The Effects of Task Repetition on L2 Writing Syntactic Complexity

Liping Chen[1*], Wenjing Yu[1], Hanxi Chen[2]

[1] School of Foreign Languages, Southwest Petroleum University, Chengdu, Sichuan, China

[2] National Institute of Education, Nanyang Technological University, Singapore

Abstract: This study employed a pre-test and post-test design to investigate the effect of task repetition on syntactic complexity of L2 writing across argumentative writing tasks. The experiment lasted for four weeks with a one-week interval between each task repetition. A total of 77 non-English-major undergraduates from a university in western China participated in the study, who were randomly allocated to a task repetition group (n = 38) and a non-task repetition group (n = 39). Four dimensions of syntactic complexity were measured, including Mean Length of Sentence, Mean Length of T-unit, Complex Nominals per T-unit, and Coordinate Phrases per T-unit. The findings revealed that task repetition significantly improves phrasal-level syntactic complexity (CN/T). However, the effect of task repetition did not significantly affect length-based measures (MLS, MLT) and coordinate structures (CP/T). This study provides empirical evidence for research on the relationship between task repetition and syntactic complexity in L2 writing. Furthermore, the findings offer foreign language teachers pedagogical implications are that task repetition can be effectively incorporated into L2 writing instruction to enhance learners' syntactic complexity.

***Keywords*:** task repetition; L2 writing syntactic complexity; argumentative tasks; TBLT

1. Introduction

English writing ability is widely regarded as a core component of second language (L2) learning, representing learners' capacity to express ideas through written language and other semiotic resources . For English as foreign language learners (EFL learners), writing can not only show their mastery of language knowledge, but also be an important criterion to measure their overall language proficiency .

Task-based language teaching (TBLT), as an important pedagogical approach, has been advocated in college English education in China. The College English Teaching Guidelines emphasize the cultivation of students' comprehensive English application ability through meaningful language use and communicative activities. Consistent with this orientation, TBLT views that tasks help learners acquire language through meaningful communication. However, many Chinese English teachers still face challenges to use TBLT in practical teaching, especially in task design and classroom implementation [1].

Among the implementation strategies of TBLT, task repetition (TR), that is, learners' re-completion of the same or similar tasks has become one of the research hotspots in the field of second language acquisition (SLA). TR enables learners to mobilize existing language resources and optimize the quality of language output . Since the beginning of the 2000s, as more and more studies have explored the effects of TR on second language performance, it has been widely shown in the literature that repetitive task exercises can help reduce cognitive load and enable learners to shift more attention to language forms[2]

It is worth noting that most of the existing TR studies focus on L2 speech performance rather than L2 writing performance. However, writing is different from spoken language, involving cognitive and linguistic processes such as planning, monitoring, and modification [3]. Therefore, the findings in the oral environment are not directly applicable to the writing context to some extent.

In addition, although a few studies have begun to focus on the effect of TR in L2 writing, those previous studies focused on general dimensions of writing performance, such as lexical complexity and grammatical accuracy [4], but ignored the syntactic complexity of L2 writing. Syntactic complexity is an important indicator of the development of L2 writing ability, reflecting whether L2 learners can produce clearly structured, well-organized language. How TR affects the development of syntactic complexity in L2 writing needs more research to be explored.

To address the limitations, this current study employed an empirical experiment to examine the specific impact of TR on syntactic complexity across argumentative writing tasks among Chinese EFL learners.

2. Literature Review

2.1 Task Repetition in SLA

As a key term in TBLT, TR describes learners' repeated implementation of the same or similar tasks. TR is generally regarded as an important task condition in task-based language learning research. defined TR as "the repeating of a configuration of purposes and content information." (p. 2), which emphasizes that repetition is not merely mechanical rehearsal. Instead, it involves meaningful engagement with task content and language use.

Same task repetition refers to learners completing the same task again under similar conditions. When learners repeat the same task, their familiarity with the task content and structure increases. This familiarity is acquired during the first performance. It reduces their cognitive demands during the second performance, because learners become increasingly familiar with task demands. As a result, learners can allocate more attentional resources to language encoding and structural refinement[5].

2.2 L2 writing Syntactic Complexity

Syntactic complexity refers to the breadth and fineness of syntactic structures used in language production [3][6]. As far as written discourse is concerned, syntactical complexity is usually manifested in the increase of sentence length and the use of more complex grammatical structures. With the improvement of learners' language ability, L2 learners tend to be able to generate longer sentences and more sophisticated syntactic forms in their writing [7][8].

Syntactic complexity is widely recognized as a multidimensional construct to capture different structural levels of language production. Length-based complexity is one of the common dimensions used to measure the average length of the output unit. For example, mean sentence length (MLS) and mean T-unit length (MLT) are often used as common indicators to reflect the overall syntactic processing level of written texts[8][9]. In addition to measuring syntactic complexity by sentence length, it can also be examined by the phrase structure within the sentence. The two commonly used indicators are: the number of complex noun phrases per T-unit (CN/T) and the number of coordinate phrases per T-unit (CP/T). These two indicators are mainly used to assess the intensity of phrase-level structures in writing. Through these indicators, we can see how many more elaborate noun phrases and coordinate structures are used in the text .

