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Syntactic Complexity Development in English Grammar Pedagogy

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| ABSTRACT

In line with the recommendation that syntactic complexity-focused instruction should be provided to EFL learners at the university level, the present study modified the traditional teaching content of English grammar in China into a syntactic complexity-focused syllabus. We examined translations by 52 first-year undergraduate students enrolled in an English Grammar course in pre- and post-tests to determine whether explicit teaching of syntactically complex structures could lead to the development of syntactic complexity. The results demonstrate that the mean length of clauses, the number of appositive clauses and sophisticated structures in the post-test were significantly higher than the ones in the pretest, while the number of clause, adverbial clauses and attributive clauses decreased, which means students used fewer subordinate clauses but more reduced structures. In addition, linguistic descriptions for the differences between two tests as well as students' responses to syntactic complexity-focused instruction, were provided to fully understand the nature and characteristics of their syntactical change and pedagogical implications are drawn from these findings.

1. Introduction

Syntactic complexity, also known as grammatical complexity (Wolfe-Quintero, Inagaki & Kim, 1998) or grammatical maturity (Ortega, 2003), refers to the range of syntactic structures that are produced and the degree of sophistication of such structures (Lu, 2011). The syntactic complexity of learners' writing is the reflection of their actual acquisition of the target language (Wolfe-Quintero et al., 1988; Ortega, 2003; Lu, 2011), whose development indicates the improvement of learners' language and language maturity (Crossley et al., 2011; Lu, 2011; Wang, 2019). Investigation of syntactic complexity in writing produced by Chinese tertiary students revealed the poor proficiency of English grammar and the restricted repertoire of syntactically complex devices used in proper genres, of which the main reasons can be summarized as the homogeneous teaching content of English grammar (Wen, 2013) and the deficiency of syntactic complexity-oriented instruction (Casal & Lu, 2021; Mazgutova & Kormos, 2015).

With the burgeoning scholarship investigating multitudinous perspectives on the subject of syntactic complexity, especially the diachronic trajectory of learners' syntactic features, much highlights the potential value of implementing the explicit teaching of complexity measures to the learners' grammatical or syntactic development (Mazgutova & Kormos, 2015; Parkinson & Musgrave, 2014). However, there is little attention has been placed on this kind of instruction in the classroom, both by teachers and students (Casal & Lu, 2021; Kuiken & Vedder, 2019).

Regarding the selected complexity measures that were used as scaleplate manifesting the learners' syntactic complexity level or mapping its variation, many studies remain dependent on traditional omnibus indexes, which were found to fail to understand the

nature of learners' syntactic features or development rather than just predicting proficiency level (Biber, Gray, Staples & Egbert, 2020).

With these gaps to the bridge, the main goal of this study was to systematically construct a syntactic complexity teaching mode in the context of college English grammar class, with descriptive measures being applied, and to examine the effects of such instruction on the development of students' syntactic proficiency.

2. Literature Review
2.1 Syntactic complexity development in L2 writing
Over the past decades, a wealth of studies have investigated different matters concerned with syntactic complexity, covering the discussion of its conception and measures (Biber et al. 2020a; Bulté & Housen 2014; Lu 2017; Zhang & Lu 2022), factors that affect syntactic complexity level (Lu & Ai 2015; Yoon & Polio 2017) and relationships between syntactic complexity and other elements, such as writing quality, language proficiency, disciplinary variation, and genres etc. And investigation of the syntactic complexity development of L2 learners and native speakers has always received major attention since the beginning of linguistic complexity research in the late 1960s. Among the earlier studies, general hierarchies of syntactic complexity were proposed. Building on extensive evidence shown in a number of studies looking into the syntactic development of learners, Wholfe-Quintero et al. (1998: 73) extrapolated the development stages as follows: fragments < main clauses < coordinate clauses < adverbial clauses < adjective and nominal clauses < adjectival, adverbial, and nominal verb phrases. Biber et al. (2011:30), who considered the findings of previous studies on register variation between conversation and academic writing and syntactic development of L1 and L2 learners, hypothesized that the development of L2 writing progress "from finite dependent clauses that function as constituents in other clauses (e.g. finite complement clauses), through intermediate stages of non-finite dependent clauses and phrases functioning as constituents in other clauses (e.g. nonfinite relative clauses), and finally to the last stage requiring dense use of phrasal (non-clausal) dependent structures that function as constituents in noun phrases (e.g. appositive noun phrases)". (represented in Table 1)

