Learnability of Grammatical Sequencing: A Processability Perspective of Textbook Evaluation in EFL Settings[1]

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Abstract

This study conducts an acquisition-based evaluation of four primary-school English textbook series used in China. The evaluation aims to determine whether the sequencing of grammatical structures in the series is compatible with the L2 learning sequence stipulated in Processability Theory (PT). The results show a partial agreement between the sequencing of structures as teaching objectives in the series and the PT-based processability hierarchy. The sequencing of structures in the initial stages is consistent with the learning sequence of L2 English stated in PT. However, several structures in the intermediate or high stages are taught in a deviant way against their sequencing in PT. The deviant grading of those structures is possibly associated with the theme-based guidelines adopted in the textbooks. It appears that concerns with the utility of grammatical structures in a given context take precedence over concerns for L2 development. A number of suggestions are offered to textbook writers in terms of the role of input, the learners' developmental readiness, and the issue of heterogeneity in L2 classrooms.

Keywords: textbook evaluation, L2 learning sequence, Processability Theory, TESOL, EFL settings

1. Introduction

This study aims to conduct an acquisition-based evaluation of four primary-school English

textbook series used on a nationwide scale in China. The textbook evaluation seeks to answer the question whether the sequencing of key grammatical structures introduced as the teaching objectives in the four textbook series is compatible with the sequenced development that the learners go through in acquiring English as an L2 (Pienemann, 1998, 2005).

L2 acquisition cannot take place without language input, and textbooks serve as one main form of language input for learners, especially in a foreign language (FL) context. In China, most learners of L2 English have limited access to the target language through natural exposure. Textbooks are one main source of linguistic exposure to English for L2 learners. They also supplement and facilitate the teacher's instruction by providing organized lesson plans and information on what kinds of teaching practice can be utilized in the classroom. As the use of textbooks in language classrooms is an almost inevitable component of formal instruction in the settings of English as an FL (Hutchinson & Torres, 1994), an evaluation of textbooks for the purpose of more efficient teaching and effective learning is a worthwhile undertaking.

Currently, a majority of evaluation studies on textbooks have been looking at the potential effectiveness of textbooks (e.g., McDonough & Shaw, 1993; Mukundan, Hajimohammad, & Nimehchisalem, 2011), the actual effects of textbooks on users (e.g., Lan & Meng, 2009; Shi & Ji, 2011), and the pragmatic information and the authenticity of textbook contexts (e.g., Petraki & Bayes, 2013; Wong, 2007). Only a handful of SLA-based studies (Keßler, 2006; Lenzing, 2004, 2008; Zipser, 2012) have paid attention to the issue of learnability, namely, whether the sequence of grammar introduced in the textbooks is learnable for L2 students.

From a processability perspective, L2 learners at any level of development are able to produce only those grammatical structures which the current state of their language processing procedures can process (Pienemann, 1998, pp. 4-5). That is, L2 learners are able to learn the structures only when they are developmentally ready to process them. Being "ready" refers to that the learners have developed the L2 processing procedures required for the acquisition of a grammatical structure situated at the next stage. Here, the key point of learnability is the learners' developmental readiness.

The sequence in which the grammatical structures are taught significantly affects language learning outcomes (Mansouri & Duffy, 2005). An improvement in L2 learning can be achieved only when teaching focuses on the grammatical structures that learners are able to acquire at the time of instruction (e.g., Ellis, 1989; Mansouri & Duffy, 2005; Pienemann, 1984). It would benefit formal instruction to follow the path of learnability – namely, the developmental sequence of L2 acquisition.

Compared with SLA research abroad, the relevant studies in China have been increasingly shifting their attention to L2 acquisitional orders and development, focusing on four major aspects: error analysis studies (e.g., Jin, 2011; Liu, 1998, 2000), corpus-based studies (e.g., Hu, 2010; Wang, 2005; Zhang, 2013; Zhang & Xu, 2017), cognitive linguistic studies (e.g., Ding, 2006; Guo & Wang, 2013; Jiang & Cai, 2009; Jin & Zhao, 2014; Tang & Xu, 2011; Xu & Zheng, 2005; Zhong & Huang, 2017), and theoretical linguistic studies (e.g., Cai, 2008; Dai, 2011; Zhang, 2005). However, there remain four shortcomings in these studies. First, the majority of the studies looked into the L2 acquisition of high school or university students, while little

attention was paid to the investigation of children's L2 English. Second, these studies merely investigated a range of isolated structural items and were language-specific; thus, they were not amenable to cross-linguistic generalizations. Third, they suffered a lack of theoretical motivations and explanations of the observed order of L2 acquisition. Fourth, few pedagogical suggestions were proposed; and further exploration of the relationship between learning and teaching is needed.

To the best of my knowledge, SLA-based evaluation of English textbooks compiled in China has not been done yet. The present study, therefore, attempts to examine four sets of English textbooks from an SLA theoretical perspective, focusing on the sequencing of English morphology and key sentence structures.

The following are the key terms used in this article:

(1) L2 development (Ortega, 2009, p. 110)

It refers to "the processes and mechanisms by which those representations and the ability to use them change over time."

(2) Acquisition-based evaluation

The following textbook evaluation is based on L2 acquisition sequence as stipulated in Processability Theory (PT) (Pienemann, 1998, 2005). The acquisition of L2 structures does not occur randomly. Instead, L2 acquisition proceeds in an orderly and sequential manner, with structure *a* proceeding *b* and structure *b* activating *c*.

