)	7.35-7.13	7.10 (0.70)	7.10-6.90
	CVV1	3.07 (0.45)	3.07-2.94	2.86 (0.48)	2.86-2.73	2.87 (0.51)	2.87-2.73	2.70 (0.40)	2.70-2.59
Accuracy	EFC/C	0.58 (0.16)	0.58-0.54	0.65 (0.13)	0.65-0.61	0.59 (0.19)	0.59-0.53	0.62 (0.16)	0.62-0.58
Fluency	W	197.94 (36.97)	197.94-187.65	220.31 (39.13)	220.31-209.41	171.10 (35.92)	171.10-161.09	196.90 (36.76)	196.90-186.67
	C	21.29 (5.23)	21.29-19.83	24.58 (4.39)	24.58-23.35	18.71 (5.53)	18.71-17.17	22.69 (5.76)	22.69-21.09
Category	Measure	WA-L / Nar (*n* = 52)		WA-L / Arg (*n* = 52)		WA-H / Nar (*n* = 52)		WA-H / Arg (*n* = 52)	
		Mt (Mt.se)		*Mt (Mt.se)*		*Mt (Mt.se)*		*Mt (Mt.se)*	
Syntactic complexity	MLC	9.61 (0.28)		9.00 (0.23)		9.18 (0.32)		8.75 (0.24)	
	VP/T	1.95 (0.05)		2.13 (0.07)		1.89 (0.06)		2.08 (0.07)	

WA-L, low writing anxiety; WA-H, high writing anxiety; Nar, narrative essay; Arg, argumentative essay; M, mean; SD, standard deviation; 95% CI, 95% confidence interval; Mt, 20% trimmed mean; Mt.se, standard error for the 20% trimmed mean.