Table 1   Hypothesized Developmental Stages for Complexity Features (Biber et al. 2011:30-31)

Stage	Grammatical structures
1	a. Finite complement clauses (that and wh-) controlled by common verbs (e.g., think, know, say)
2	a. Finite complement clauses controlled by a wider set of verbs
	b. Finite adverbial clauses
	c. Nonfinite complement clauses controlled by common verbs (especially want)
	d. Phrasal embedding in the clause: adverbs as adverbials
	e. Simple phrasal embedding in the noun phrase: attributive adjectives
3	a. Phrasal embedding in the clause: prepositional phrases as adverbials
	b. Finite complement clauses controlled by adjectives
	c. Nonfinite complement clauses controlled by a wider set of verbs
	d. That relative clauses, especially with animate head nouns
	e. Simple phrasal embedding in the noun phrase: nouns as premodifiers
	f. Possessive nouns as premodifiers
	g. of-phrases as noun postmodifiers
	h. Simple PPs as postmodifiers, especially with prepositions other than of when they have concrete/locative meaning
4	a. Nonfinite complement clauses controlled by adjectives
	b. Extraposed complement clauses
	c. Nonfinite relative clauses
	d. More phrasal embedding in the NP: attributive adjectives and nouns as premodifiers (multiple modifiers)
	e. Simple prepositional phrases as postmodifiers, especially with prepositions other than of when they have abstract meanings
5	a. Preposition + nonfinite complement clause
	b. Complement clauses controlled by nouns
	c. Appositive noun phrases
	d. Extensive phrasal embedding in the NP: multiple prepositional phrases as postmodifiers, with levels of embedding

Recognizing the importance of tracking the syntactic development of learners' writing and providing the pedagogical implication, sizable empirical research has been implemented, which can be categorized into cross-sectional and longitudinal studies according to research design. The first line of research, cross-sectional study, predicted syntactic development by comparing the written or oral language of learners at different academics levels, language proficiency levels or age stages (e.g. Ansarifar et al. 2018; Jiang, Bi & Liu 2019; Lu 2011; Lei 2017; Martínez 2018; Yin, Gao & Lu 2023). In a study aiming to investigate the relationship between syntactic complexity and L2 proficiency, especially intermediate level of proficiency, Martínez (2018) examined complexity differences between lower intermediate level (grade 3 of secondary education) and intermediate level (grade 4). The results reveal that upper grade learners outperformed grade 3 in all complexity measures, including measures of sentence coordination and subordination, clause coordination and subordination and phrasal complexity except simple sentence ratio. As for the more advanced learners, Lei (2017) compared the dissertations written by Chinese masters and doctors who majored in English Applied Linguistics with those by native English-speaking counterparts, with the results indicating that the measures of length unit, subordination and phrasal complexity in theses by intermediate-advanced writers were significantly lower than those in PhD dissertations. And Lei suggested that syntactic complexity levels may be more relevant to the writing experience than language proficiency. The longitudinal design has also received large attention in recent scholar studies, supplying empirical evidence of learners SC development (Atak & Saricaoglu, 2021; Biber et al., 2020b; Mazgutova & Kormos, 2015; Wang, 2022). For example, with the aim to explore patterns characterizing the development of learners' clausal and phrasal grammatical complexity, Gray, Geluso, and Nguyen (2019) investigated the short term (over 9 months) longitudinal changes in the language by L1 Chinese learners in the spoken and written sections of the TOEFL test. Results of developmental complexity analysis showed a clear trajectory of complexity development with a significant increase in stages 2-4 and a decrease in stage 1 in terms of Biber et al.'s hypothesized set.