2. Established studies on SLA-based evaluation

These studies (Lenzing, 2004, 2008[1]; Keβler, 2006; Zipser, 2012) apply to textbook evaluation a psycholinguistically-based SLA theory—PT (Pienemann, 1998), which focuses on the developmental sequence of L2 grammar. They aim to assess whether grammar instruction in textbooks is sequenced in a way that is compatible with the L2 developmental path. As the most representative SLA-based evaluation study, Lenzing's (2008)[2] aims at testing the stages of the developmental sequence of L2 acquisition predicted by PT against two textbooks for early English education in Germany. She discovers that the design of the two textbooks does not reflect the developmental sequence. She advises it is of significance that early English teachers are informed about the underlying principles in L2 acquisition process (Lenzing, 2008, pp. 238-239).

Lenzing's work (2008) in the application of PT in the evaluation of grammar instruction in ESL textbooks breaks new ground. Her study uses a quantitative approach to calculate the

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1 Lenzing (2008) is a summary of the main issues of Lenzing's unpublished Master degree's thesis in 2004, that is, Lenzing (2004).

2 Keβler (2006) is written in German and thus inaccessible to me. According to Keβler (2011, p. 190), they used a similar approach to that of Lenzing (2004), but with a focus on German EFL textbooks, and the outcomes were similar. Zipser (2012) also generally followed the textbook evaluation approach developed by Lenzing (2004, 2008). Therefore, Lenzing (2008) is reviewed here as the representative of PT-inspired textbook studies.

relative frequency of grammatical structures in the linguistic input of textbooks and then determines whether the presentation of the structures is learnable for L2 learners according to two criteria: (1) the structures that are located at a low stage of the processability hierarchy should occur frequently in the initial units of the textbook; and (2) those structures that can only be processed at a higher stage should not be introduced too frequently in the beginning units of the textbook. Lenzing (2008) offers an explanatory basis for promoting more learnable grammatical introduction in L2 learning materials. She also provides an insight into the gap between SLA research and language pedagogy — crucial findings from SLA research about the developmental sequence have not been considered in the design of EFL textbooks. Lenzing (2008) goes a long way towards developing a learnable syllabus for ESL grammar instruction in language materials.

Spearheaded by a psycholinguistically-based SLA theory (PT), the research on SLA-based evaluation provides an insight into the sequencing of grammatical structures in L2 textbooks. Studies such as Lenzing (2008) have filled a gap that almost no previous research ever paid attention to, even though it is a core issue for L2 learners: namely, how L2 learners acquire grammatical structures step-by-step. The research on SLA-based evaluation contributes to facilitating the application of SLA theory to language pedagogy.

However, the established SLA-based studies on textbook evaluation are still limited in number and scope. First, they investigate either L2 English textbooks used in Germany (cf. Lenzing, 2004, 2008) or L2 Italian textbooks used in Austria (cf. Zipser, 2012). No existing studies have applied the SLA-based approach to the assessment of L2 textbooks used in China. Second, no previous studies have looked into a complete coursebook series which included multiple and sequential volumes. Lenzing (2004, 2008) focused on three volumes from two English coursebooks designed for Grades three and four at primary schools. Zipser (2012) selected a single Italian textbook that was used for beginners in Austrian secondary schools as well as in adult education. Third, an investigation of multiple and representative textbook series may reveal insights into the current situation of textbook compilation and account for the grammatical introduction presented in textbooks. In fact, this issue has not been clearly addressed in the established SLA-based textbook studies. Therefore, the present study is called for in order to provide an insight into the issue of learnability regarding grammatical sequencing in textbooks within the context of China and to add more empirical evidence to the SLA-based textbook studies.

Since the PT forms the basis of textbook analysis in the current study, the following section is devoted to an exposition of its related claims.

3. PT and PT-hypothesized L2 English development

PT (Pienemann, 1998, 2005) describes, explains and predicts the universal developmental

sequence inherent in L2 acquisition from the perspective of language processing.[1] The underlying logic of PT is that L2 learners at any level of development are able to produce only those grammatical structures which the current state of their language processor can process (Pienemann, 1998, pp. 4-5). The developmental sequence of L2 acquisition is determined by the order in which the necessary processing procedures are available to L2 learners. This theory is based on a number of L1 speech production models (e.g., Kempen & Hoenkamp, 1987; Levelt, 1989), and is formalized within Lexical-Functional Grammar (Bresnan, 2001; Kaplan & Bresnan, 1982).

Based on the hypothesis that the processing procedures developed at one stage are a prerequisite for the following stage, PT predicts a hierarchy of processing procedures in morphological and syntactic development of ESL involving a six-stage model of lemma access, category, noun and verb phrase, sentence, and subordinate clause procedures (cf. Bettoni & Di Biase, 2015; Pienemann, 1998; Pienemann, Di Biase, & Kawaguchi, 2005). This implicational hierarchy of ESL development has been generally supported by a range of empirical studies (e.g., Charters, Jansen, & Dao, 2012; Dyson, 2009; Dyson & Håkansson, 2017; Keßler, 2007; Pienemann, 1998, 2005; Pienemann & Keßler, 2011).