2.3 Previous Studies on Task Repetition and Syntactic Complexity of L2 Writing

In the field of Task-Based Language Teaching (TBLT), the effect of task repetition has been widely investigated in L2 oral performance. Relevant research systematically examine the overall effects of TR on CAF of L2 oral performance [10] [11], which revealed that the effect of TR had substantial effects on syntactic complexity and accuracy, but had relatively smaller effect on fluency and lexical complexity.

Based on the findings from L2 speech performance, researchers have increasingly extended the investigation on the effect of TR on L2 writing performance.

A comprehensive meta-analysis conducted by Abdi Tabari et al. [20] synthesized 31 studies with 65 independent samples to systematically examine the effects of TR on L2 written performance, which revealed significant positive effects of TR on syntactic complexity, accuracy, lexical complexity and fluency.

Nitta and Baba[4] conducted a longitudinal classroom-based study to examine the effects of repeated writing tasks on 46 Japanese EFL learners' written production. They completed a timed narrative writing task. The task was repeated weekly throughout a school year. The study examined syntactic complexity, lexical aspects and fluency. The results showed significant gains in syntactic complexity and lexical aspects. However, fluency did not show comparable improvement, reflecting that the effects of TR were not uniform across linguistic measure dimensions.

Khezrlou [12] also investigated the role of TR combined with direct written corrective feedback on L2 writing syntactic dimensions. The study involved 57 EFL learners who completed a narrative writing task across three conditions: TR without feedback, TR with error correction, and TR with rewriting. The findings revealed that the TR with rewriting group showed immediate gains in subordination, but the other syntactic measures remained unchanged. The findings are consistent with the research of Nitta and Baba [13], which also indicates that TR selectively facilitated specific aspects of syntactic complexity.

Kyle and Crossley[14] conducted four sub-studies using 240 TOEFL independent argumentative essays to examine the predictive role of traditional holistic syntactic complexity measures on writing quality. They employed two computational tools: the L2 Syntactic Complexity Analyzer [6] and the Tool for the Automatic Analysis of Syntactic Sophistication and Complexity to measure syntactic complexity across multiple dimensions. The first category comprised traditional holistic indices including MLT, MLC, DC/T, DCC, CP/T, CPC and CN/T. The second category involved clausal indices derived from TAASSC , such as adjectival complements per clause, adverbial clauses per clause, clausal coordinating conjunctions

per clause and non-finite clausal complements per clause . Their findings demonstrated that phrasal complexity indices were stronger predictors of writing quality than both traditional measures and clausal indices.

Abdi Tabari et al.[15] employed a pretest-posttest design with 96 ESL learners across four written argumentative tasks with varying cognitive complexity in a counterbalanced order. They repeated the tasks in the opposite order after a one-week interval. The study examined different dimensions of L2 writing syntactic complexity. The L2SCA was used for analysis. Fourteen syntactic complexity indices were measured, including MLS, MLT, CN/T, and CP/T. The results of showed that task complexity and TR each had significant main effects on different facets of syntactic complexity.

Abdi Tabari et al.[16] examined the effects of task complexity and TR on verb argument construction complexity indices among 96 high-intermediate L2 learners. They performed two argumentative writing tasks and repeated them at a one-week interval. The 384 collected essays were analyzed using Tool for the Automatic Analysis of Syntactic Sophistication and Complexity (TAASSC; Kyle, 2016). Results showed that three conditions: a simple task with repetition (S+R), a complex task with no repetition (C+NR) and a complex task with repetition (C+R). Three conditions all led to more lower-frequency VAC-verb combinations. The C+R group showed a significantly stronger verb-VAC association than the other groups, indicating the superiority of complex task repetition in developing syntactically complex writing.

Another study[16] examined the interplay of TR and task rehearsal across varied proficiency levels among 180 ESL learners at three proficiency levels. They performed an argumentative writing task. Half of the participants (n = 90) repeated the task without prior knowledge. The other half (n = 90) repeated it with awareness of the impending repetition at a one-week interval. The study examined syntactic complexity, accuracy, lexical complexity, and fluency (CALF). This study assessed syntactic complexity using mean length of sentence, mean length of T-unit, clauses per T-unit, complex nominals per T-unit, and coordinate phrases per T-unit. The results showed that task repetition significantly improved all CALF measures. Significant differences were observed across proficiency groups. Progress in CALF did not differ significantly across proficiency levels.

Abdi Tabari and Wang[19] adopted a quasi-experimental design among 120 advanced ESL undergraduates. The study compared three interventions: task sequencing (TS), text modeling (TM), and task repetition (TR) across argumentative writing tasks. The TR group performed and repeated the task twice. The study examined syntactic and lexical complexity. The results showed that all three interventions produced significant improvements. TS produced the largest improvement. TR produced the most limited improvement. TM was between the two. In the TS and TM groups, syntactic and lexical complexity improved in parallel. In the TR group, such parallel improvement was not observed. This suggests that the three interventions activated different learning mechanisms.

In summary, it is important to note that the effects of TR on different dimensions of L2 writing performance remain inconsistent. In addition, previous studies have primarily concentrated on the effect of TR on lexical complexity of L2 writing. However, the effect of TR on syntactic complexity of L2 writing is underexplored.

Thus, it is necessary to conduct an empirical study to investigate the effect of TR on syntactic complexity of L2 writing.