2.2 Pedagogical attention on syntactic complexity

Given the cumulative evidence reported in previous research that syntactic complexity level is parallel with the learners' language proficiency or writing experience, syntactic complexity-focused instruction is of potential value in awareness-raising and syntactic development. For example, Polio (2019) argued in his report *Keeping the language in second language writing classes* that language-focused instruction was a peripheral focus in language writing classes, for which he provided two ways turning the situation around, "including explicit language instruction in genre-based classes and writing-to-learn-language activities (such as story continuation, revising writing resorted to model texts and the use of dictoglosses)". Mazgutova and Kormos's study (2015) indicated the development of lexical and syntactic complexity of academic writing by L2 learners who received over a one-month long intensive English for Academic Purposes programme, which did not focus on the instruction of lexis and syntax. But even so, they also called for more language-focused instruction, especially explicit one. Similar pedagogical implications and suggestions were given by many other researchers (Atak & Saricaoglu 2021; Casal & Lu 2021; Qin & Uccelli 2016; Shao et al. 2022), but there is limited extant research into the syntactic complexity-focused instruction. Xu (2010) investigate the change of nonfinite clauses in learners' writing after a semester-long instruction on four types of nonfinite clauses (passive forms of nonfinite clauses, nonfinite clauses with a logical subject, nonfinite clauses functioning as postpositive attributes and the ones functioning as adverbial). The teaching method used was explicit grammar teaching which put emphasis on the composition of nonfinite clauses, the relation and conversion with SVO sentence patterns. Results showed there was a significant increase in the overall grade and sub-scores for nonfinite clauses, both in their amount and type, but they were still lower than those of native English speakers. Xu recommended in the study that syntactically complex structures should be paid more attention to in the writing course of tertiary L2 learners (p.100). Recent pedagogy-oriented study by Bychkovska (2021) examined the effects of explicit instruction on noun phrase production in L2 undergraduate writing, whose results demonstrated learners' positive development in using complex noun phrases, indicating an advanced level of syntactic complexity. She also claimed that there need further research into the effects of short-term syntactic complexity instruction on learners writing proficiency who have different educational levels or L1 backgrounds (p.13).

Thus, in light of the research background and gap discussed above, the current study took first-year undergraduate students majoring in Translation as its subjects, modified the traditional teaching content of English grammar in China into a syntactic complexity-focused syllabus and aimed to examine the syntactic complexity development of L2 learners in this context, with one-group pretest-posttest design has been applied. Specifically, the current study aims to address the following questions:

Q1: What changes can be observed in the length and the number of clause used by students receiving a semester long syntactic complexity-focused instruction?

Q2: What changes can be observed in the subordinate clause used by students receiving a semester-long syntactic complexity-focused instruction?

Q3: What changes can be observed in the sophisticated structures (including non-finite adverbial phrases, non-finite adjective phrases and subject-predicate partition) used by students receiving a semester long syntactic complexity-focused instruction?

3. Methodology
3.1 Participants
The present study was conducted in two classes of the Department of Translation and Interpretation in an engineering oriented university in South-western China. The participants were 52 beginning college-level learners, representing intermediate level EFL learners in China according to China's Standards of English Language Ability (CSE). Both classes were taught by the same two teachers, who have been teaching grammar and writing for a long time and have extensive teaching and research experience.

3.2 Syntactic complexity-focused instruction and students participants
Echoing the recommends that more effort should be put forth into explicit language-focused instruction, also aiming to differentiate English grammar teaching at college-level from that in secondary education, this course integrates scholarship of syntactic complexity into the grammar teaching, constructing a syntactic complexity-focused instruction in the context of college English grammar course that emphasizes the schematic knowledge and production skills of syntactic structure in different developmental stages. The course is entitled "English Grammar: Academic Style", lasting 16 weeks, in which syntactic complexity-focused instruction occupied 18 class hours out of 32 hours, and the rest hours were allocated to course orientation, basic grammar teaching and discussion activities. As shown in Figure 1, teaching contents of SCFI includes a) complex structures functioning as clause constituents (non-finite adverbial clauses, absolute nominative and complex structures of gerund); b) noun phrase constituents: non-finite relative clauses, appositive clauses and phrases, chained modification and splitting modification; c) other English syntactic features which are markedly different from those of Chinese, such as nominalization, stative features of English, subject-predicate separation and end-weight.

