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Prospects for Evidence-Based L2 Chinese Teaching Practice in Sweden

A Progression Sequence Analysis of Grammatical Items in Chinese Textbooks

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Abstract

This study was motivated by the current vulnerable status of Chinese taught as a second language in Swedish gymnasium education, calling for further knowledge on how theories on second language (L2) acquisition can benefit instruction on L2 Chinese. Since language textbooks often constitute the curriculum in Swedish classrooms, two Chinese textbooks were targeted for analysis in terms of the sequencing of grammatical content in relation to learner readiness. The analysis was operationalized through the framework of Processability Theory (PT), a language acquisition theory hypothesizing a predetermined, incremental acquisition order of syntax and morphology for language learners that instruction cannot override. Formal instruction following this sequence has proven to have a positive effect on the rate of learning and acquisition, implicating that instruction content in textbooks should be sequenced in alignment with the predicted order in favor of effectiveness and learnability.

The two textbooks *Lai ba!* and *Zhongwen Haoxue 1* were analysed in terms of their alignment with the learner progression sequence predicted by a PT-derived hierarchy of Chinese grammatical content. The findings from *Lai ba!* concluded that the targeted content in the textbook aligned with the sequence order of the PT-hierarchy, while the targeted content in *Zhongwen Haoxue 1* were found to deviate from the predicted order. Within the limited scope of this study, PT determines the findings of the input of the former to be learnable while the input of the latter is not, provided instruction exclusively follows the sequence of contents determined by the progression in the textbooks. However, the study concluded that the data sample was too small to elicit any definite conclusions. In order to enable conclusions applicable to classroom practice and textbook usage, the theoretical implications of these findings require more empirical support from studies combining research on instruction input and learner production output.

Keywords

Teaching Chinese as a Second Language (TCSL/TCFL), Swedish Education, Textbook Analysis, Acquisition Order, Processability Theory, Learnability, Second Language Acquisition (L2A/SLA)

Abbreviations

ADJ	Adjective marker (-de 的)
ATT	Attributive marker (-de 的)
CL	Classifier
CFL/CSL	Chinese as a foreign/second language
DP	Determiner phrase
EXP	Experiential marker (-guo 过)
L1	First language
L1A	First language acquisition
L2	Second language
L2A (SLA)	Second language acquisition
LFG	Lexical Functional Grammar
NEG	Negation marker
NP	Noun phrase
OBL	Oblique (case)
PST	Past (tense)
POSS	Possessive marker (-de 的)
PP	Prepositional phrase
PROG	Progressive marker ((zheng)zai 正在)
PT	Processability Theory
Q	Question marker (ma 吗)
RC	Relative clause marker (-de 的)
SVO	Subject - Verb - Object
TL	Target language
TCFL/TCSL	Teaching Chinese as a foreign/second language
UG	Universal Grammar
V-COMP	Verb complement (-de 得)
VP	Verb phrase
XP	X phrase
1PL	1st person plural
1SG	1st person singular
2SG	2nd person singular
3PL	3rd person plural

Table of contents

1. Introduction	1
1.1 Purpose	2
1.1.1 Research Questions	3
1.3 Limitations and Disclaimers	3
1.4 Definitions	3
2. Second Language Acquisition – Background and Literature Overview	4
2.1 Second Language Acquisition (L2A) – Introduction	4
2.2 Interlanguage and L1 Influence	5
2.3 L2 Acquisition Order and Development	6
3. The Theoretical Framework	8
3.1 Processability Theory – Acquisition Order Hypothesis	8
3.2 PT's Implications on Teaching	11
3.3 Previous Research Within the PT framework	12
3.3.1 Hypothesized Development of L2 Chinese	12
3.3.2 Textbook Sequence Analysis	15
4. Method	17
4.1 Selection of Theoretical Framework	17
4.2 Selection of Data Samples	18
4.2.1 Data Units	19
4.3 Coding Items	20
4.3.2 Discussion on PT Hierarchy Application Issues	21
4.5 Data Analysis	23
4.1 Ethical Considerations	24
5. Results and Discussion	25
5.1 Lai ba! Content Sequence Order	25
5.1.1 Possessive Marker and Classifiers	28
5.1.2 Adjective and Attributive Marker	28
5.1.4 Relative Clause Marker	30
5.2 Zhongwen Haoxue 1 Content Sequence Order	30
5.2.1 Possessive Marker and Classifiers	31
5.2.2 Adjective and Attributive Marker	33
6. Concluding Discussion and Suggestions for Further Research	34
References	36

1. Introduction

Considering China's socio-economic and political position in the world today, the importance of learning Chinese can be regarded as greater than ever. In Sweden, Chinese as a foreign language taught in school emerged in *gymnasium*¹ schools for the very first time in 1970, and has since then slowly grown, peaking around the year of 2014 (Sahlberg, 2015; Skolverket, n.d.). According to Skolverket's² (n.d.) annual statistics³, 729 students graduated from a Swedish gymnasium in the academic year of 2013/14 with a mark in beginner's Chinese⁴, which can be compared with 336 students in that of 2018/19. In other words, there has been a decrease by 54 percent in five years. Two years before the peak of 2014, former head of the Ministry of Education and Research Jan Björklund requested that all gymnasiums and the majority of primary schools within a 10 to 15 years span should provide Chinese classes (Sveriges Radio, 2012). In light of this, the realization of Chinese becoming a school language in parallel with Spanish, German and French (Skolministeriet, 2018) seems very distant today.

The reasons behind the decrease in interest has not yet been thoroughly researched, though Håkan Friberg (Sveriges Radio, 2018), former Chinese teacher and school politician who has identified the issue, has mentioned a combination of factors. Ambitious students pursuing top grades worry that high grades in Chinese will be unattainable due to its reputation of being an impossible language to learn. The Swedish merit point system that awards students pursuing the same language they studied in primary school at the higher level of gymnasium education prevents many students from choosing a beginners level language in gymnasium. In the rare cases that Chinese is provided in primary schools however, students hesitate to choose it because of the uncertainty of being able to advance to higher levels at gymnasium. Meanwhile, both primary schools and gymnasiums hesitate in starting up Chinese classes, since small size groups are less eligible for funding. Together these factors all contribute to a labile and fragile system, a "Catch-22" as Friberg phrases it (Sveriges Radio, 2018).

While authorized teachers and a stable system (Sveriges Radio, 2018) are crucial as prerequisites for successful teaching, the way instruction in class is carried out is central from the students' perspective. The question on how to attract Swedish students and keep them interested in advancing to higher levels and thus stabilizing the existence of Chinese as a modern language in Swedish schools, calls for more research on the conditions needed for effective teaching in the context of Chinese language acquisition in Swedish classrooms. One of these conditions is constituted by effective teaching materials. Even though no survey to my knowledge exists on the usage of Chinese textbooks in Sweden, surveys conducted in the context of other subjects conclude that published textbooks still serve a crucial role in

¹ Gymnasium is the Swedish term for the non-mandatory last three years of upper secondary school in Sweden (students are usually aged 16–18).

² The National Educational Agency in Sweden.

³ Includes students in both the national program and national recruiting courses that have received a high school diploma or a diploma of at least 2,500 points from the upper secondary school, counting the academic year 2013/14 vs 2018/19. The numbers include both Mandarin and Cantonese.

⁴ Kinesiska 1

Swedish gymnasiums today (Svensson, 2000). In a 2003 survey on textbook usage in Sweden, carried out by the teaching materials trade association FSL⁵, less than two percent of teachers stated that they never use textbooks and 16 that they rarely do, while 60 percent stated that they used printed study materials regularly and nearly 20 percent do so “virtually every lesson”⁶ (Skolverket, 2006:20). In other words, textbooks remain central to instruction in Swedish classrooms.