3. Current study

This study adopts a pretest-posttest design to explore the effect of TR on the development of syntactic complexity in second language writing. The independent variable in the study is task repetition (one is the task repetition group, the other is non-task repetition group as the control group. The dependent variable is L2 writing syntactic complexity at four indicators, including the average sentence length (MLS), the average T-unit length (MLT), the number of complex nouns in each T-unit (CN/T), and the number of coordinate phrases in each T-unit (CP/T).

Four research questions (RQ) are addressed as below:

RQ1: To what extent does task repetition affect the pre-test to post-test change in mean length of sentence (MLS) in L2 writing, as compared with the control group?

RQ2: To what extent does task repetition affect the pre-test to post-test change in mean length of T-unit (MLT) in L2 writing, as compared with the control group?

RQ3: To what extent does task repetition affect the pre-test to post-test change in complex nominals per T-unit (CN/T) in L2 writing, as compared with the control group?

RQ4: To what extent does task repetition affect the pre-test to post-test change in coordinate phrases per T-unit (CP/T) in L2 writing, as compared with tthe control group group?

Based on previous research on TR and L2 writing performance [15][16][4], the present study proposes the following hypotheses.

In terms of RQ1, it is hypothesized that TR may influence learners' development in MLS, as repeated task performance

may affect sentence-level syntactic elaboration in L2 writing ([17]; [18].

In terms of RQ2, it is hypothesized that TR may influence learners' development in MLT, as repeated engagement with the same task may affect the structural complexity of T-units during language production [15].

In terms of RQ3, it is hypothesized that TR may facilitate learners' development in complex nominals per T-unit (CN/T), since repeated task performance may encourage greater phrasal elaboration and nominal complexity in L2 writing [13].

In terms of RQ4, it is hypothesized that TR may facilitate learners' development in CP/T, as repeated task performance may allow learners to allocate more attentional resources to linguistic organization and coordination structures [17][18].

4. Method

4.1 Participants

The participants were 77 undergraduates (22 females, 55 males), aged ranging from 19 to 22 (M=19.85, SD=0.68) from different majors in a southwest Chinese university. All participants were from the same grade (sophomore). None of them had received systematic training in L2 writing prior to the experiment. They all passed CET-4 from 425 to 665. The participants were initially drawn from two intact classes, with 39 students in each class. The study designates one of the classes as a task repetition group (TR) and the other class as a non-task repetition group (NTR). During the data screening process, one participant in the TR group did not complete the entire TR process, so he was excluded from the final analysis. The final valid samples include 38 people in the TR group and 39 people in the NTR group. In order to test whether there is a significant difference in CET-4 scores between the task repetition group and the non-task repetition group, this study adopts a single-factor analysis of variance. It should be noted that due to the lack of CET-4 score data of some participants, this analysis is based on the existing valid data. The results of one-way ANOVA showed no significant difference in L2 proficiency between the two groups, $F(1, 69) = 0.739$, $p = .393$, indicating that the participants were comparable in terms of CET-4 proficiency prior to the experiment (see Table 1).

Table 1. Comparative Descriptive Statistics for Comparability of Groups

Group	No.	Age			CET 4 score		
		Mean	SD	Range	Mean	SD	Range
TR	38	19.658	0.699	19-22	474.320	33.784	425-526
NTR	39	20.051	0.597	19-21	482.171	49.483	426-665

Note: Task Repetition Group = TR; Non-task Repetition group = NTR.

4.2 Materials

Two argumentative writing tasks were selected in this study. The argumentative genre was chosen because argumentative writing typically requires learners to express opinions and support arguments with reasons and examples, which is often associated with the use of more elaborated syntactic structures in L2 writing [14] .

The two writing tasks are selected from the writing part of College English Test (CET-6), which are comparable in terms of topic familiarity and cognitive needs. In task-based second language writing research, inter-task comparability is widely regarded as a key criterion for controlling task-related variables and obtaining comparable language performance [18][33]. Previous studies have shown that topic familiarity has a positive impact on the syntactic complexity and overall written performance of second language learners. The reason is that familiar topics can reduce the conceptual processing burden of learners, so that they can invest more cognitive resources into language coding and syntactic refinement [19][34]. In addition, maintaining similar cognitive needs between different tasks helps to reduce the changes in syntactic complexity caused by differences in task difficulty rather than differences in teaching conditions [18]. The specific task content is detailed in Appendix.

4.3 Procedure

The experiment lasted for four weeks. According to the learner's class affiliation, the researcher set class A as the task repetition group and class B as the non-task repetition group. According Figure 1, the TR group (Class A) completed four writing tasks in these four weeks. In the first week, students in both groups first completed Task 1 as a pre-test. For Class A, they will repeat the same tasks as Task 1 in the second and third weeks under similar writing conditions. At the end of the fourth week, the students in this group will complete a new writing task (Task 2) as a post-test.

As a control group, the NTR group (class B) did not receive the treatment throughout the experiment. The NTR group only completed Pre-test (Task 1) at the first week, and completed the post-test (Task 2) at Week 4.