Figure 1 Contents of syntactic complexity-focused instruction
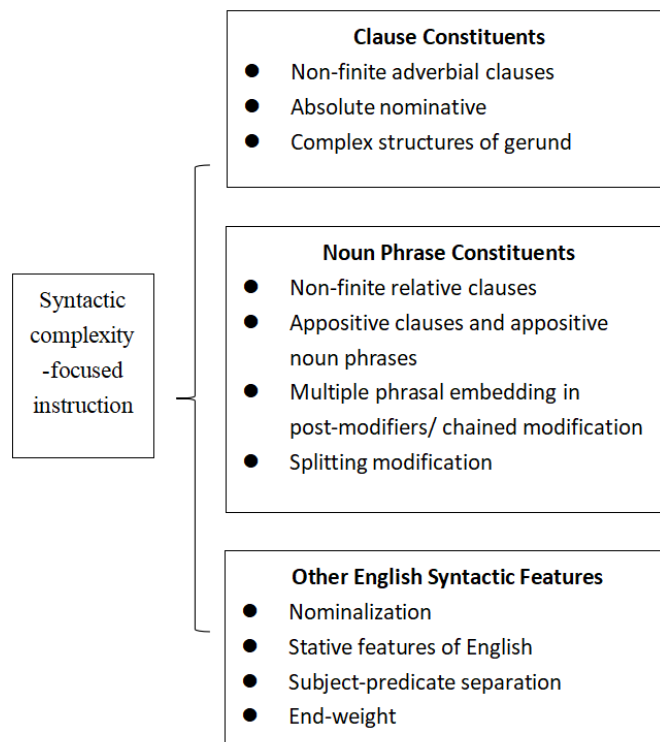
All of the above syntactic structures were taught explicitly, and cognitive contrastive analysis between English and Chinese, as well as the connection and transformation of finite dependent clauses and reduced phrasal structures, were emphasized throughout the grammar teaching process. Besides, students are trained in both sentence comprehension and production, with related exercises such as the controlled practice of clause-to-phrase transformations, sentence corrections and Chinese-English translations using given grammatical structures. Students were also required to write reflective journals after completing each stage of learning, which include reflection on their harvest, problems and suggestions in learning content and strategies and responses to SCI.

3.3 Instruments

In order to explore the changes in learners' syntactic complexity features in written language after receiving a one-semester-long explicit grammar teaching focusing on syntactic complexity, this study examined students' translations produced in pretest and post-test. In the pretest, students were required to complete a Chinese-English translation test, including 10 sentences within 20 minutes during the second session of the course. At the end of the semester, they completed the post-test in the same manner during the final exam. To ensure that the questions are of the same difficulty, the same texts were used for the pre- and post-tests. The papers would be collected immediately after the completion of the pre-test without any explanation. Students were also unaware that they will complete the same test at the end of the semester.

3.4 Syntactic complexity measurement

Traditionally, syntactic complexity has been operationalized in terms of length-based and ratio-based measures, which include the mean length of T-units (T-unit is shorted for "terminal unit", i.e., one main clause plus any subordinate clause or non-clausal structure that is attached to or embedded in it.), clause, and sentences as well as the ratio of these units to one another and to other structures (Hunt, 1970; Lan et al., 2019; Bychkovska 2021). However, with their widespread application, these large-grained measures, especially syntactic measures based on T-units, have received criticism. Biber et al. (2011) argued that the T-unit is a measure designed mostly to capture the extent to which a writer uses dependent clauses, the clausal elaboration representing the complexity of language in conversation. As a result, these T-unit-based measures miss out on the most important kinds of complexity devices in academic writing: complex noun phrases, which allow writers to compress information and produce concise discourse with dense meaning. Besides, with continuous scholarship recognizing that syntactic complexity is a muti-dimensional concept, researchers have tried a dimensional approach applying multiple syntactic measures to quantify it in their studies, which mainly covers overall and local-level measures of clausal complexity and phrasal complexity.