On the importance of textbooks, UNESCO states in their 2016 annual issue of The Global Educational Monitoring Report (2016:1) that “[n]ext to an engaged and prepared teacher, well-designed textbooks in sufficient quantities are the most effective way to improve instruction and learning.” Brian Tomlinson, TESOL professor and developer of language learning materials, argues that teaching materials should be tied primarily to “theories of language acquisition and development [...] principles of teaching” (Tomlinson, cited in Wang et al., 2017:146). Furthermore, as stated in the 5th paragraph in the first chapter of the Swedish Education Act (SFS 2010:800), “[e]ducation should have proven science and evidence-based practice as a foundation”⁷. This, of course, must then also apply to the teaching materials and textbooks used in class. In order for this to be actualized however, more research within the field of CFL in a Swedish context is required, especially considering the fact that Chinese taught as a second/foreign language is a relatively new to the Swedish curriculum, and that textbooks are used in a relatively larger extent by teachers with less teaching experience and education (Wikman, 2004).

One feature language teachers have to consider is the order in which language content should be taught in class. In Sweden, where the curriculum for Chinese as a modern language is not detailed in terms of content and progression, textbooks often constitute the curriculum, and the sequence of target language content is thus largely predetermined. Meanwhile, the question on what causes delayed effect on instruction has been of great focus in the L2A research field. One explanation proposed to this issue is that of a predetermined acquisition order of language that instruction cannot override (Pienemann, 1998). In light of this, formal instruction that follows the hypothesized acquisition sequence has proven to have a positive effect on the rate of learning and acquisition, which implies that instruction in schools could be more effective in terms of learning without delay, provided the curriculum followed this sequence order (Wang, 2011). Further knowledge in this area could constitute one step toward more evidence-based practice in Chinese classrooms in Sweden. Therefore, the focus of this study is to explore the theoretical implications on the effectiveness of TCFL through sequence order analysis of language content in Chinese textbooks.

1.1 Purpose

The purpose of this study is to contribute to the research field of teaching Chinese as a foreign language (TCFL) in the Swedish context, in introducing L2A theories on sequence order and learnability as an analytic tool for evaluating teaching materials and instruction

⁵ Föreningen Svenska Läromedel.

⁶ Author’s translation; “så gott som varje lektion”.

⁷ Author’s translation; “Utbildningen ska vila på vetenskaplig grund och beprövad erfarenhet”

content. In applying a similar method on instruction text analysis previously used within the PT framework on Chinese learner production data, this study serves as an expansion of the PT framework by providing a suggestion for future textbook and instruction text analysis methodology in contexts beyond TCFL in Sweden.

In the Swedish context, the results of this study could possibly contribute to a more active choice of textbook materials among Chinese teachers in Sweden. Furthermore, the importance of transparency on the route of instruction when studying student output, has been called upon in prior research (Wang, 2011). Since awareness of the sequence order of content in the textbooks used in class in relation to the hypothesized sequence order is crucial in order to do a valid interpretation of the progression of students' production output, the results of the current study can also be used in future research on developmental acquisition among students using the textbooks analysed in this study.

1.1.1 Research Questions

This study aims to answer the following question:

To what extent does the content sequence of the textbooks chosen in this study align with the acquisition route of CFL learners as predicted by the hierarchy derived from Manfred Pienemann's Processability Theory (1998)?

In addition, the implications of the findings of the research question on the language acquisition progression of the CFL learning textbook users will be discussed.

1.3 Limitations and Disclaimers

The current study aims to analyse the textbooks only in terms of the sequence order of certain grammatical structures and discuss the findings within the framework of Processability Theory. The conclusions of this study should only be viewed within the context limited by the research question, and not as a holistic evaluation of the textbooks selected for the analysis.

The main target audiences of this paper are Chinese language teachers in Sweden, researchers of CFL and researchers of PT applied to Chinese. Therefore, no introduction or explanatory section on the features of the Chinese language will be included.

1.4 Definitions

Some scholars use the terms 'acquisition' and 'learning' synonymously within L2A research, despite essential differences in meaning. 'Acquisition' refers to the implicit learning of a language, and is often limited to research concerning first and second language learning that are acquired in a 'natural' context. 'Learning' on the other hand, refers to the explicit process of acquiring a foreign language outside of a natural context, for example in a classroom. A similar distinction is often made between the terms *second* language (L2) and *foreign* language (FL). In this paper I will use the broader definition of the term 'acquisition', thus including learning processes under formal instruction of Chinese. This is due to the fact that the theories chosen in this study focus on sequence of physical and procedural constraints

independent of mode of instruction. For the same reasons, I will use the term second language acquisition (L2A) consistently, even when FLA might be the more accurate term regarding teaching materials for learning in a non-target language (TL) environment.

In regard to the distinction between CSL (Chinese as a Second Language) and CFL (Chinese as a Foreign Language) however, I've chosen to use the abbreviation CFL. Though this might seem contradictory in regard to my prior discussion, this choice is made considering that the two terms are used more consistently within the field (i.e. CFL is used only in the context of Chinese taught in a non-naturalistic environment, and vice versa).

The term *Chinese* refers to standard Chinese (often, but not always, interchangeable with the Chinese term *putonghua*) or Mandarin Chinese throughout this paper.

2. Second Language Acquisition – Background and Literature Overview

Research on L2A has developed rapidly within the last fifty years, providing more insight into questions such as how and what is needed in order to acquire a second language, how the TL system is internalized and how it is put to use during production and comprehension of the TL, and how the development of language acquisition progresses.

In order to understand the significance of acquisition order on the development of language acquisition, specifically in the context of textbook content in CFL teaching and learning, one must first become acquainted with the field of L2A research. Due to the time limits of this paper, the literature review is not exhaustive. The purpose of this section is to serve as a brief introduction to some of the most central issues and theories within the research field in order to put the theoretical framework applied in this study into context. The studies and theories presented have thus been selected partly from readings of prior literature overviews, and partly for their relevance in terms of explaining key terms and concepts relevant to this study.

2.1 Second Language Acquisition (L2A) – Introduction

Some theories that focus on the learner when approaching the question of language acquisition argue either that the cognitive processes of language are included within general learning capabilities of the brain, or that the learner is genetically endowed with capabilities specific to language acquisition, i.e. a specific language faculty (Benati et al., 2016). Many theories developed within L2A research field rely on Chomsky's theory of Universal Grammar (UG) as a primary component of the initial state of the language learner. UG proposes an explanation to what is known as the logical problem, namely the question of how children can learn their L1 despite the linguistic input around them appearing insufficient and grammatically inconsistent. The theory of UG suggests that humans possess an innate language faculty or grammar, holding a certain set of structural rules that constrains and guides language acquisition. On the basis of this innate grammar, the child then acquires their L1 provided the input that provides the raw data for the language system is comprehensive and sufficient in quantity. Within this rationalist view, formal instruction or a certain form of

environment cannot be regarded as a determinant factor for language acquisition given the complexity and implicitness of the language system. Instead, the role of input is mainly to trigger the development of an innate knowledge of language (Benati et al., 2016). Today, it is generally believed that acquisition does rest upon the foundation of some kind of initial state, more specifically an innate mechanism responsible for organizing TL input, while interaction with the environment also stands as a significant factor (Benati et al., 2016).