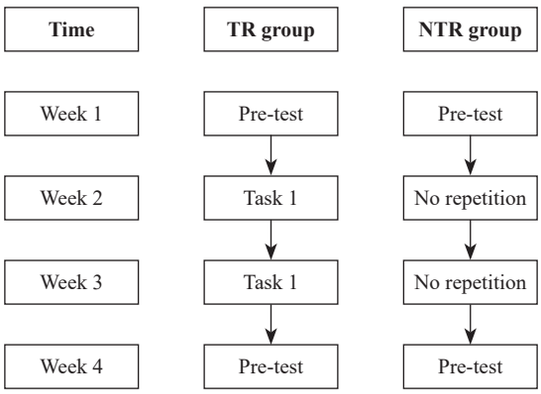

Figure 1. Research Procedure

4.4 Measures of L2 Writing Syntactic Complexity

L2 writing syntactic complexity was measured using the L2 Syntactic Complexity Analyzer [27]. Four indices were selected: mean length of sentence (MLS), mean length of T-unit (MLT), complex nominals per T-unit (CN/T), and coordinate phrases per T-unit (CP/T) (see Table 2).

Table 2. Measures of Syntactic Complexity

Measure	Operation
MLS	Total number of words / Total number of sentences
MLT	T-unit = one main clause + all its dependent clauses Total number of words / Total number of T-units
CN/T	Total number of complex nominals / Total number of T-units
CP/T	Total number of coordinate phrases / Total number of T-units

Note: Mean Length of Sentence = MLS; Mean Length of T-unit = MLT; Complex Nominals per T-unit = CN/T; Coordinate Phrases per T-unit = CP/T.

These indicators reflect two main aspects of syntactic complexity: length-based complexity and phrase complexity. Length indicators (such as MLS and MLT) refer to the average length of the production unit, which are often used to measure the overall syntactic fineness and development level of second language writing [7][27]. Phrase complexity (the number of complex noun phrases per T unit, the number of parallel phrases per T unit) reflects the density and fineness of phrase structure within a sentence, which is regarded as an important symbol of the development of academic writing[14]

The main reason for selecting these indicators is that they can provide complementary information for syntactic development at different structural levels. Previous studies based on L2SCA have shown that the combination of length indicators and phrase indicators can enable researchers to simultaneously grasp the macro trends and micro changes of syntactic complexity in L2 writing[6][14]. Therefore, the combination of MLS, MLT, CN/T, and CP/T provides a comprehensive assessment of learners' syntactic complexity development.

4.5 Data Coding and Data Analysis

The data analysis initially used 154 writing samples, including 77 pre-test essays and 77 post-test essays. These samples are transcribed into digital format for analysis. The specific operation process is as follows: first, the handwritten text is transcribed word by word into an electronic document; then, under the supervision of the course teacher, the trained research assistant checked the accuracy of the transcribed content. In order to meet the technical requirements of the analysis tool, the researchers made some small spelling and format corrections to the text, such as correcting obvious spelling errors and unifying the format of each paragraph. During the whole processing process, the original syntactic structure of all compositions has been completely preserved.

After completing the data screening, one learner in the TR group was not included in the final statistical analysis because he did not participate in the whole process of TR. In this way, the valid sample of the TR group was finally 38 people, while the NTR group retained 39 people. All subsequent analyses are based on the data of these 77 valid participants.

Next, all the prepared transcripts were analyzed using the L2 Syntactic Complexity Analyzer (L2SCA)[27]. In order to ensure the reliability of the analysis results, all texts adopt the same analysis process and parameter settings.

All statistical analysis is completed using R 4.5.3 version, with readxl, tidyr, dplyr, ggplot2, afex, emmeans packages.

In order to answer the questions raised in this study, descriptive statistics, two-way mixed multivariance analysis (Mixed MANOVA) and independent two-way mixed variance analysis (Mixed ANOVA) were employed. The significance level of all statistical tests is set to $\alpha = 0.05$ ($p < 0.05$). At the same time, the edge significance ($p < 0.10$) was also detected to identify the possible interaction trend. The judgment of the amount of effect adopts the partial η^2p standard proposed by Richardson (2011): the small effect is 0.0099, the medium effect is 0.0588, and the large effect is 0.1379.

5. Results

5.1 Descriptive Statistics of Syntactic Complexity

Table 3 presents the descriptive statistics for the four syntactic complexity measures across the two groups. In both groups, the length-based measures (MLS, MLT) decreased from pre-test to post-test, whereas CN/T increased. However, CP/T showed divergent trends: it increased slightly in the TR group but decreased slightly in the NTR group. In sum, both groups exhibited similar overall tendencies, though the magnitude of change varied across measures (see Table 3).

Table 3. Descriptive Statistics of Syntactic Complexity

Group Time Measure	TR (N = 38)				NTR (N = 39)			
	Pre-test		Post-test		Pre-test		Post-test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
MLS MLT	16.498	5.300	14.242	2.671	15.274	3.698	14.315	2.729
	15.041	4.136	13.816	2.6285	14.446	3.093	13.776	2.646
CN/T	1.278	.603	1.815	.445	1.210	.440	2.087	.584
CP/T	.258	.231	.333	.172	.266	.221	.253	.198

5.2 Multivariate Analysis of Syntactic Complexity

To examine the effect of task repetition on syntactic complexity, a two-way mixed MANOVA was conducted with Group as the between-subjects factor, Time as the within-subjects facto and the four complexity indices as dependent variables (see Table 4).