Given this, the measures selected in this study include large-grained metrics giving the overall picture of learners' syntactic complexity development (i.e. MLC) and fine-grained measures, the normed frequencies of construction in clausal level and noun phrasal level, which can reveal the more comprehensive and detailed information.

Regarding the omnibus measure, MLC, the mean length of a clause is calculated by dividing the number of words by the number of clauses. Clause is any expression with a subject and a finite verb, including independent, adjective, adverbial and nominal clauses, but not non-finite verb phrases. Compared with T-units, clauses take into account the contribution of subordinate clauses and phrasal structures to syntactic complexity, precluding the disadvantage of relying on subordinate clauses to expand T-units, which are more common in spoken English. Research have shown that clause length, i.e., the mean length of the clause, is a feature of academic English (Beers & Naggy, 2009) and is one of the most effective variables for differentiating language levels (Lu 2011).

The descriptive fine-grained measures were divided into two levels: a) clause constituents: finite adverbial clauses, non-finite adverbial clauses, absolute nominative and complex structures of gerund; b) noun phrase constituents: finite relative clauses, non-finite relative clauses, appositive clauses/ phrases, chained modification and splitting modification. In addition, we also calculated the frequencies of other English syntactic features: subject-predicate partition, end-weight etc. According to the finial results, the measures except from MLC, the normed frequencies of clauses, adverbial clauses, attributive clauses, appositive clauses, non-finite adverbial and relative clauses and subject-predicate partition were extracted due to their low occurrence rate (less than once per ten papers), largely owing to the small size of texts of given translation questions.

Table 2 Grammar structures examined in this study

Grammar structures	Examples from this study
Attributive clauses	All foreigners who live in this country are required signing up in the police station.
Adverbial clauses	Once the kids are left aside, they will immediately get into trouble.
Appositive clauses	I resigned from the company with a feeling that company needs a new manager.
Non-finite adverbial phrases	If left alone, children can soon get themselves into all sorts of trouble.
Non-finite adjective phrases	All foreigners living in this country are asked to sign in the police station.
Subject-predicate partition	My friend John, sitting in the sofa with a smile, is discussing the news with neighbors happily.

3.5 Statistical analysis

The data for this study includes translations in pre- and post-tests as well as the last reflective journals collected at the end of the course. Firstly, the C-units in students' translations and each grammatical feature were marked manually, and next, the frequencies and the mean length of the clause were calculated. To ensure a high level of credibility of the collected data, when the coding of the dataset was completed, independent coding was done by an applied linguist who has more than 20 years of English grammar teaching experience at college level. The disagreed cases were resolved after further discussions. After the syntactic complexity analysis, the MLC and frequencies of various kinds of grammatical features would be analyzed and put into SPSS26.0 to contrast the differences in syntactic complexity between the pre- and post-tests. Students' final reflective journals were analyzed using thematic analysis to explore students' gains, problems and suggestions on the learning content and strategies after a semester long grammar instruction which can be used to support data analysis.

4. Results

4.1 Research question1: Changes in the W/C and the number of clause

As presented in Table 3 and Table 4, descriptive results and the paired sample tests reveal significant differences ($p < 0.05$) between the pretest and the post-test in the W/C ($t(51) = -15.471$, $p < 0.05$) and the number of (finite) clause ($t(51) = 9.306$, $p < 0.05$). First, the W/C of the post-test (M=10.6) was significantly higher than the pretest's (M=8.41), while the number of the clause in the post-test (M=15.4) was significantly lower than the pretest's (M=17.71), which means students used fewer dependent clauses but more reduced structures in the post-test.