The child is believed to acquire their L1 through the interaction between the linguistic input provided in the child's specific cognitive and sociocultural context and biological factors such as processing capacities and constraints to acquisition (Strömquist, 2003). In contrast to L1A, learning a second language can be pursued during any period of time in life, and the initial state of an L2 learner is thus much more complex in terms of independent variables that may or may not determine the acquisition route and development of the TL. In addition to exposure to the raw linguistic data provided by the input, the development of an L2 is also believed to be shaped by the learner's access to universal properties, formal instruction, and the learner's knowledge of their L1 (Benati et al., 2016).

One heavily debated question is that of the learner's age, and whether or not it is a constraining factor in L2A. The long-lived paradigm of the Critical Period hypothesis states that there is an age limit to when an L2 can be acquired implicitly in the same way that a child acquires their L1. Put bluntly, the claim holds that "children always succeed in completely acquiring their native language, but adults only very rarely succeed in completely acquiring a second language" (Tarone, 2006). Attempts to explain this notion includes loss of organisational neural plasticity in adulthood and indirect access or lack thereof to UG (Benati et al., 2016). The case of Genie, a girl raised in total isolation from any type of speech interaction with other humans and who later on as an adult only managed to learn a very simple form of English, makes a case for the hypothesis that there is a critical period in which the child must acquire an L1. However, this conclusion has been disputed, seeing as her limited language acquisition could very well be due to her emotional trauma and alleged intellectual disability (e.g. Benati et al., 2016; Clark, 2009). Furthermore, recent research has challenged the Critical Period hypothesis, including a study (Gullberg & Dimroth, 2012) on implicit Chinese word acquisition among adults in which the participants' ability to segment the sound strings and map meaning to these segments was monitored and analysed. The implicit segmentation and mapping on meaning onto the segments were found to be successful, suggesting that "the adult learning mechanism [...] at the outset or the earliest stages of L2 acquisition and in the absence of pre-existing knowledge about cognates and sound system to bootstrap and boost learning, can deal efficiently with very little and very complex input" (Gullberg & Dimroth, 2012:258). It is safe to say that the critical period hypothesis remains a debated subject.

2.2 Interlanguage and L1 Influence

Today it is known that production of an L2 doesn't happen simply through mapping L1 features onto the target language, and that a linguistic system is instead mentally constructed

within the learner according to the new TL system. Yet, the L1 is considered to play a certain role in the process of L2 acquisition (Wang, 2011).

One group within L2A research regards the learner's L1 as a significant factor in how the target second language (TL) is approached and acquired. Early on within this school of thought, contrastive analysts stipulated that the sole process behind L2A was that of L1 *transfer*. However, this view was ultimately challenged, as no evidence proved sufficient to fully support it (Tarone, 2006).

Corder (1967; 1981, presented in Tarone, 2006) built on the idea of UG, suggesting that the learner starts from a universal 'built-in syllabus'. In dialogue with Selinker (1972, presented in Tarone, 2006) this notion developed into the theory of *interlanguage*, a concept that came to be central in the field of L2A research. Interlanguage refers to the learner's own linguistic system during any point of their developmental route towards acquiring the L2, and constitutes a separate system from those of the learner's L1 and TL. The L1 is still considered to play a role in how interlanguage is shaped however. Certain features in the TL may be identified by the L2 learner as similar to their L1, in which case transfer of that certain feature might occur (Tarone, 2006).

While the early theories of transfer suggested that target-deviants, or errors, appearing in the learner's language system were regarded as a product of the TL processed through the learner's L1, Corder (1967) makes the distinction between unsystematic errors or errors of performance on one side, and systematic errors on the other. The latter "provide evidence of the system of the language that he is using (i.e. has learned) at a particular point in the course" (Corder, 1967:167). Corder views the learner's L1 as being facilitative for their acquisition of the L2, and argues that interlanguage "errors" should be viewed as evidence of learning strategies instead of signs of inhibition (Corder, 1967).

In contrast to Corder's error analysis, Klein & Perdue (1997) refer to the learner's own construction of the target grammar as *basic variety*. This concept derives from observations of shared structural properties among errors in L2 learners TL's that are independent from the specific combinations of L1 and L2, also supporting the notion of an innate universal grammar.

2.3 L2 Acquisition Order and Development

In the structuralist tradition of the 1900's, prominent linguists such as Jakobson and Greenberg (1991) found grammatical categories to be hierarchically organized in the world's languages, and that this organization can be described with an implicational order. In this context, Jakobson (1941, presented in Jakobson 1972) was the first to suggest that the cross-linguistically valid implicational hierarchy also tended to describe ontogeny, i.e. the order of acquisition in child language development. In Jakobson's research, this notion was developed into theories of phonological contrasts. The Maximal Contrast theory was formed in the context of explaining the phonological development among children through contrasting sounds in the target language, but the theory can also be applied on L2 acquisition.

When looking into the phonetic output in a learner's TL, one question is why certain phonological elements of the TL occur in the learner's interlanguage, while others seem to come less easily and emerge later in the developmental acquisition sequence (Jakobson, 1972). This question has also been proposed in terms of grammatical acquisition.

In 1950, Piaget formulated a theory of language development dealing with "the implicational nature of processing prerequisites for possible operations at the different stages of acquisition" (Pienemann, 1987:92). The interest for research on the universal acquisition sequence of grammatical morphemes however, grew after a publication of a longitudinal study of L1 English learners published by Roger Brown in 1973, concluding that certain morphemes were acquired in a similar sequence order among all participants. Several studies followed within the field, yielding similar findings even among L2 learners (Freeman, 1975).

Order of acquisition in relation to teachability was elaborated on in a broader sense by Vygotsky, who within his influential theory of the Zone of Proximal Development, argued that "instruction should lead rather than follow development" (Vygotsky, 1978, cited in Dunn & Lantolf, 1998:415). Vygotsky's theory is often compared to Krashen's well known construct of $i+1$, where ' i ' is the state of the learner's language development at a given time, and ' 1 ' is "the next rule the acquirer is 'due to' acquire or is eligible to acquire along the natural order" (Krashen, 1985, cited in Dunn & Lantolf, 1998). This claim is based on the notion that "humans acquire language in only one way – by understanding messages, or by receiving 'comprehensible input'[...] that contains structures at our next 'stage'" and thus "are a bit beyond our current level of competence" (Krashen, 1985 cited in Dunn & Lantolf, 1998). While Krashen's theory is built on the notion of an inner grammar that will entail the acquisition of input, provided the input contains linguistic features at $i+1$, Vygotsky's theory differs in his ascending approach, emphasizing the role of instruction, interaction and environment on the development of the learner (Dunn & Lantolf, 1998).

On the question of what is difficult to learn and what constitutes these difficulties, different explanations have been suggested by L2A research scholars. DeKeyser (2005) pointed out that while such accounts can usually be understood through their emphasis on problems of either meaning, form, or form-meaning mapping, "it is [rather] the transparency of form-meaning relationships to a learner who is processing language for meaning that determines the difficulty of acquisition" (DeKeyser, 2005:4). This was emphasized by Vanpatten (presented in DeKeyser, 2005), who distinguished 'meaningful' and 'redundant' linguistic forms in terms of their degree of importance for the meaning they express in the sentence or discourse, and theoreticized that meaningful forms are more easily acquired than redundant forms. DeKeyser (2005) pointed out that the importance of saliency in this question holds true more so for learners in naturalistic L2 acquisition contexts than for learners in instruction contexts where rules about form-meaning relationships are provided to guide the processing of input. Some studies, on another note, rely on data elicited from asking teachers to rate the level of difficulty of certain L2 linguistic structures (DeKeyser, 2005). Such intuitive ratings have then constituted the grounds for principles used when grading teaching syllabi and textbooks (Pienemann, 1985).