Table 4. Two-Way Mixed MANOVA Results (Pillai' s Trace)

Effect	Pillai's Trace	F	df	p
Group	.005	0.384	1, 75	.537
Time	.005	0.352	1, 75	.555
Group × Time	.017	1.315	1, 75	.255
Measure	.946	425.64	3, 73	< .001*
Group × Measure	.073	1.904	3, 73	.136
Time × Measure	.572	32.499	3, 73	< .001*
Group × Time× Measure	.123	3.414	3, 73	.022*

Note: 1. *p<.05; 2. Mean Length of Sentence = MLS; Mean Length of T-unit = MLT; Complex Nominals per T-unit = CN/T; Coordinate Phrases per T-unit = CP/T.

Based on Pillai' s Trace, no significant main effect of Group or Time was found, nor was the Group by Time interaction significant, suggesting that task repetition did not exert a statistically reliable influence on overall syntactic complexity when all four measures were considered simultaneously.

In addition, a significant main effect of Measure was observed, along with a significant interaction between Time and syntactic complexity measure, indicating that changes over time varied across different dimensions of syntactic complexity. Most importantly, the three-way interaction between Group and Time reached statistical significance, indicating that the effect of task repetition differed across specific syntactic complexity measures.

To further probe the interaction between task repetition and syntactic complexity measure, separate two-way mixed ANOVAs were conducted for each syntactic complexity.

5.3 Effects of Task Repetition on Mean Length of Sentence (MLS) (RQ1)

Table 5. Two-Way Mixed ANOVA Results for MLS

Effect	F	df	p	η^2p
Group	0.641	1, 75	.426	.008
Time	12.131	1, 75	<.001*	.139
Group × Time	1.975	1, 75	.164	.026

Note: 1. *= p<.05. 2. Mean Length of Sentence = MLS. 3. According to Richardson (2011), η^2p values of .01, .06, and .14 correspond to small, medium, and large effect sizes, respectively.

The MANOVA results (Table 5) revealed no significant main effect of Group with a small effect size, $F(1, 75) = 0.641$, $p = .426$, $\eta^2p = .008$, indicating that no significance difference in MLS between two groups. . However, a significant main effect of Time with a large effect size was observed, $F(1, 75) = 12.131$, $p < .001$, $\eta^2p = .139$.

The results showed that both groups demonstrated decreases in MLS over time after TR. The lack of a significant interaction suggests that the degree of change over time did not differ significantly between the two groups.

5.4 Effects of Task Repetition on Mean Length of T-unit (MLT)(RQ2)

The results of the effects of task repetition on Mean Length of T-unit are shown in Table 6.

Table 6. Two-Way Mixed ANOVA Results for MLT

Effect	F	df	p	η^2p
Group	0.312	1, 75	.578	.004
Time	4.448	1, 75	.038**	.056
Group × Time	0.382	1, 75	.539	.005

Note: 1. *= p<.05. 2. Mean Length of T-unit = MLT. 3. According to Richardson (2011), η^2p values of .01, .06, and .14 correspond to small, medium, and large effect sizes, respectively.

Results revealed that no significant main effect of Group with a nil effect size, $F(1, 75) = 0.312$, $p = .578$, $\eta^2p = .004$, indicating that there was no overall difference between TR and NTR in MLT. However, a significant main effect of Time with a medium effect size was observed, $F(1, 75) = 4.448$, $p = .038$, $\eta^2p = .056$, suggesting that learners' MLT changed significantly from the pre-test to the post-test across both groups.

The Group×Time interaction effect was not statistically significant with a nil effect size, $F(1, 75) = 0.382$, $p = .539$, $\eta^2p = .005$. This finding indicates that the developmental pattern of MLT did not differ significantly between the two groups. In other words, TR did not produce a distinct influence on the development of T-unit length compared with the non-task repetition condition.

5.5 Effects of Task Repetition on Complex Nominals per T-unit (CN/T) (RQ3)

The results of the effects of task repetition on Complex Nominals per T-unit are shown in Table 7.

Table 7. Two-Way Mixed ANOVA Results for CN/T

Effect	F	df	p	η^2p
Group	1.282	1, 75	.261	.017
Time	80.615	1, 75	<.001**	.518
Group × Time	4.687	1, 75	.034**	.059

Note: 1. *= p<.05. 2. Complex Nominals per T-unit = CN/T. 3. According to Richardson (2011), η^2p values of .01, .06, and .14 correspond to small, medium, and large effect sizes, respectively.

Results revealed that no significant main effect of Group with a nil effect size, $F(1, 75) = 1.282$, $p = .261$, $\eta^2p = .017$, indicating that the overall CN/T performance did not differ significantly between the task repetition group (TR) and the non-task repetition group (NTR). However, a highly significant main effect of Time was observed with a large effect size, $F(1, 75) = 80.615$, $p < .001$, $\eta^2p = .518$, suggesting that learners' use of complex nominals increased substantially from the pre-test to the post-test across both groups.

The results showed that both groups demonstrated clear increases in CN/T over time. In the TR group, the mean CN/T increased from 1.278 in the pre-test to 1.815 in the post-test. Similarly, the NTR group showed an increase from 1.210 to 2.087.

Moreover, the Group×Time interaction effect reached statistical significance, $F(1, 75) = 4.687$, $p = .034$, $\eta^2p = .059$. According to [31] benchmark, the effect size can be interpreted as medium. This finding shows that after TR, particpants in both groups showed significant differences in the development patterns of the use of complex nouns.