Table 1. Processability hierarchy: Morphological development for L2 English (adapted from Pienemann, 1998, 2005)

Stage	Processing procedure	Morphology		Example
5	S-procedure	SV agreement (=3sg –s)		**She plays** football on Mondays.
4	VP-procedure	tense	be + V-*ing*	She **is watching** TV.
		agreement	have + V-*ed*	I **have ordered** a new book.
3	NP-procedure	NP agreement		I have **ten bananas**.
2	category procedure	plural –*s* (on nouns)		They're **monkey**s.
		possessive pronoun		It is **your** kite.
		simple past –ed		I **cooked** fish.
1	word/lemma	single words/formulas		**Many thanks**!

As Table 1 shows, PT predicts five stages in ESL morphological development. At the first stage, L2 lexical items are stored without any grammatical information, and no processing procedure is involved. L2 learners are only able to produce morphologically invariant forms (chunks or non-analyzed material) such as single words (e.g., *here*) or formulaic expressions

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1 PT accounts for both universal stages of L2 development and individual variation within stages. PT also develops the Hypothesis Space (Pienemann, 1998) to specifically account for the possible range of interlanguage variation under the leeway of processability available at a given point in L2 development.

(e.g., *many thanks*).

At the second stage, the category procedure, L2 learners are able to identify the categories of lexical items such as nouns or verbs but are unable to exchange grammatical information between each lexical item in the phrase or sentence structure. For L2 English, no less than three lexical morphemes are hypothesized to emerge at this stage. *Plural –s on nouns* describes the lexical nominal plural marking *–s* on nouns. *Simple past –ed* refers to the regular past tense marker *–ed*. *Possessive pronoun* refers to possessive determiner for adjectives. *Plural –s on nouns* requires identification of the noun category of lexical items, while *simple past –ed* requires identification of the verb category. Take the acquisition of *plural –s on nouns* for example. L2 learners need to determine whether the referent is one entity or more (*monkey* vs. *monkeys*) and then differentiate whether the referent is countable or not from the perspective of semantics (*monkeys* or *water*). Next, L2 learners need to learn that this *–s* ending marker is associated with generic countable entities, as in *They are monkeys*, but not with generic uncountable entities.

At the third stage, once the noun-phrasal procedure has been developed for the L2, diacritic features can be stored, exchanged and unified between the head of a noun phrase (NP) and its modifier. Grammatical information is therefore required to be exchanged within the NP to ensure that the diacritic features of words in the phrase are unified. PT hypothesizes the phrasal plural marking *–s* (to achieve *NP agreement*) to emerge at this stage. Take *ten bananas* for example. The plural feature appears in the head noun (the plural referent *bananas*) and its modifier (the numerical quantifier *ten*), and thus this information needs to be unified between two lexical items in this NP.

The fourth stage is the verb-phrasal procedure stage, which requires interphrasal agreement — exchanging grammatical information within a verb phrase (VP). The structure hypothesized to emerge at this stage of the interlanguage of L2 learners is the VP composed by the auxiliaries (AUX) and their lexical verbs. To produce this structure, L2 learners need to learn to choose the AUX according to a range of temporal, aspectual or modal motivations (*be, have, modal*) and then unify these features with the corresponding ones in the lexical verbs (*V-ing, V-en, V*).

The next stage is the S-procedure stage. The activation of the S-procedure requires interphrasal agreement across different phrases — the subject (SUBJ) and the lexical verb (V) — within a sentence. As PT postulates, L2 English learners can produce the morphological structure known as the 3rd person singular marking *–s* in the simple present context, once they are capable of unifying the SUBJ feature information in the NP_{SUBJ} (PERSON=3rd; NUMBER=SINGULAR) with the associated V feature information (TENSE=PRESENT; SUBJ PERSON=3rd; SUBJ NUMBER=SINGULAR).

As Table 2 presents, there are six stages predicted in ESL syntactic development. At the first stage, L2 learners have not developed any language-specific procedures, and thus are unable to access any syntactic information (Pienemann, 1998, 2005). They can only produce single constituents that only require the activation of lemma access, such as *How are you* or *No*.

Table 2. Processability hierarchy: Syntactic development for L2 English (adapted from Pienemann, 1998, 2005)

Stage	Processing procedure	Syntax	Example
6	S'-procedure	Cancel inversion	I wonder why he sold that car.
5	S-procedure	Do-2nd	What do you do on Sundays?
		Aux-2nd	Why are you laughing?
4	VP-procedure	Yes/No inversion	Can you speak English?
		Copula inversion	Are you here?
3	NP-procedure	ADV-fronting	Later she could read.
		Do-fronting	Do you like meat?
2	category procedure	Canonical word order SV(O)	I like football.
1	word/lemma	single words/formulas	How are you?

At the second stage, L2 learners can activate the category procedure and start to distinguish between verbal and nominal elements. Learners are able to organize their utterances based on the canonical order found in the input from the target language—English. For English syntax, the canonical word order is the subject-verb-object (SVO) structure. At this stage, L2 learners of English can map conceptual structures onto linguistic form (Pienemann et al., 2005: 26). Thus, *canonical word order SVO* is hypothesized to emerge at this stage of L2 syntactic development, as exemplified in *I like football*.

Next, L2 learners can enter the third stage — the NP-procedure. At this stage, learners are able to place non-arguments (e.g., adjuncts) at the initial position of a canonical word sentence. The syntactic phenomenon known as *ADV-fronting* is hypothesized to emerge by allowing adjuncts such as time or place circumstantial adverbials to appear in the initial position, as exemplified in *Later she could read*. L2 learners can also produce structures such as *Do you like meat* by placing the auxiliary *do* in the initial position of the canonical order SVO (*you like meat*). This syntactic phenomenon is called *Do-fronting*.