Pienemann (1998) argued that while the explanation that complex structures are available for acquisition earlier than more complex structures is appealing in all its simplicity, “[...]it is not the difficulty of processing as such that makes complex structures impossible for the learner to process, but the lack of the appropriate processing procedures” (Pienemann, 1998:87–88). As an extension of Piaget’s research on the developmental problem, the Processability theory (PT) was proposed by Pienemann in 1998. PT has remained a highly influential framework within L2A research, focusing on the procedural and incremental development of L2 acquisition. According to Pienemann, “acquisition has to be viewed as the process of automatisation of linguistic operations” (Pienemann, 1998:5). The theory suggests that the developmental route of acquiring an L2 is constrained by the limits of the human language processor, or in other words constrained by the sequential development of language processing routines within the brain. Along with other theories, such as those suggested by Piaget, Krashen and Vygotsky, the sequential development of language is predetermined. Within PT, this development follows language universal sequencing of procedures; a notion that has enabled predictions of a universal acquisition hierarchy.

3. The Theoretical Framework

In this section, Processability Theory along with its suggested acquisition hierarchy which constitutes the framework of the current study will be presented. Then, implications of PT on formal instruction as well as previous research on PT in relation to Chinese will follow.

The literature review for section 3 was carried out through searching for the keywords ‘processability’, ‘textbook analysis’, ‘textbook evaluation’, ‘CFL/CSL’ etc. in libris, the ERIC database as well as in Google Scholar. Pienemann’s original publication from 1998 marked the starting point for research on Processability Theory, while my own understanding of the theory and its subsets largely has been derived from the accounts provided in the previous studies on PT presented further into this chapter.

3.1 Processability Theory – Acquisition Order Hypothesis

On the prediction of what is difficult to acquire, Pienemann suggested one determinant to be the extent of re-ordering and -arranging linguistic material for the output realization or phonetic representation of abstract linguistic meaning, i.e. “the process of mapping underlying semantics onto surface forms” (Reinders, 2009:50). Pienemann also suggested saliency in terms of sentence initial or final position of the linguistic item as a predictive feature, as well as “the distance between an item that triggers a transformation and the place in the sentence where the transformation is affected” (Reinders, 2009:50). These notions of linguistic complexity are all concretized through the incremental processing hierarchy suggested by PT.

The main hypothesis of PT states that there is a specific and language universal (i.e. applicable on any language regardless of structural variety) hierarchy of the developmental sequence of the activation of grammatical encoding, or the cognitive processes required to acquire certain grammatical elements in an L2. L2 learning is thus viewed as the cumulative

acquisition process in which linguistic rules are added subsequently to the interlanguage system. Each stage in the PT hierarchy requires a varying degree of information exchange between constituents, where the progression between levels lies in accessing procedures that enable the learner to unify or match features across boundaries within sentences. The varying degrees of information exchange range between the rather simple unification of lexical items and their inflections that are bound forms of the word in the hierarchy (e.g. the plural –s morpheme in ‘dog–s’, requiring unification between the main word ‘dog’ and the –s on stage 2), to the more complex productions of subclauses requiring unifications of constituents between head and subclause (Pienemann, 1998). The processing hierarchy is incremental and absolute, meaning that any level in the hierarchy can only be reached once all preceding levels have been accessed.

The implicational hierarchy within PT is described as follows (Pienemann, 1998):

1. *lemma/word processing procedure.*

In this stage, the lexical items in the L2 are accessed, including single constituents such as words and lemmata as well as formulaic expressions. No information exchange occurs on this level.

2. *the (lexical) category procedure.*

In this stage, the procedure for categorizing information associated with the activated lemmas/words is accessed, such as syntactic category and functional role. No information exchange with other constituents is required for productions on this level.

3. *the phrasal procedure.* In this stage the procedure for unifying information between constituents of the same phrase is accessed.

4. *the S-procedure* (embedded S).

In this stage, the procedure for exchanging information between phrases within a sentence is activated, providing access to target word order rules and interphrasal morphemes that enable unifying noun phrase and verb phrase.

5. *the subordinate clause procedure.*

In this stage, the procedure for exchanging information between main and subordinate clause is activated, enabling producing inter-clausal agreement and atypical word orders in the TL specific to subordinate and embedded clauses.

The hierarchy is typologically plausible yet language specific, meaning that the hierarchy is applicable on all languages that so far have been empirically tested within the framework, while the categorization of specific linguistic features to the respective stages in the hierarchy differ between languages due to typological differences.

The theory of PT is formalised within the framework of Lexical Functional Grammar (LFG), a generative model that offers a mental representation of grammatical relations. LFG views language as constituted by multiple dimensions of structure where the information exchange between the dimensions constitutes the encoding process constrained by the procedures that are represented in the incremental hierarchy. The two primary representations of these dimensions used within the framework of PT are the *c(onstituent)-structure* that represents the ‘surface’ structure relations, constituted of syntactic constituents of the specific

language, and the *f*(unctional)-*s*tructure, that represents functional relations and language-universal aspects of grammar (Pienemann, 1998).

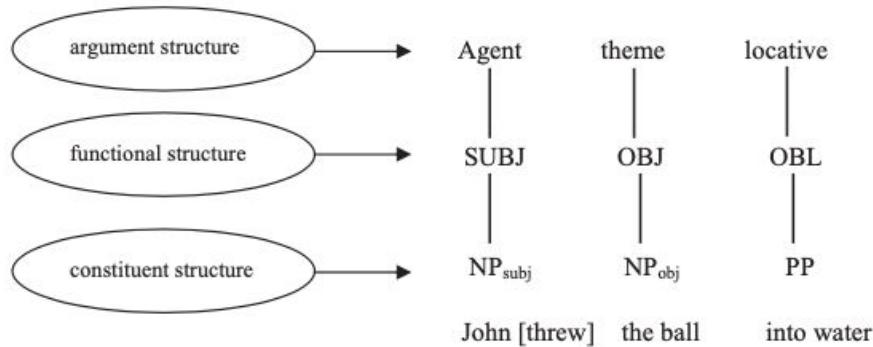


Figure 3.1: linear alignment of three structural levels of LFG in a canonical SVO sentence (Pienemann 2007, reprinted in Zhang & Lantolf, 2015:154)

While the information exchange of lexical morphology on stage 2 in the English L2 processing hierarchy includes linguistic features such as the past tense marking suffix *-ed* (play-ed), there is no equivalent in Chinese since tense is not grammatically realized in Chinese. Instead, the possessive marker *-de* can be used to represent stage 2, since the same level of information exchange is carried out in order to produce this construction. The emergence of this morpheme in a Chinese L2 learner's speech could thus indicate their access to this procedure/level.