5.6 Effects of Task Repetition on Coordinate Phrases per T-unit (CP/T)(RQ4)

Results revealed that no significant main effect of Group with a nil effect size, $F(1, 75) = 1.055$, $p = .308$, $\eta^2p = .014$, indicating that the overall CP/T performance did not differ significantly between the task repetition group (TR) and the non-task repetition group (NTR). In addition, the main effect of Time was not statistically significant, $F(1, 75) = 0.952$, $p = .332$, $\eta^2p = .013$, suggesting that learners' use of coordinate phrases did not change significantly from the pre-test to the post-test across the two groups.

Table 8. Two-Way Mixed ANOVA Results for CP/T

Effect	F	df	p	η^2p
Group	1.055	1, 75	.308	.014
Time	0.952	1, 75	.332	.013
Group × Time	2.002	1, 75	.161	.026

Note: 1. *= p<.05. 2. Coordinate Phrases per T-unit = CP/T. 3. According to Richardson (2011), η^2p values of .01, .06, and .14 correspond to small, medium, and large effect sizes, respectively.

The Group × Time interaction effect did not reach statistical significance, $F(1, 75) = 2.002$, $p = .161$, $\eta^2p = .026$. This finding indicates that the changes in coordinate phrase use over time were not significantly different between the two groups. Therefore, TR did not exert a statistically reliable effect on the development of coordinate phrasal complexity in the present study.

6. Discussion

This study examined how TR affects four dimensions of L2 writing syntactic complexity□consisting of MLS, MLT, CN/T, and CP/T among Chinese EFL learners. All participants completed argumentative writing tasks over four weeks.

The findings showed that TR did not produce significant group differences in length-based syntactic complexity measures (MLS, MLT and CP/T). The Group×Time interaction effects for all three measures were not significant, indicating that TR did not uniquely affect these dimensions beyond the general practice effect experienced by both groups.

The insignificant results in length-based syntactic complexity are consistent with several previous studies[12][15][20]. Argumentative tasks as a typical academic writing, are evident in phrasal elaboration, which particularly use more complex noun phrases and less sentence length expansion and coordinate structure use[14][23] . Thus, the non-significant results for MLS, MLT, and CP/T may reflect learners' selective allocation of attentional resources, which have prioritized noun phrase elaboration over sentence lengthening or coordination.

However, the current study is conflicted with the findings of Abdi Tabari et al. [20]. The most important reason to explain the different is that different measures were used to measure syntactic complexity. Abdi Tabari et al.[20] measured nuanced phrasal measures by verb argument construction complexity to measure syntactic complexity, which found TR facilitated learners' use of more sophisticated syntactic structures. In contrast, the present study used broad length-based measures, which is less sensitive to instructional interventions.

From the perspective of cognitive resource allocation, task repetition reduces cognitive load, allowing learners to devote more attention to language encoding and structural refinement[5][17][24] . However, the release of cognitive resources does not automatically benefit all syntactic dimensions. Learners tend to direct their limited attention to linguistic structures most relevant to task goals.

Unlike the three measures discussed above, CN/T (complex nominals per T-unit) showed a significant Group×Time interaction with a medium effect size, indicating that TR positively facilitated learners' use of complex noun phrases. The significant CN/T improvement in the present study suggests that task repetition encouraged learners to use complex noun phrases more frequently. The significant CN/T improvement in the present study indicates that this structured repetitive practice facilitated phrasal-level syntactic elaboration. The significant interaction between group and TR confirms Biber et al.'s[23] theoretical claim of academic writing complexity in the dense use of complex noun phrases. As learners become familiar with task content, cognitive load during conceptualization decreases. This frees up attentional resources for language encoding and structural refinement[5][17].

The present finding is also aligned with the empirical findings of Kyle and Crossley, revealing that phrasal indices

outperformed traditional clausal or length-based measures in predicting L2 writing quality.

To summarize, task repetition selectively promoted phrasal complexity (CN/T) in L2 writing, but did not significantly affect length-based measures (MLS, MLT) and coordinate complexity (CP/T). These findings confirmed that syntactic complexity is multidimensional[7]. In addition, different dimensions of syntactic complexity respond differently to task repetition[12][15]. The selective effect can be explained by cognitive resource allocation within Skill Acquisition Theory : as learners become familiar with task content, they focus more on refining structures typical of advanced academic writing [14][17].

7. Conclusion

7.1 Major Findings

Through the experimental design, this study investigates how TR affects the L2 writing syntactic complexity at four indices (MLS, MLT, CN/T, CP/T) among 77 Chinese EFL learners across argumentative tasks for four weeks at one-week interval.

The major finding of the currents study is that although the syntactic complexity of learners changed during the four-week experiment, the patterns of change between different dimensions were not consistent. In the task repetition group, the complexity of the phrase level has increased significantly, especially the number of complex nouns (CN/T) in each T unit has increased significantly. Indicators based on sentence length, such as average sentence length (MLS), show a significant downward trend. These findings show that TR does not necessarily allow learners to write longer sentences; on the contrary, it may prompt learners to adopt a more compact and syntactic phrase expression.