At the fourth stage, L2 learners can activate the VP-procedure. They can produce syntactic phenomena such as *Yes/No inversion* and *Copula inversion* in non-canonical sequences, by assigning focal function to the auxiliary or copula verb to mark the whole sentence as a question. This results in the inversion between the subject and the auxiliary (or copula), as shown in the examples *Can you speak English* and *Are you here*.

At the fifth stage, L2 learners can activate the S-procedure and fully differentiate the topic from the subject. They are assumed to be able to implement the procedure of inversion, namely, placing the auxiliary or copula before the subject. After learning to assign a focal element (e.g., a *Wh*-word) to the first position of a sentence, learners are hypothesized to become able to produce syntactic structures such as *Do-2nd* and *AUX-2nd*, as exemplified in *What do you do on Sundays* and *Why are you laughing*. In the meantime, learners are also able to exchange the interphrasal information for agreement (cf. Table 2). They can unify features (e.g., PERSON, NUMBER, TENSE) across constituent boundaries. Therefore, learners are hypothesized to

become able to produce questions such as *What does she do* or *What did she do* by using the morphological form of *do* (e.g., *does, did*).

Once L2 learners have developed all the previous processing resources, they are able to get to the sixth stage and activate the S'-procedure. The activation of this procedure requires the exchange of information between the main clause and the subordinate clause. At the previous stages, the learners have already learned to place the focal element (e.g., *Wh-word*) at the initial position and keep the rest of the words in the canonical order. Thus, they are assumed to be able to produce indirect questions such as *I wonder why he sold that car* by allowing interclausal agreement between the verbs in the main clause and the subordinate clause. This syntactic phenomenon is called *cancel inversion* in the processability hierarchy of L2 syntactic development.

The processability hierarchy of L2 English grammar proposed in PT provides an understanding of how an English learner develops L2 grammar from basic levels to intermediate and high levels. This understanding enables us to focus on the learner's level of ability and to optimize English teaching including textbook and syllabus design. To examine whether the sequence of grammatical structures introduced in English textbooks follows the hypothesized developmental sequence of L2 English acquisition, the following section will present an SLA-based textbook analysis of four English textbook series that are currently used in primary schools in China.

4. Textbook analysis

4.1 The textbooks

The present study[1] evaluates four English textbook series (28 volumes in total) that are currently used in many primary schools in China. They are *New Standard English* (Chen & Ellis, 2012; eight volumes), *People's Education Press English* (Wu, 2012; eight volumes; hereafter *PEP English*), *Super Kids* (Liu, Krause, & Cossu, 2012; four volumes), and *Join in* (Zhang, 2014; eight volumes). The four textbook series were selected on the basis of three criteria. First, all of them are officially approved by the Ministry of Education of China for the teaching of English in primary schools from Grade 3 to Grade 6. Second, they are published by two of the largest educational publishing companies in China — the People's Education Press, and the Foreign Language Teaching and Research Press — and used widely in schools throughout China. Third, they contain explicit syllabi of grammatical structures and vocabulary. As pointed out in the preface to each textbook series, while they focus on the communicative aspect of language and specific cultural contexts, they require mastery of certain grammatical structures and vocabulary to meet the communicative needs of students.

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1 Due to the limited scope of this paper, it is a summary of the main issues of the author's doctorate dissertation. For a detailed understanding of the theoretical framework and relevant argument, please refer to Tang (2017).

4.2 Method of textbook analysis

The textbook analysis was carried out in three steps. The first step was documenting the focal grammatical items that were introduced as the teaching objectives in the textbooks. Overviews of the focal grammar were provided at the start of each textbook or at the start of individual units in a volume.

The second step was analyzing and defining the specific grammatical structures contained in the listed focal items, using grammatical terminology (such as morpheme) and grammatical patterns (such as word order rules). Except for *New Standard English*, none of the textbook series presented the focal grammar in an explicit way. The majority of the focal items listed in *PEP English, Super Kids*, and *Join in* were exemplars of grammatical structures; there was no metalinguistic statement of the rules that were being taught. Thus, an explicit grammatical description was needed to provide a clear understanding of what specific grammatical structures were contained in the listed items.

The third step was tagging and grouping the focal grammatical structures introduced in the textbooks according to the morphological and syntactic categories outlined in the processability hierarchy for L2 English as stipulated in PT (cf. Tables 1 and 2). For example, this study grouped single words (*station*), chunks (*many thanks*), semi-formulaic structures (*I have got* ___ [*a book / a sweater*…]) and fully formulaic expressions (*How are you*?) into Stage 1 of the processability hierarchy for L2 English.

The aim of this third step was marking where in the textbooks the grammatical structures introduced as teaching objectives occur, and comparing their ordering with the sequence of the corresponding items in the processability hierarchy for L2 English. A distinction was made between the initial occurrence of a structure defined as a teaching objective (a grammatical focus) and incidental later occurrences. Since this study is only concerned with the order of introduction (i.e., the sequencing) of the structures that are teaching objectives, and not with the number of times the structures reoccur in the textbooks, the initial occurrence of the structures that are grammatical foci is our main preoccupation.