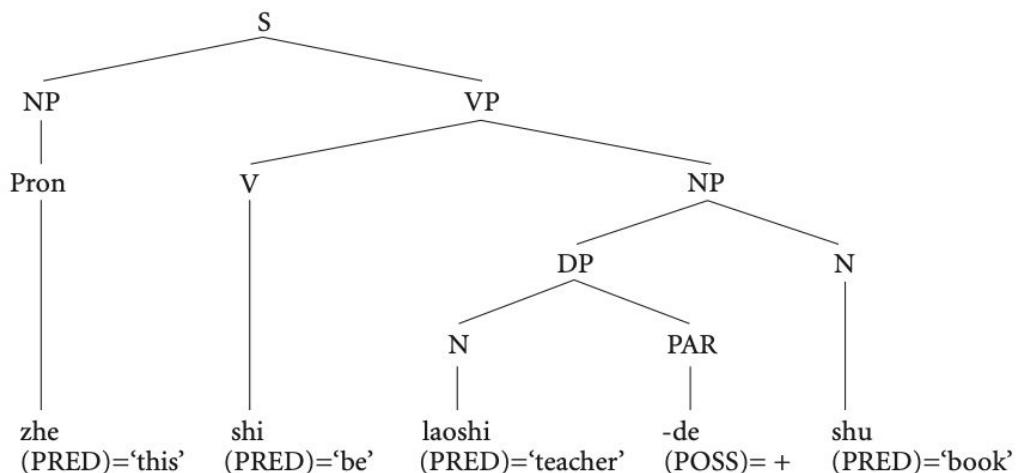


Figure 3.2: c-structure model of the sentence *zhe shi laoshi-de shu* as illustrated in Y. Zhang (2005:161)

PT does not regard target-deviant structures in the learner's TL as effects of L1 transfer. Rather, target-deviant structures in the learner's interlanguage are considered as individual varieties within the constraints of the L2 developmental acquisition sequence irrespective of the typological distance between the L1 and L2, and transfer from L1 can thus only occur within the limits of the hierarchical level. Pienemann and Keßler concluded that developmental errors and variational errors should be differentiated and treated in different ways. Developmental errors were suggested to indicate the learner's inability to process the

input at their current state of development, and correcting developmental errors in the learner's interlanguage would therefore be futile in terms of helping their acquisition process. Variational errors on the other hand were suggested to be caused by choices made by the learner when trying to solve problems in managing the input, and could be treated differently seeing as "errors may lead to a simplified variety in interlanguage development, which may result in stabilization", the precursive phenomenon to fossilization (Pienemann and Keßler cited in Wang, 2011:39–40). According to Pienemann, fossilization, the state of interlanguage stagnation prior to fully acquiring the TL, is caused by certain processing constraints in the developmental process that has not been successfully released (Pienemann, 1998).

3.2 PT's Implications on Teaching

When considering applying theories on L2A that are generally applied on naturalistic learning to the context of classroom L2 learning, one must first distinguish between formal and informal learning, where the former involves studying the language and learning *about* the language, and the second involves the implicit learning taking place when simply observing and participating in communication in the TL. While it is safe to say that the classroom environment generally provides more opportunities for formal learning, the informal learning otherwise found in naturalistic learning is also present, especially in classrooms where the teacher has undertaken a more communicative approach (Ellis, 1990). On another note, naturalistic learning, including L1A, has been found to have a larger proportion of elements of formal learning than previously assumed, such as self-correction as response to adult reformulations (Chouinard & Clark, 2003).

Prior to the publication of the first account of PT (1998), Pienemann discussed syllabus development from a learnability/teachability perspective in terms of natural grading (Pienemann, 1985). Despite evident differences between formal and naturalistic L2A in terms of the differing external factors, similar types of TL-”deviant” structures have been observed in L2 learner output from formal classroom and naturalistic settings alike, independent of how the input is presented. Pienemann concluded that “teaching is only possible within the margin determined by [the set of developmental principles which apply to formal as well as to natural L2 development]” (Pienemann, 1985:39-40).

Implications of the PT hypothesis on the teaching of foreign languages are discussed within the Teachability Hypothesis (TH), a subset of PT (Pienemann, 1998). The hypothesis predicts that (1) “stages of acquisition cannot be skipped through formal instruction” and (2) “instruction will be beneficial if it focuses on structures from ‘the next stage’” (Pienemann, 1998:250). In other words, a linguistic item belonging to a hierarchical stage that the learner has not yet reached, should not be taught prematurely since the learner is unable to process and thus acquire that item. Instead, the instructional input should be “focussed on the crucial structure which the learner is prepared for to learn” (Pienemann, 1985:54). This further implies that the occurrence of such an item in a teaching textbook taught prematurely in relation to the current developmental state of the learners' interlanguage should be considered

as ineffective. Pienemann (1985) articulated the need of replacing the often intuitively derived syllabuses with syllabuses based on the constraints of learnability, deeming it “a necessary, though by no means sufficient, step in improving language teaching.” (Pienemann, 1985:69).

The claim that instruction is unable to override the psycholinguistic constraints as presented in PT-based processing procedures has been verified in various studies, albeit scarcely in the context of TCFL (these studies will be accounted for in the following subsection). Some studies have contradicted the predictions within TH claiming that instruction must be targeted at the next stage in the trajectory (X. Zhang & Lantolf, 2015). The prediction that stages cannot be skipped has been challenged in two studies (X. Zhang & Lantolf, 2015:158). Wang (2011:40) concludes that the Teachability Hypothesis, despite offering the teacher practical guidance for instruction, should “be built up strongly with more experiments and research evidence to prove its generalization” (Wang, 2011:40).

Despite its hypothesis, TH does allow for developmental gaps, meaning that there is no guarantee for a specific structure to emerge in the learner’s output even though the learner has accessed the prerequisite hierarchical stage. This, by extension, implies that not all structures within one stage of the hierarchy must be produced in order to mark the learner’s access to the procedure required for the next stage. The grammatical items or ‘rules’ are either structurally independent or somewhat variable, and even in the case where one structure triggers the presence of another in providing the linguistic context in which the other structure ought to appear, there is yet again no guarantee that it will be produced by the learner (Pienemann, 1998).

3.3 Previous Research Within the PT framework

3.3.1 Hypothesized Development of L2 Chinese

Many studies have been carried out to test the claim that PT can predict developmental trajectories of language acquisition. In relation to the amount of research conducted on PT applied to English and ESL however, there has to my knowledge been relatively few studies applied to Chinese conducted within the framework. In order to place my study in the context of this field, the studies of Y. Zhang (2001; 2008), Gao (2005), Wang (2011) and Brolin (2017) will be presented briefly in this section. In these studies, the PT hypothesis was tested through a cross-sectional or longitudinal study design, where production output from learners of Chinese with various language backgrounds and L1s in either formal or informal contexts is observed. Typically in the cross-sectional designs, oral language is analysed from participants performing different types of elicitation tasks which are engineered to provide linguistic environments in which the targeted grammatical items are likely to be used by the participant. As stated by Pienemann (1998:150), “to decide on the emergence of a form, the presence of alternate forms and linguistic environments is required.” The occurrences of the structures in the output are then annotated to map whether the participants’ usage of different Chinese morphemes and grammatical structures at syntactical levels align with the developmental stages suggested in Pienemanns PT. In the analysis process, an emergence

criterion as suggested and discussed in Pienemann (1998), is usually applied in order to define the point of acquisition. The definition of the criterion is not fixed, and must be redefined in each study in terms of how many occurrences and lexical contexts are required to satisfy the criterion. To illustrate, in Y. Zhang's (2005) research a structure would only be considered to have 'emerged' once it occurred in the output a minimum of three times in lexically varied contexts, since the occurrence of a grammatical item or structure limited to fewer lexical contexts could indicate it to be part of a formulaic phrase and thus not fully acquired. For example, if the adjective marker *-de* occurred exclusively with the adjective *xin* ("new"), it would not be considered as productive, and thus not considered as fully acquired regardless of the frequency of emergence in the output. Y. Zhang (2005:167) argued from her data that:

By itself, the first environment, i.e., the pronoun *de*, is not reliable in determining the emergence status of the possessive marker because it is possible to learn Chinese possessive pronouns, all formed as 'pronoun *de*(POSS)', as single lexical items without knowing the morphological status of *-de*. The productive nature of *-de*(POSS) can be reasonably determined when *-de*(POSS) also occurs with lexical nouns, or when the optional deletion rule (i.e., delete *-de*(POSS) when the head noun is a kinship term) is applied in the pronoun context [...]. Such evidence would demonstrate that *-de*(POSS) is structurally separable from the pronoun, hence productive.