In contrast, although the NTR group also changes in syntactic complexity, the overall development model is not as good as the TR group system. In this group, only the CN/T index was significantly improved, and most other indicators did not reach the statistical significance level. This shows that the syntactic complexity in the writing process may develop naturally to a certain extent; however, repeating the same task can create more opportunities for learners to reorganize and consolidate their language knowledge.

The comparison between groups shows that the significant differences in the post-test are mainly reflected in the phrase complexity index. Specially, the effect of TR on syntactic development at the phrase level may be stronger than its effect on length-based syntactic complexity, which confirm that TR enables learners to turn more attention resources to language coding and structural refinement after being familiar with task content [17]

7.2 Implications

The findings of this study suggest that the development of syntactic complexity should be understood as a multi-level process. In this study, the progress made by learners is mainly reflected in the complexity of phrases, rather than the increase in sentence length. Therefore, when evaluating the progress of learners' writing, teachers should not simply rely on the length of sentences or the increase of text length as a standard. On the contrary, more attention should be paid to whether learners have the ability to construct more compact and detailed phrase structures, such as complex noun phrases and coordinate phrases—these are key features of advanced academic writing .

Furthermore, the findings of the present study suggest that repeated engagement with the same writing task may facilitate learners' syntactic development, particularly at the phrasal level. Therefore, rather than treating writing tasks as one-time classroom activities, teachers may consider incorporating planned TR cycles into writing instruction. Such arrangements can provide learners with opportunities to revisit language forms, refine linguistic choices, and gradually develop more sophisticated syntactic structures. Teachers should not regard writing tasks as a one-time activity, but should add repetitive or slightly changed writing tasks to daily teaching. Through repeated exposure to similar communicative situations, learners can gradually strengthen the connection between form and meaning and improve their ability to control language structure. In this way, TR helps to support learners' long-term progress in syntactic development and writing proficiency.

Finally, this study also points out that language teachers should pay attention to balancing the relationship between TR and task diversity. Although repeated exercises help to consolidate language knowledge, too many repetitions may lead to a decrease in learners' motivation to learn or their participation in the classroom. Therefore, it is necessary to consider carefully when designing and arranging TR activities, not only to maintain the interest and enthusiasm of learners, but also to provide sufficient space for their meaningful language practice and the development of language structure.

7.3 Limitations and Suggestions for Future Research

There are three main limitations. The first limitation is that the sample size is small, and the research subjects are only

from one university in southwest China. Therefore, there may be certain restrictions when extending the conclusions of this study to other groups. Future research can consider recruiting learners from different educational environments to expand the number of samples and increase the diversity of samples. Doing so will help test whether similar developmental laws can also be applied to a wider group of learners.

Second, the experimental period is relatively short, only four weeks. As syntactic development in second language writing is usually progressive and long-term, it may be difficult to fully capture the development and changes at the syntactic level in a short intervention time. Future research can appropriately extend the time span of TR processing to explore the long-term effect of repeated task performance on the development of syntactic complexity.

The last limitation that needs to be pointed out is that this study mainly focuses on the correlation between TR and syntactic complexity and does not include some other potential influencing factors in the analysis, such as learners' proficiency, learning motivation, task type and planning conditions.

Future research can explore at a broader level how these variables interact with TR and jointly affect different dimensions of second-language writing performance. Such research will help us have a deeper and systematic understanding of the inherent mechanism of task-based writing teaching and L2 development and build a more systematic cognitive framework on this basis.

References

[1] Liu, Y., & Ren, W. (2024). Task-based language teaching in a local EFL context: Chinese university teachers' beliefs and practices. Language Teaching Research, 28(6), 1603–1624.

[2] Robinson, P. (2011). Second language task complexity: Researching the cognition hypothesis of language learning and performance. John Benjamins.

[3] Ellis, R., & Barkhuizen, G. (2005). Analysing learner language. Oxford University Press.

[4] Nitta, R., & Baba, K. (2014a). Exploring repeated task performance in EFL writing: A classroom-based study of task repetition and its effects on written production. Language Teaching Research, 18(2), 237–263.

[5] Hanzawa, K., & Suzuki, Y. (2023). How do learners perceive task repetition? Distributed practice effects on engagement and metacognitive judgment. The Modern Language Journal, 107(2), 451–478.

[6] Lu, X. (2010). Automatic analysis of syntactic complexity in second language writing. International Journal of Corpus Linguistics, 15(4), 474–496.

[7] Norris, J. M., & Ortega, L. (2009). Towards an organic approach to investigating CAF in instructed SLA: The case of complexity. In A. Housen, F. Kuiken, & I. Vedder (Eds.), Dimensions of L2 performance and proficiency: Complexity, accuracy and fluency in SLA (pp. 141–165). John Benjamins Publishing Company.

[8] Ortega, L. (2003). Syntactic complexity measures and their relationship to L2 proficiency: A research synthesis of college-level L2 writing. Applied Linguistics, 24(4), 492–518.

[9] Nitta, R., & Baba, K. (2018). Understanding benefits of repetition from a complex dynamic systems perspective: The case of a writing task. In M. J. Ahmadian & M. P. García Mayo (Eds.), Learning language through task repetition (pp. 279–309). John Benjamins Publishing Company.