5. Results and discussion

5.1 Summary of the main findings

On the positive side, the results show that the grammatical sequencing in these four textbook series is partially compatible with the learning sequence as stipulated in PT. For all four textbook series, the morpho-syntactic structures at Stages 1 and 2 are graded in accordance with the hypothesized learning sequence (Pienemann, 1998, 2005). Despite this, the ordering of the grammatical structures at the later stages slightly differs among the four sets of textbooks and within the areas of morphology and syntax.

Table 3. Ordering of morphological foci in *New Standard English*

Book	Lesson	Morphological items	Stage
1	1	Words/formulas	1
	9	Possessive determiner	2
2		3rd ps sg -s	5
3	3	V-ing	4
	8	Phrasal plural -s	3
4		Simple past -ed	2
6		Lexical plural -s	2

Table 4. Ordering of morphological foci in *PEP English*

Book	Lesson	Morphological items	Stage
1	1	Words/formulas	1
	6	Phrasal plural -s	3
2	2	Possessive determiner	2
	5	Lexical plural -s	2
3		3rd ps sg -s	5
4		V-ing	4

Table 5. Ordering of morphological foci in *Super Kids*

Book	Lesson	Morphological items	Stage
1	1	Words/formulas	1
	2	Possessive determiner	2
	6	V-ing	4
2	5	Simple past -ed	2
	6	Lexical plural -s	2
	7	Phrasal plural -s	3
	8	3rd ps sg -s	5

Table 6. Ordering of morphological foci in *Join in*

Book	Lesson	Morphological items	Stage
1	1	Words/formulas	1
	4	Possessive determiner	2
	4	Lexical plural -s	2
	4	Simple past -ed	2
	4	Phrasal plural -s	3
2	2	3rd ps sg -s	5
	3	V-ing	4
	4	V-en	4

In the area of morphology, *Super Kids* has shown the highest consistency with the learning sequence as stipulated in PT (see Table 5). The other morphological items taught as teaching objectives are introduced in an order that is processable and learnable for students, with the only exception of the VP morpheme "V-ing" (Stage 4) which is taught in a premature manner. "V-ing" appears before "phrasal plural -s" (Stage 3) in the whole textbook series; this does not agree with the PT's hypothesis (Pienemann, 1998, 2005) that the learner can acquire the VP procedural skills only when they have developed all the previous NP procedural skills.

PEP English and *Join in* have been found to achieve a similar pedagogical teaching order of the morphological items (see Tables 4 and 6). The morphological items located at the first two stages are taught as grammatical foci in line with the PT-based learning sequence (Pienemann, 1998, 2005). The pupils are required to begin with the single words or invariant forms; subsequently, they need to develop the category procedural skills (the SVO structure). However, the instruction of "phrasal plural-s" is not presented in a learnable way. It is taught as an instructional focus either before (in *PEP* English) or simultaneously with (in *Join in*) the lexical morphemes. Such pedagogical teaching orders are not consistent with the PT's hypothesis (Pienemann, 1998) that the category procedure is a necessary prerequisite for the NP procedure. The instruction of Stage 4 morphemes "V-ing" and "V-en" are learnable for the pupils, since the two sets of textbooks follow the L2 sequenced development; namely, the learner has to develop the NP procedural skills before he or she moves to the VP procedure stage. Nevertheless, "3rd ps sg -s" is conversely instructed as a teaching objective before the VP morphemes in these two textbook series. This violates the sequenced development of L2 processing skills, namely, the learner is not able to acquire the S-procedural skills before he or she has developed the VP procedural skills.

New Standard English presents a partial agreement with PT predictions and does not coordinate the ordering of the morphological items at Stages 4-5 with learnability in an effective way; but at least, the morphological items at the initial three stages are ordered in accordance with the hypothesized sequencing (see Table 3). The pedagogical teaching sequence in this textbook series shows that, at first, the pupils only need to learn invariant forms, and then they are expected to progress to the category procedure stage (lexical morphemes), and afterward they have to acquire the NP procedural skills ("phrasal plural -s"). However, the instruction of "V-ing" and "3rd ps sg -s" is not presented in a learnable manner. They precede their prior-stage morphemes in the textbook series. The pupils cannot acquire these two morphemes due to that they have not developed all the previous processing resources (the NP procedure and the VP procedure) at that point.

The situation in the area of syntax seems less complex. The ordering of the syntactic structures taught as teaching objectives is highly similar among these four sets of textbooks (see Tables 7-10). Overall, except for "copula inversion" (Stage 4) which is taught before the Stage 3 word orders, the other syntactic features under investigation are ordered in line with the PT-based processability hierarchy (Pienemann, 1998, 2005). For these four textbook series, the students are required to start with some formulaic structures such as *how are you*;

Table 7. Ordering of syntactic foci in *New Standard English*

Book	Lesson	Syntactic items	Stage
1	1	Words/formulas	1
	4	Canonical word order SV(O)	2
	8	Copula inversion	4
2	4	Do-fronting	3
	5	Yes/no inversion	4
	6	Do-2nd	5
3		AUX-2nd	5

Table 8. Ordering of syntactic foci in *PEP English*

Book	Lesson	Syntactic items	Stage
1	1	Words/formulas	1
	5	Canonical word order SV(O)	2
2	2	Copula inversion	4
	5	Do-fronting	3
3	1	ADV-fronting	3
	4	Yes/no inversion	4
	5	AUX-2nd	5
	6	Do-2nd	5