Y. Zhang (2001) was the first to carry out an empirical study on acquisition sequence of Chinese within the framework of PT, concretizing the hierarchy by categorizing and applying Chinese grammatical morphemes to the processing stages in the hierarchy and testing the hypothesis in learner production data. Several studies testing the PT hypothesis followed (2004; 2005; 2008 et al.). In her 2008 study, Y. Zhang expanded the hierarchy with syntactic categories, including topicalization and subordinate clauses. While Y. Zhang (2001; 2008) limited her data to the first four of the five stages in the PT hierarchy, Gao (2005) included the *ba*-structure at stage five in his study.

In Wang's (2011) dissertation research, the PT hypothesis was tested among formal learner participants using a syllabus that derived from the sequence predicted by PT. The grammatical categories from Gao's (2005) and Y. Zhang's (2001; 2008) was used to represent the hierarchical stages. As an addition to the hierarchy, Wang (2011) suggested the *bei*-structure, but concluded that the data was not sufficient enough to prove consistency in use. Wang (2011) also expanded the hierarchy by differentiating structures within the topicalization and subordinate clause categories.

In Brolin's study the data was collected from observing morpheme emergence among participant groups representing different stages of development, in contrast to the other studies that observed the emergence within the same population over time. Brolin used the respective morphemes of the hierarchies from previous studies by Y. Zhang (2001; 2004), Gao (2005) and Wang (2011), with the contribution of suggesting to move the relative clause marker *de* to stage 5 and to add the temporal structures *-de shihou*, *yihou* and *yiqian* to an intra-stage within stage 4.

In table 3.1 below, the morphemes chosen to represent the PT levels within the prior studies by Y. Zhang, Gao, Wang and Brolin are presented.

Processing procedure	Information Exchange	Y. Zhang (2001)	Gao (2005)	Y. Zhang (2008)	Wang (2011)	Brolin (2017)
5 Subclause procedure	Main and subclause	/	ba-structure	/	<i>bei</i> -structure <i>ba</i> -structure	Relative clause marker <i>de</i> <i>bei</i> -structure <i>ba</i> -structure
4 S-procedure	Inter-phrasal information	Relative clause marker <i>de</i>	Relative clause marker <i>de</i>	Topicalization : OSV, SOV Topicalization	Object topicalization: T(=O)SV(Comp) T(=O)(S)V(Comp)	- <i>de shihou</i> -structure <i>yihou</i> -structure <i>yiqian</i> -structure
3 Phrasal procedure	Phrasal information	Classifier V-compl. marker - <i>de</i>	Adjunct fronting Classifier	XP SV(O)/ S XP VO: adv-fronting subordinate clause	Adjunct topicalization: T(=Adjunct)SV(O) Subordinate clause: adverbial clause coordinate clause	[all items from prior studies included]
2 Category procedure	Lexical morphology	Possessive marker - <i>de</i> Adjective marker - <i>de</i> Attributive marker - <i>de</i> Progressive marker -(<i>zheng</i>) <i>zai</i> Experiential marker - <i>guo</i>	Canonical word order: SVO	Canonical SV(O): declaratives interrogative s (y/n, wh-, intonation)	Subject topicalization: T(=S)VO	Canonical SV(O): declaratives interrogatives (y/n, wh-, intonation)
1 Word/ Lemma	Words/ Chunks	Single constituent	Invariant forms	Single words/ constituents; formulaic expressions	Formulaic expressions	

Table 3.1: PT hierarchies applied on Chinese as suggested in prior studies

All findings of the abovementioned studies supported the hypothesis stipulated by PT. However, as Wang (2011) herself drew attention to, the studies provided an undetailed account for the method applied in terms of data collection and task description, which together with the fact that the effect of instruction on the results was not taken into account, decreases the reliability and validity of the studies in question. It can be concluded that

further research on production data in relation to the PT hierarchy applied on Chinese is needed.

3.3.2 Textbook Sequence Analysis

There has only been a small amount of studies carried out with focus on learnability of textbook content from a PT account, that is, whether the sequence of grammar introduced in L2 textbooks align with the hierarchies derived from PT and consequently are learnable for students. Up to date, the studies in question include Keßler (2006), Lenzing (2008), Zipser (2012) and Tang (2019). Keßler (2006) is written in German and is thus inaccessible for me. I will therefore focus on the remaining three studies in this section, attempting to make a detailed account for the methodologies applied in order to discuss the method selected for the current study. First however, Pienemann's (1985) proposition of textbook grading, published prior to the development of PT and its implicated hierarchies, will be presented in short.

Within his discussion on syllabus development through learnability theory, Pienemann (1985) compared the natural stages of acquisition derived through prior findings on the developmental route of German L2A with grading of the corresponding structures and items in a German L2 textbook (Pienemann, 1985). With support of prior research, Pienemann (1985) argued that different procedures underlie comprehension and production, which are developed as separate abilities. He further suggested that “[c]omprehension does not necessarily have to precede production. Rather, it is possible that children produce items first and only at a later stage understand them” (Pienemann, 1985:48). In light of this, Pienemann (1985:61-62) discussed that:

[the] differentiation [of comprehension and production] may, in fact, be useful to cope with the differences in the development of the two aspects of speech processing. Difficulties will arise, however, if the teacher demands learning processes which are not possible at the time these appear in the textbook. And this is very likely to occur in the present context if the teacher insists on correct (re-) production of the general input, since it contains from the beginning (with respect to word order) two major structures which can only be processed at a later stage.

This discussion followed into the proposal of general guidelines, which have been referred and adhered to in Lenzing's (2008) and Tang's (2019) studies. The guidelines state that the order of teaching objectives should be in line with stages of acquisition, and that "the general input may contain structures which were not introduced for production" (Pienemann, 1985:63). In his own textbook analysis, two aspects of the content providing the linguistic input were categorized, "namely (1) the structures which appear in the exercises and which are expected to be (re-) produced by the learners", i.e. the general input, "and (2) those structures which are in focus in the instruction (learning objectives)" (Pienemann, 1985:61). The idea is that "the teaching objectives are ordered parallel to the order of acquisition, whereas the general input also contains all the necessary 'structural consequences'" (Pienemann, 1985:65).

Lenzing (2008) presented a study carried out within her 2004 unpublished master's thesis, in which two L2-English textbooks targeting German primary school learners were analysed

in relation to the PT hierarchy. Syntax and morphology was differentiated as categories, with the former including 13 items and the latter including 10 items coded for in the analysis. The introduction point as well as frequency of occurrence was calculated, the latter presented through percentage of the occurrence in relation to “all morphological structures in the learning objectives” (Lenzing, 2008:229). The grammatical structures constituting the data sample were divided into one input category and one learning objectives category, the former including “all the grammatical structures that occur in the textbooks according to the table of contents” (Lenzing, 2008:225), and the latter including “features that are to be actively produced by the pupils in the sense of a communicative progression” (Lenzing, 2008:225). These categories were explicitly differentiated in the textbooks.

Zipser (2012) analysed the hierarchy alignment and progression of an Italian beginner’s textbook, coding for 9 items (syntax and morphology combined) distributed on the 5 stages of the hierarchy. She then combined the results of the textbook analysis with production output from learners using the same textbook. Vocabulary and grammatical structures were “introduced in the textbook according to the communicative needs[of the learners]” (Zipser, 2012:57). The data sample was limited to the morphosyntactic structures of the textbook “on which the learner’s attention is focused during a course” (Zipser, 2012:58). Furthermore, “[t]he structures actually counted were those found in the grammar section of the appendix of the book, i.e., the structure to be explicitly taught per unit[...].” (Zipser, 2012:57-58). The structures were then counted and analysed in terms of frequency and distribution in relation to the hierarchical stages predicted by PT.