[10] Mansouri, M. R., Tavakoli, M., & Amirian, Z. (2025). Effects of task repetition awareness and the need for cognition on the complexity, accuracy, and fluency of L2 oral performance. Cogent Education, 12(1), 2579714.

[11] Ahmadian, M. J., & Tavakoli, M. (2020). Planning conditions (strategic planning, task repetition, and joint planning), cognitive task complexity, and task type: Effects on L2 oral performance. System, 93, 102297.

[12] Khezrlou, S. (2020). The role of task repetition with direct written corrective feedback in L2 writing complexity, accuracy and fluency. Journal of Second Language Studies, 3(1), 31–54.

[13] Nitta, R., & Baba, K. (2014b). Task repetition and L2 writing development: A longitudinal study from a dynamic systems perspective. In H. Byrnes & R. M. Manchón (Eds.), Task-based language learning: Insights from and for L2 writing (pp. 107–136). John Benjamins Publishing Company.

[14] Kyle, K., & Crossley, S. A. (2018). Measuring syntactic complexity in L2 writing using fine-grained clausal and phrasal indices. The Modern Language Journal, 102(2), 333–349.

[15] Abdi Tabari, M., Khezrlou, S., & Tian, Y. (2022). Task complexity, task repetition, and L2 writing complexity: Exploring interactions in the TBLT domain. International Review of Applied Linguistics in Language Teaching, 62(2), 871–901.

[16] Abdi Tabari, M., Khezrlou, S., & Tian, Y. (2024). Verb argument construction complexity indices and L2 written production: Effects of task complexity and task repetition. Innovation in Language Learning and Teaching, 18(1), 1–16.

[17] Bygate, M. (2018). Learning language through task repetition. John Benjamins Publishing Company.

[18] Michel, M., Révész, A., Shi, D., & Li, Y. (2019). The effects of task demands on linguistic complexity and accuracy across task types and L1/L2 speakers. In Z. Wen & M. J. Ahmadian (Eds.), Researching L2 task performance and pedagogy: In honour of Peter Skehan (pp. 133–151). John Benjamins Publishing Company.
[19] Abdi Tabari, M., & Wang, Y. (2021). The effects of prompt types on L2 learners' textual emotionality and lexical complexity. Journal of Second Language Studies, 5(1), 34–57.
[20] Abdi Tabari, M., Zhuang, J., & Farahanynia, M. (2025). Task repetition and L2 written performance: A meta-analysis. Journal of Second Language Writing.
[21] Anderson, J. R., Bothell, D., Byrne, M. D., Douglass, S., Lebiere, C., & Qin, Y. (2004). An integrated theory of the mind. Psychological Review, 111(4), 1036–1060.
[22] Abdi Tabari, M., & Farahanynia, M. (2025). Task repetition and L2 oral performance: A meta-analysis. System, 135, 103868.
[23] Biber, D., Gray, B., & Poonpon, K. (2011). Should we use characteristics of conversation to measure grammatical complexity in L2 writing development? TESOL Quarterly, 45(1), 5–35.
[24] DeKeyser, R. M. (2007a). Practice in a second language: Perspectives from applied linguistics and cognitive psychology. Cambridge University Press.
[25] DeKeyser, R. M. (2007b). Skill acquisition theory. In B. VanPatten & J. Williams (Eds.), The handbook of second language acquisition (pp. 97–113). Lawrence Erlbaum Associates.
[26] Foster, P., & Skehan, P. (2008). The influence of planning and task type on second language performance. Studies in Second Language Acquisition, 18(3), 299–323.
[27] Lu, X. (2011). A corpus-based evaluation of syntactic complexity measures as indices of college-level ESL writers' language development. TESOL Quarterly, 45(1), 36–62.
[28] Lu, X. (n.d.). L2 syntactic complexity analyzer. Retrieved March 1, 2026, from http://aihaiyang.com/software/l2sca/
[29] Ministry of Education, College Foreign Language Teaching Advisory Board. (2020). Guidelines for college English teaching (2020 edition). Higher Education Press.
[30] Plonsky, L., & Oswald, F. L. (2014). How big is "big"? Interpreting effect sizes in L2 research. Language Learning, 64(4), 878–912.
[31] Richardson, J. T. E. (2011). Eta squared and partial eta squared as measures of effect size in educational research. Educational Research Review, 6(2), 135–147.
[32] Róg, T. (2025). The interaction between task repetition and oral task enjoyment: Effects on speech complexity, accuracy, and fluency. Language Teaching, 1–15.
[33] Xu, J. (2022). Foreign language classroom task design and second language acquisition research. Modern Foreign Languages.
[34] Xu, T. S., & Zhang, L. J. (2023). Effects of cognitive task complexity and online planning on second language learners' argumentative writing. Frontiers in Psychology.

Appendix

Pre-test (Task 1)

Why Students Should Be Encouraged to Develop the Ability to Meet Challenges

You are required to write an argumentative essay on the topic above. Please express your opinions clearly and support your ideas with appropriate reasons and examples. The essay should be completed independently within the given time. The use of dictionaries or other reference materials is not allowed.

Post-test (Task 2)

The Importance of Having a Sense of Social Responsibility

You are required to write an argumentative essay on the topic above. Please express your opinions clearly and support your ideas with appropriate reasons and examples. The essay should be completed independently within the given time. The use of dictionaries or other reference materials is not allowed.