Table 3 Comparison of the W/C (*n*=52)

	Pretest		Post-test		MD	t (51)	Sig (2-tailed)
	M	SD	M	SD			
W/C	8.41	0.84	10.6	0.80	-2.19	-15.471	.000*

*$p < 0.05$

Table 4 Comparison of the Number of Clause (*n*=52)

	Pretest		Post-test		MD	t (51)	Sig (2-tailed)
	M	SD	M	SD			
The number of clause	17.71	1.72	15.4	1.42	2.31	9.306	.000*

*p < 0.05

4.2 Research question 2: Changes in the number of subordinate clause

Table 5 presents the descriptive statistics and the paired sample tests of subordinate clauses in the two tests. Results show that the number of adverbial clauses decreases and the number of appositive clauses increases, but no significant differences existed in the number of adverbial clause (t (51)=1.609, p＞0.05）and appositive clause (t (51)=-.574, p＞0.05) between the two tests. However, a significant difference in the number of attributive clause (t (51)=3.295, p＜0.05) can be found between the pre-test and post-test, with the latter presenting lower frequencies (MD=0.7).

Table 5 Comparison of the subordinate clause (*n*=52)

	Pretest		Post-test				Sig
	M	*SD*	*M*	*SD*	*MD*	*t* (51)	(2-tailed)
	2.7	1.4	2.0	0.97	0.7	3.295	.002*
Attributive Clause							
	2.23	1.2	1.96	1.19	0.27	1.609	.114
Adverbial Clause							
	0.81	0.44	0.84	0.36	-0.04	-.574	.569
Appositive Clause							

*p＜0.05

4.3 Research question 3: Changes in the number of sophisticated structure

In the use of sophisticated structures, the frequencies of non-finite adverbial phrases (t (51)=-2.272, p＜0.05), non-finite adjective phrases (t (51)=-4.894, p＜0.05) and subject-predicate partition (t(51)=-3.189, p＜0.05) of the post-test were significantly higher than the pre-test's.

Table 6 Comparison of the complex structures (*n*=52)

	Pretest		Post-test				Sig
	M	*SD*	*M*	*SD*	*MD*	*t* (51)	(2-tailed)
	3.1	1.2	3.62	1.4	-.54	-2.272	.027*
Non-finite Adverbial Phrases							
Non-finite Adjective Phrases	1.17	0.96	1.87	0.66	-.69	-4.894	.000*
Subject-predicate Partition	1.4	0.6	1.81	0.89	-.4	-3.189	.002*

*p＜0.05

5. Discussion

5.1 Changes in MLC and the number of clause

This study investigated the written complexity development of L2 learners demonstrated by the grammatical structures in their translations and the effect of grammar instruction focused on syntactic complexity on the development of learners' syntactic proficiency. The results showed that there was a significant decrease in the number of C-units in students' translations and a significant increase in the mean length of clauses, which are generally consistent with previous researches' findings that longer output units generally indicate higher levels of proficiency (Lu, 2011; Ortega, 2003). It also can be seen that students rely less on

simple, coordinate and subordinate clauses in their sentences but more on reduced structures. For example, the two sentences in Examples 1 and 2 are a student's translations of the same sentences in the pre- and post-tests, respectively. It can be seen that the student used an attributive clause in the pretest, after a semester of explicit teaching of syntactic complexity, used a reduced clause, which is more advanced to increase syntactic complexity. Students also mentioned in their reflective journals that " Through the course, I got to know and use the key clauses and phrases which can improve my syntactic proficiency" (Student Z); " The teacher explained a lot of knowledge that I had not been mastered before, such as the conversion between adverbial clauses and reduced structures, which helps to deepen the understanding and use of the adverbial clause and its transformation" (Student C).

Eg.1：This exhibition is held every autumn, which indicates the bloom of the economy. （pre-test）

Held annually, this trade fair shows the prosperity of the local economy. （post-test）

Eg.2：Once kids are left alone, they will always bring lots of trouble. （pre-test）

Once left alone, kids cause a lot of trouble right away. (post-test)