Tang (2019) carried out an analysis of four English textbook series targeting primary school L2-learners in China, aiming 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” (Tang, 2019:236). Tang coded for 9 items distributed on the 5 stages of the hierarchy. The textbooks chosen for the study all provided an explicit outline of grammatical structures and vocabulary. The sample chosen for analysis within the textbooks were presented as “the focal grammatical items that were introduced as the teaching objectives in the textbooks” (Tang, 2019:244), and in relation to the previous studies, Tang (2019) thus didn’t analyse the sequencing of the general input. The study points out that “[a] distinction was made between the initial occurrence of a structure defined as a teaching objective (a grammatical focus) and incidental later occurrences” (Tang, 2019:244). In comparison to Lenzing’s (2008) and Zipser’s (2012) studies, Tang’s study is only concerned with the order of instruction of the targeted structures, and not the frequency of occurrences.

To my knowledge, no studies primarily researching PT sequencing in textbooks of L2 Chinese have yet been carried out. However, similar analysis have been carried out as part of larger studies on PT output. These include Wang (2011) and Lantolf & X. Zhang (2015). In both of these studies, the textbook analysis was not the focus of the study, and the applied methodology of analysis was neither presented nor discussed, despite the analysis being presented as a critical element in interpreting learner production data. However, due to studies’ relevance to the current study, they will be accounted for briefly below.

Within her own study, Wang (2011) analysed the textbook *New Practical Chinese Reader*, as well as *Han Yu Jiao Cheng (Chinese Teaching Textbook)*, that was used for instructing the participants in Y. Zhang's (2001; 2008) and Gao's (2005) studies respectively. Both teaching plan and textbook was analysed and presented in the same table. More specifically, “[t]he ‘+’ sign indicates the emergence point of a certain structure as a teaching objective, whereas ‘(+)’ indicates that the grammatical points appeared in the specified lesson as exercises or additional information, not as a teaching focus” (Wang, 2011:158-159). Her findings concluded that the textbook followed the sequential hierarchy proposed by the PT hierarchy. The support of the PT hypothesis, concluded from Y. Zhang's findings of her participants following the developmental route of PT, was therefore questioned by Wang (2011). For the participants in her own research, Wang chose a textbook following a sequence that derived from the PT hierarchy, “[i]n order to explore the relationship between the learners' acquisition sequence and the order of the teaching input” (Wang, 2011:157).

Lantolf & X. Zhang (2015) also analysed the alignment of *New Practical Chinese Reader* to the PT hierarchy within their study on topicalization acquisition “with regard to each of the relevant grammatical structures covered in each lesson” (Lantolf & X. Zhang, 2015:160). The book was coded for only 3 items distributed on stages 2–5 and the results were presented in relation to questioning the validity of another study on topicalization carried out by Y. Zhang in 2007.

4. Method

For the purpose of finding tendencies of alignment in the textbook material to the hierarchy order (as suggested in prior research on Chinese and PT), the contents of the two textbooks will be analysed and interpreted through the PT framework. Although the current study largely will follow the steps and criteria applied in previous studies with similar research questions, the logic behind each step in such an application will be discussed.

4.1 Selection of Theoretical Framework

For the purpose of my study, that is, to analyse the sequence order of language content in Chinese textbooks in relation to theories on language development, a substantial theory on acquisition order that has been empirically tested through applications on Chinese is needed. Aside from fulfilling these criteria, Processability Theory has the advantage of operationalizing the suggested developmental trajectory through a hierarchy of incremental stages that can be coded for in raw linguistic data. Furthermore, in representing a descending approach by modelling language acquisition with reference to the target system, PT stands in contrast with the ascending approach held by theories such as Jakobson's Maximal Contrast theory, in which the starting point is the simplest possible system that can be systematically extended. PT could thus be considered as especially suitable for analysing text intended for instruction, since it must be assumed that the author of such texts shares the descending approach in visualizing a target end-state of the user learning the L2.

PT rests on premises of cognitive processing whose claims lay outside the scope of this study. In my study, PT serves merely as a framework within which I have chosen to operationalize my research question, and the grammatical structures categorized in previous studies to the respective stages in the Processability hierarchy serve as representatives for levels of structural complexity in my study. In other words, this paper will not include any discussion on the cognitive premises of the theory, nor is the purpose of the findings intended to make an argument for or against any other premises or hypotheses of the theory.

4.2 Selection of Data Samples

Two textbooks, both included in a teaching materials set, were chosen for the analysis in this study, namely *Zhongwen Haoxue 1* and *Lai ba!*. This sample was selected in favor of their relevance for the research question, seeing as they are the only two Swedish published L2 Chinese textbooks aimed towards primary school and gymnasium (Sahlberg, 2015). The reason for not including all textbooks in this category is mostly due to the time constraint of this paper.

Lai ba! was published by Gleerups in 2008, providing instruction on 200 characters. *Lai ba!* contains 10 chapters, each one introduced with a dialogue (repeated twice, once with pinyin and once with characters only) and a complimentary word list. Each chapter contains a few exercises on writing, listening and reading comprehension.

Zhongwen Haoxue 1 was published by Liber in 2010, providing instruction on 300 characters. The Swedish version was preceded by a dutch original from 2007. *Zhongwen Haoxue 1* contains 24 chapters, with three chapters making up one theme. A complementary word list introduces each chapter together with a short text either titled *tala* ('speaking') or *dialog* ('dialogue'). The text is usually, but not always, repeated without pinyin at the end of the chapter under the title 'Can you read these characters now?'. Sometimes the repeated text is altered somewhat. The chapters also contain a few exercises on listening and reading comprehension as well as writing.

One could argue that since this study aims to investigate the prospects of effective instruction of Chinese in terms of the influence of sequence order on acquisition, the data sample must be selected considering how the textbook material is intended to be used. Among the prior studies on textbook analysis within the PT framework presented in section 3.4, Pienemann (1985), Lenzing (2008) and Wang (2011) differentiated general input and teaching objectives, while Zipser (2012) and Tang (2019) focused on teaching objectives only. This all follows Pienemann's (1985) view on comprehension and production as separate abilities with differing underlying processes, entailing that valid conclusions on the learnability implications of hierarchy alignment can be drawn from the results only when the distinction of general input and teaching objectives has been made. However, although this notion has been adhered to among all previous textbook analysis studies, such a distinction of data would require a fairly strong assumption that the students produce what is expected from the production-oriented exercises, that the structures defined as teaching objectives are explicitly taught in class and not just provided as general input, and vice versa with the

remaining linguistic input. Without studying the classroom when the textbook is put into use and actual learner production in relation to the teaching, conclusions made from the distinction of input remain speculative and require empirical data and theoretical support that lie outside the scope of this study.

Moreover, while the definition of teaching objectives made in prior studies as the items presented in the table of contents makes a plausible criteria for *Lai ba!*, the application on *Zhongwen Haoxue 1* proves more difficult. In *Lai ba!* grammatical items are explicitly listed under the headings *Uttal & Ordbildning* ('pronunciation & word-formation') and *Struktur* ('structure') aside each chapter description in the table of contents, while grammatical items and syntax in *Zhongwen Haoxue 1* are neither mentioned in the table of contents nor explicitly explained anywhere else in the textbook, leaving only the texts and exercises.