Table 9. Ordering of syntactic foci in *Super Kids*

Book	Lesson	Syntactic items	Stage
1	1	Words/formulas	1
	2	Copula inversion	4
	3	Canonical word order SV(O)	2
	4	Do-fronting	3
	5	Yes/no inversion	4
	6	AUX-2nd	5
2		Do-2nd	5

Table 10. Ordering of syntactic foci in *Join in*

Book	Lesson	Syntactic items	Stage
1		Words/formulas	1
2	1	Copula inversion	4
	2	Canonical word order SV(O)	2
	5	Do-fronting	3
3	2	Yes/no inversion	4
	3	AUX-2nd	5
4		Do-2nd	5

later, they are expected to learn the SVO structure by using the category procedure. After developing all the previous processing skills, the students need to acquire the NP procedural skills ("ADV-fronting" and "do-fronting"). However, "copula inversion" is taught too early in the whole series. The teaching order that the VP procedural skills are developed prior to the NP procedural skills goes against the PT-based learning sequence (Pienemann, 1998, 2005). The instruction of "do-2nd" and "AUX-2nd" is considered learnable in these four sets of textbooks since the students are required to acquire the S-procedural skills after they have developed the VP procedural skills.

Apart from the ordering of grammatical structures, the presence of several structures at the same developmental stages differs in the four textbook series. One contrast exists between "V-ing" and "V-en." These two morphemes are both processed through the VP procedures and can be acquired at Stage 4 of ESL morphological development. However, "V-ing" is included in all the four sets of textbooks, while "V-en" only appears in *Join in*. Similarly, "Do-fronting" and "ADV-fronting" forms the other contrast. These two word orders are hypothesized to be acquired at Stage 3 of ESL syntactic development through the process of the NP procedure. Nevertheless, the previous textbook analysis reveals a difference in their presence, namely, "Do-fronting" is introduced in all the four sets of textbooks, but "ADV-fronting" merely appears in *PEP English*.

5.2 The ordering of grammatical structures and learners' developmental readiness

The acquisition-based ordering of the structures at the initial two stages indicates that the textbook writers' idea of early-stage grammatical development follows the developmental trajectory as stipulated in PT; therefore, the introduction of morpho-syntactic structures at Stages 1 and 2 is processable and learnable for L2 students.

According to PT (Pienemann, 1998, 2005), learning an L2 equates to acquiring the skills to process L2 grammatical structures. L2 processing skills are developed in a sequence that follows the order of activation of processing procedures (Pienemann, 1998, p. 7). The sequenced activation of L2 processing procedures allows for the production of grammatical structures. A processing procedure can be activated, and the corresponding grammatical structure can be produced only if all the previous processing skills have been developed (Pienemann, 1998). For instance, if an L2 learner can apply the category procedure (Stage 2), he or she will be able to produce the word order "canonical word order SV(O)." Next, if the learner is able to use the NP procedure to produce the word order "do-fronting," he or she is already capable of using the preceding procedure — the category procedure — and producing the word order "canonical word order SV(O)." Accordingly, the process of acquiring L2 processing procedures and grammatical features is cumulative. The activation of the various processing procedures is sequenced, so that L2 learners, in the course of their L2 acquisition, must go through a series of stages (Pienemann, 1998). Each earlier-stage procedure in this sequential progression is a prerequisite for what is acquired at a later stage. In other words, less complex grammatical structures processed at an earlier developmental stage constitute the precondition for the more

complex ones at later stages (Mansouri & Duffy, 2005).

Applied to this textbook evaluation, the sequencing of the morpho-syntactic structures at Stages 1 and 2 in all four sets of textbooks is in full agreement with the learners' developmental readiness. That is, before teaching a grammatical structure such as "canonical word order SV(O)," which is situated at the category procedure stage (Stage 2), single words or formulaic expressions that are acquired at the lemma access stage (Stage 1) are taught as obligatory learning items in the textbooks. This finding indicates that the authors of these four textbook series have taken into account the learners' developmental readiness in their sequencing of structures at the initial two stages. They have perceived single words or formulaic expressions such as "How are you" as less complex items than a canonical word order SVO such as "I like you." In other words, since the word order SVO is considered more difficult for L2 students, this structure is introduced as a grammatical focus after formulaic expressions, which are considered less difficult to learn.

However, our findings also reveal that the ordering of several grammatical structures in the four textbook series is different compared with the L2 learning sequence as stipulated in PT. In all four sets of textbooks, there is only one syntactic structure ("copula inversion") taught in a premature manner; two of them present two morphological structures (either "phrasal plural -s" or "3rd ps sg -s") in a deviant pedagogical teaching sequence, whereas two of them present one morphological structure ("V-ing") in a deviant teaching order. These forms are introduced as grammatical foci before the structures at their previous stages have been presented. The findings imply that the authors of the four series may consider these four structures less difficult for L2 students, and thus these forms are taught earlier than others. However, from a processability perspective, the early instruction of these four structures in the textbooks does not take into consideration L2 learners' developmental readiness.

For instance, the Stage 4 word order "copula inversion" is taught prior to the Stage 3 word order "do-fronting" in all four textbook series. The inversion of the NP procedural skills and the VP procedural skills violates their sequencing as hypothesized in the PT-based processability hierarchy. According to PT (Pienemann, 1998, 2005), the acquisition of "copula inversion" calls for the activation of the VP procedure at Stage 4, and the acquisition of "do-fronting" necessitates the activation of the NP procedure at Stage 3. Since the NP procedure is the prerequisite for the VP procedure, the processing of "do-fronting" is deemed less complex than that of "copula inversion." For L2 learners, it is more difficult to acquire "copula inversion" than "do-fronting." Thus, it is more realistic for them to learn the less complex structure "do-fronting" first and then learn the more complex one "copula inversion" later. The authors may not have considered the processing complexity of "copula inversion" in the four textbook series.