5.2 Changes in the used of subordinate clause

Previous studies have generally concluded that the proportion of subordinate clauses is a valid indicator for intermediate-level English learners (Lu & Ai 2015), as some findings show that the proportion of subordinate clauses for intermediate English learners increases linearly with writing level or grade (Martínez 2018; Yang & Wang 2016). Advanced learners of English, on the other hand, are more concerned with phrase level development, so the proportion of subordinate clauses for advanced learners may remain the same or even decrease as the writing level or grade level increases (Ai & Lu 2013). Thus, it can be seen that the different levels of learners may lead to differences in the use of subordinate clauses. Results in this study show that the number of adverbial clauses and attributive clauses decrease while the amount of appositive clauses increases, which demonstrates the development of syntactic complexity in students' written language. According to the Biber's (2011) developmental stages for complexity features, there are many different kinds of dependent clauses in English, representing different complexities. Finite dependent clauses functioning as adverbial and complement (i.e. adverbial clauses and object clauses) are strongly favored types of structural complexity in conversation, which represent lower orders of complexity, while relative clauses represent an intermediate level of complexity, and appositive clauses are much more common in academic writing which is at the highest stage of syntactic development, as it can increase the information-carrying capacity of nouns, reflecting the accuracy of thinking (Xu et al., 2014). As shown in Example 3, the student used an object clause in the pretest and a more syntactically complex appositive clause in the post-test.

Eg.3：I left the meeting **feeling that** the company needed a new manager. （pre-test）

I left the company **with the feeling that** the company needed a new manager. (post-test)

5.3 Changes in the use of sophisticated structures

The complex structures in this study focus on non-finite adverbial phrases, non-finite adjective phrases and subject-predicate partition, which mark the highest stages of syntactic development (Wolfe-Quintera et al., 1998). Previous studies have shown that reduced structures, such as non-finite clauses, are difficult for Chinese students in their English learning process (Xu, 2010; Xu et al., 2013; Yang & Wang, 2016). One of the reasons is that reduced structures can make sentences more compact and informative, and "the study of them involves pre-exist cognitive structures and requires advanced cognitive skills such as analysis, reasoning and integration", requiring a higher level of linguistic competence (Xu et al., 2012). On the other hand, the syntactic structure of the Chinese also affects the use of reduced structures. Chinese run-on sentences, as a unique type of complex sentences, have structural traits of discreteness, leading to the looseness of structure, which is the essential difference between English and Chinese (Wang & Zhao, 2017a, 2017b; Wang, 2019; Zhao & Wang, 2020). For this reason, students tend to use sentences with simple structures, lacking deeper learning and application of reduced structures. As shown in the results, students' use of the three sophisticated structures increased significantly in the post-test, suggesting that after a semester of grammar teaching, students gradually mastered and made conscious use of the complex structures.

It is encouraged to use reduced clauses, which can reduce the number of simple and subordinate clauses as well as increase the length of clauses and syntactic density (Xu, 2014). Ortega (2003) states that advanced learners have the ability to shorten clauses into phrases. Therefore, in L2 teaching syllables, the instruction on reduced structures should be appropriately strengthened to raise awareness of the use of them in writing.

6. Conclusion

This study examined translations by first-year undergraduate students enrolled in L2 grammar teaching to determine whether explicit teaching of syntactically complex structures could lead to the development of syntactic complexity. Having empirically tested the validity of recommendations from previous research to integrate syntactic complexity instruction into L2 teaching syllables, this study confirms that such instruction may indeed benefit learners' syntactic development.

This study yields significant pedagogical implications for language teaching. Firstly, grammar teaching at the college level should move beyond the situation where teaching content is simple and repetitive but pay more attention to the improvement of learners' syntactic proficiency through explicit instruction on grammatical features at the advanced level, such as non-finite dependent clauses and phrasal structures that function as constituents in noun phrases. Secondly, a complex-structure-oriented teaching syllables would be desirable. Language educators need to find pedagogical approaches that promote the development of syntactic complexity. For example, L2 composition instructors are recommended to consider including sophisticated structure-focused discussions and activities in their courses in order to support the syntactic complexity development of university-level writers, providing opportunities for noticing and analyzing these grammatical features in model texts and students' own writing, offering controlled clause-to-phrase transformation exercises, and encourage integrating complex structures into students' writing.

There are several limitations to this research. First, the study period was limited to one semester. This suggests the need for longitudinal studies that stretch over two or even three semesters. Second, the sample size of this research is small, with only 52 participants and 20 Chinese-English translations of each student, leading to the deficiency of measures examined. A wider range of measures of clausal complexity and phrasal complexity could be considered in future studies.

Conflicts of Interest: The authors declare no conflict of interest.
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