5.3 Reconsider the deviant pedagogical teaching orders: Theme-based textbook design

Is it possible that the design of grammar instruction in the four textbook series analyzed in this study follows other concepts of L2 learning and teaching? One question worth asking is

whether the deviant introduction of structures at the intermediate and high levels (Stages 3 to 5), reported in the present study, is inspired by the textbook writers' consideration of the context of English education in China.

According to the prefaces of the four textbook series, a theme-based teaching approach pervaded the compilation guidelines adopted by the authors. For example, in the preface of the *New Standard English* series, the authors Chen and Ellis stated:

> 每册内容以题材（theme）为纲，以功能、结构、运用任务（task of using English）为目。同一题材在全套教材中重复出现，但其内容逐步扩展加深，螺旋上升。词汇、语法项目和功能用语的选择和安排，均以题材为出发点，以运用英语的任务为载体。(*New Standard English*, Book 1, Chen & Ellis, 2012: 2)

> The contents of each volume follow a theme-based syllabus, considering functions, grammatical structures, and tasks of using English as learning objectives. One overall theme is pervasive in the whole textbook series, but the contents associated with that theme are gradually extended and enriched — "spiraling." The vocabulary, grammatical items and functions (or notions) are selected and arranged on the basis of themes, and they are implemented through tasks of using English. (*New Standard English*, Book 1, Chen & Ellis, 2012, p. 2; my translation)

Similarly, the prefaces of the *PEP English, Super Kids* and *Join in* series all indicate that the textbook series is designed according to a theme-based syllabus (cf. the prefaces of these three sets of textbooks). Theme-based approaches are a form of content-based instruction that aims to deliver content and language integrated teaching (Alptekin, Erçetin, & Bayyurt, 2007). Content refers to the subject matter the students learn through the use of the target language (Richards, 2001). L2 is regarded as the medium of conveying content and information instead of being taught in an isolated way without the integration of particular content (Khranke, 1987). Focusing on the content, the theme-based approach integrates different objectives of L2 learning such as functions, vocabulary, and grammar around a theme or specific topics closely related to the students' interests, needs, personal experiences and daily life (Met, 1999).

Motivated by a theme-based approach, the writers of the four textbook series consider the theme or topics as the primary concern in the compilation. For example, the writers of the *New Standard English* series indicate that they follow the "题材—功能—结构—任务"的多步法编写大纲 ("theme – function – structure – task" multi-step procedure for syllabus design; my translation) (*New Standard English* Book 1, Chen & Ellis, 2012, p. 1). The themes of individual lessons (or units) determine what kinds of target grammar and vocabulary need to be utilized to achieve the use of corresponding functions or notions. Take for example *New Standard English*, Book 1. The theme of the first module is "Greetings," and thus there are two related categories of functions: "greeting and saying farewell" and "introducing oneself." The grammar and vocabulary needed for this context are provided accordingly, such as words or formulas *Hello / Hi, I'm …, Goodbye / Bye-bye, Good morning, How are you*, and *I'm fine, thank you.*

Theme-based textbook compilation may account for the deviant grading of several structures at the intermediate or high stages in the four textbook series. Due to the limited scope of this article, the morpheme *3rd ps sg -s* (Stage 5) is taken as an example to exemplify the possible association with the theme-based approach.

The *3rd ps sg -s* is introduced prior to the Stage 4 structures, or it appears too early in the initial volumes of the textbook series. The early introduction of *3rd ps sg -s* may be associated with the early occurrence of a related theme (or topics) such as favorite things or routines. In the *New Standard English* textbook series, it is the grammatical focus of Book 2. The theme of Module 5 in Book 2 is "Activities," and the related function is "talking and asking about activities on weekdays and weekends." Students are required to describe, in the present tense, what one of their acquaintances or friends (or relatives) normally does at those times. The third person singular inflection *-s* is obligatory if the subject is a third person singular pronoun (e.g., *she*) or a singular proper name (e.g., *Amy*). Similar themes in *PEP English*, Book 3 and *Join in*, Book 2 also provide the context for the instruction of *3rd ps sg -s*. In *PEP English*, Book 3, the theme of Unit 3 is "My friends." In *Join in*, Book 2, the theme of Unit 2 is "My classmates." Students are required to talk in the present tense about what one of their friends or classmates usually does or likes. Therefore, *3rd ps sg -s* is introduced as the grammatical focus very early in these textbook series.

5.4 Implication of deviant instruction: "Avoidance" strategy

As discussed above, the selection and sequence of grammatical structures may be related to the arrangement of themes (or topics) and relevant functions in the analyzed textbook series. It seems that, in these textbooks, the concern with the usefulness of a grammatical form (what kind of grammatical expression is needed in a given context) takes precedence over learnability considerations (whether the structure is learnable for L2 students). The premature teaching of structures that are not processable and learnable at a given point may result in a possible negative consequence for a learner's acquisition process.

One possible negative consequence is that students probably avoid or omit the use of the structures they have already acquired at the earlier developmental stages. For example, Pienemann (1986, 1989) conducted a teaching experiment in which he observed the acquisition by L2 learners of four German word order rules — *canonical order (SVO), adverb preposing (ADV), verb separation (SEP)*, and *inversion (INV)*. These word order rules were hypothesized to emerge at different stages of the L2 German acquisition process: Stage X (SVO), Stage X+1 (ADV), Stage X+2 (SEP), Stage X+3 (INV). Two of the informants were at Stage X+1 (ADV). After the untimely introduction of the structure INV, which should normally occur at Stage X+3, these two informants were found to reduce their frequency of use of the structure ADV by 75% (Pienemann, 1989, p. 72).

A further investigation carried out by Pienemann (1989) showed that, since these two informants were at a lower stage (Stage X+1), they had not developed the processing procedures required for the higher stage (Stage X+3). They merely knew that an element (e.g.,

an adverb) other than the subject could be preposed while they learned ADV. They did not know that the subject and the verb must be inverted (this information was included in the process of INV at Stage X+3). Therefore, the informants performed violations in the use of INV. When they realized that they were not able to process INV, they attempted to avoid the use of this non-learnable structure and stopped using ADV as well. Such an "avoidance" or "omission" strategy does not contribute to facilitating the acquisition process but confines the expressiveness of the learner's language (Pienemann, 1989, p. 76). A similar finding was revealed in Lightbown's (1982, 1983, 1985) empirical research on L2 English acquisition of adolescent learners who were primarily exposed to classroom input of English. The L2 learners were found to give up using some structures they had learned and to replace them with less complex structures such as the use of progressive -*ing* (cf. Lightbown, 1985).

5.5 Suggestions for sequencing grammar in textbooks

Applied to L2 English classrooms, the deviant order or the untimely introduction of grammatical structures in a textbook may lead to wasted time and frustration when the teacher attempts to teach a structure that the learner is not capable of learning. A possible solution to the issue of premature instruction is to consider learnability constraints in the arrangement of textbook content. Pienemann (1985) and Lenzing (2008) suggested that we should incorporate the principles of learners' developmental readiness when selecting textbook content and sequencing the textbook's syllabus. Therefore, from a processability perspective, grammar should be hierarchically arranged in accordance with the developmental sequence of the L2 acquisition process.

How can we, in a feasible manner, sequence grammatical input in textbooks according to the developmental path of L2 acquisition? Here are three suggestions which may be considered in future textbook compilation.

First, the grammatical items integrated into the textbooks, including exercises and tasks, should be subdivided into two categories: the obligatory structures and the optional structures. The obligatory structures refer to the learning objectives required to be learned and produced by students. The optional structures refer to those features that are not required for production but that appear as structural consequences of the structures that are obligatory to achieve the communicative needs within the textbook theme (or topics).

Second, the grammatical items that are specified as the obligatory structures should be selected and graded in accordance with the L2 acquisition process as stipulated in PT: (1) a structure at an earlier stage should be introduced before a structure at a later stage; and (2) structures at the intermediate or high levels, such as *3rd ps sg. -s*, should not be introduced as obligatory structures in the initial volumes of a textbook series or the beginning units of a textbook.

Third, a variety of pedagogical tasks should be provided in textbooks to meet the heterogeneous demands of students in an L2 classroom. Many SLA researchers have considered pedagogical tasks to be a feasible way of combining communicative language skills

with beneficial grammar instruction (e.g., Crookes & Gass, 1993; Ellis, 2001, 2003; Keßler, 2008). In contrast with normal exercises such as "cloze tests," pedagogical tasks have a better chance of identifying different levels of developmental readiness in students and of addressing student needs (Keßler, 2008; Johnson, 2003; Seedhouse, 2005). Once teachers have a general understanding of the current developmental stage of individual students through a task test, they can focus on the instruction of the obligatory structures that all or the majority of the students are developmentally ready to acquire next. In the meantime, teachers can also use tasks in which all or the majority of students can use those grammatical items that are available to them for communicative practice (Keßler, Liebner, & Mansouri, 2011). Therefore, textbook writers should design a certain range of pedagogical tasks (e.g., Spot-the-difference task, Story-completion task) in the teaching units (or lessons) of their textbooks.

6. Conclusion

This study reports on an acquisition-based evaluation of four English textbook series (28 books altogether) for primary school education in China: *New Standard English, PEP English, Super Kids*, and *Join in*. Under the methodological guidance of PT (Pienemann, 1998, 2005), this evaluation has indicated that the sequencing of grammatical structures in these four textbook series is partially compatible with the developmental sequence of the L2 English acquisition process as stated in PT.

This study has implications for ESL pedagogy. The study reveals current trends in English textbook compilation in China, where reliance on a theme-based approach means that textbook authors primarily concern themselves with the usefulness of grammatical forms within a given theme, rather than with learnability considerations. The related findings may draw more attention to the issue of how to balance communicative needs and the grading of grammar in L2 teaching. The proposed suggestions may serve as a reference for the design of grammatical syllabi in a theme-based textbook for an L2 communicative classroom.

Two principal limitations related to the research scope need to be acknowledged. First, insights gained through the analyses of more textbooks that are widely used in China are needed in order to extend the generalizability of the findings in the present study. Second, "first-hand" information with regard to the textbook writers needs to be collected through further interviews, in order to have a deeper understanding of textbook compilation and grammatical sequencing. Third, issues related to grammatical presentation and general input provided by textbooks such as exercises remain a matter for further investigation. Future research may incorporate other SLA approaches such as input frequency or input processing into the PT-based approach.

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