In light of the discussion above, the differentiation between general input and teaching objectives will not be used when considering the selection of data sample. Instead, I argue that the selection should be made in favor of homogeneity and transparency in order to ensure the reliability and replicability of the study. It must also be assumed that the sample size and range of linguistic forms are correlated, and the data must thus provide sufficient input to enable contexts for such a variation in order to illustrate the alignment of content to the PT hierarchy. On these grounds, the data sample has been limited to the comprehensive texts or dialogues, which can be found in most language textbooks.

In specific terms, the sample in the current study will consist of the texts titled *dialog* or and/or *tala* in *Zhongwen Haoxue 1*, and the dialogues introducing each chapter in *Lai ba!*. For brevity, these content categories will hereinafter be referred to as the sample texts.

Although the dialogues and comprehensive texts in each chapter of the two textbooks only constitute one component of the total input, an analysis of the entirety of linguistic material provided in the textbooks proved to be too complex in terms of categorization. While both textbooks include a few exercises for production and comprehension in each chapter, *Zhongwen Haoxue 1* provides additional exercises in a complementary workbook, and both textbooks provide complementary online material which I have no access to. Even though this study is not primarily carried out through a comparative study design, the variation between the two textbooks entails that applying the analysis on such a varied amount of categories would presumably compromise the comprehension of the collective results.

In short, the selection of the data sample as explained above is made in favor of consistency and coherence of the analysis process and of comprehension of the results.

4.2.1 Data Units

In my analysis, the units in relation to which the targeted grammatical structures will be counted for, are represented by half a chapter (making up 20 units in total) in *Lai ba!*, and one chapter (making up 24 units in total) in *Zhongwen Haoxue 1*. This unitizing is made with the intention of creating units as small as possible without breaking up content that is intended to be taught as a whole, in order to enable a detailed illustration of the alignment to the PT hierarchy and a valid interpretation thereof. Moreover, the texts in *Lai ba!* are significantly longer than the ones in *Zhongwen Haoxue 1*. Treating each chapter in *Lai ba!* as a separate

unit would decrease the detail of the scaling, while I choose to assume that the first dialogue in the chapter is usually used in the classroom before the second one. Treating each text in *Zhongwen Haoxue 1* as a separate unit on the other hand, would presumably provide too little text data, while the readability of the scaling illustrations would be decreased.

In short, although this categorization might seem somewhat arbitrary, the current study is carried out through an analysis of data from two bodies of text not primarily meant to be set in comparison. The inevitable differing amount and types of contents within one unit, as well as the different types of contexts in the two textbooks, should therefore not be considered a complication for the validity of the results.

4.3 Coding Items

The *items*, i.e. the grammatical structures and items representing different levels of the PT hierarchy targeted for my analysis, are selected from the synthesis of the items suggested in Y. Zhang's (2001; 2008) and Gao's (2005) studies (previously presented in table 3.1 in section 3.3.1) as presented in Wang's (2011) study. Brolin's (2017) suggestions will be included in the discussion. The syntax category will be excluded from the analysis however, the reasons of which will be discussed in subsection 4.3.2.

The items coded for in this study are presented in table 4.1 below.

Morphemes	Examples
5 ba-structure	<i>Zhangsan ba Lisi da le.</i> Zhangsan BA Lisi beat PST 'Zhangsan beat Lisi.'
bei-structure	<i>Lisi bei Zhangsan da le.</i> Lisi BEI Zhangsan beat PST 'Lisi was beaten by Zhangsan.'
4 de (RC)	<i>Ni gei-de qian hen duo.</i> 2SG give-RC money very much 'The money you gave (me) was quite a lot.'
3 Classifier	<i>san-zhang bing.</i> three-CL pancake 'three pancakes'
-de (V-COMP)	<i>zou-de hen man</i> walk-V.COMP very slowly 'walk slowly'
2 de (ATT)	<i>mutou-de fangzi</i> wood-ATT house 'wooden house'
de (ADJ)	<i>piaoliang-de qiqiu</i> pretty-ADJ balloon 'pretty balloon'

de (POSS)	<i>wo -de yifu</i> 1SG-POSS clothes 'my clothes'
zhengzai (PROG)	<i>Tamen zhengzai chi fan.</i> 3PL PROG eat meal 'They are eating.'
guo (EXP)	<i>Tamen chi-guo niurou.</i> 3PL eat-EXP beef 'They have had beef before.'

1 Single constituents/words

Table 4.1: The morphemes targeted for analysis (examples from Mai, 2016:126–128, slightly modified)

Within the context of this study, classifiers refer to the category of *liangci* (lit. ‘measure word’) that occurs between a number and a noun and functions to identify the class of the noun. One way to differentiate the category is to separate sortal classifiers from measure words. Since the classification of classifiers to stage 3 of the PT hierarchy requires the feature unification between constituents of the same phrase (in this case within the NP), only sortal classifiers will be accounted for in my analysis, seeing as “sortal classifiers select a set of natural and inherent characteristics of the noun, while standard and approximation measure words refer to a set of conventionalized features which are independent of the head noun” (Ahrens & Huang, 2016:172). Y. Zhang (2001:81-82) wrote:

When the classifier is called for by the numeral, it must first be identified. This identification process is triggered by the noun, specifically, by certain characteristics of the referent of the noun (e.g., shape, function, size, etc.) which must match those of the classifier.

Some classifiers might appear in an NP simultaneously holding the classifying property and function of the head noun, such as the classifier *fen* in the noun phrase *yì fènzhōng* ('one minute'). Such classifiers will not be accounted for in the analysis, since they allow no information exchange between the head noun and the classifier.

4.3.2 Discussion on PT Hierarchy Application Issues

Initially, the grammatical structures from the syntax categorizations in the hierarchy as suggested by Gao (2005), Y. Zhang (2008) and Wang (2011) were to be included in the analysis of the current study. Since only a handful of studies have been carried out on Chinese applied to the PT framework, the Chinese linguistic material applied to the PT hierarchy through analysis is scarce. Arguably, this entails that the researcher upon application of the framework on Chinese data cannot afford to be overly selective when choosing what categorized items to code for. However, during the course of research for this study, the task of differentiating features of the syntactic items applied to the hierarchy proved too difficult to manage within the limited time assigned for this paper, and were thus excluded from analysis. This section aims to discuss some of the difficulties encountered when operationalizing the PT framework on Chinese linguistic data, with the ambition of articulating the need for detailed categorization criteria.

Firstly, the distinction between the formulaic expressions category and the canonical SV(O) category requires a discussion. While an utterance such as *ni hao* ('hello') unambiguously can be classified as a single constituent or a formulaic expression, the classification of the phrase *wo jiao Anna* ('my name is Anna') is much less apparent. Y. Zhang (2001) included 'prefabricated sentences' as one definition of formulae, exemplifying with phrases such as *bu zhidao* ('I don't know') and *Ni shi na guo ren?* ('what's your nationality?') (Y. Zhang, 2001:195). While such phrases could very well be formulaic, the definition of 'pre-fabricated sentences' leaves much to interpretation, while very little data is left for the remaining categories. It can be argued that the function of such a categorization, that is to avoid wrongly interpreting chunk utterances as productive, is already occupied by the criterion of lexically varied contexts generally applied along with the emergence criterion. I argue that there is little evidence to why the phrase *ni shi na guo ren* would be considered as formulaic while an utterance with an only slightly less invariant structure such as *zhe shi ni-de baba* ('this is your father'), which was counted for as productive in Y. Zhang's (2001:114) study, would not.

The distinction of 'canonical SV(O)' structures from subclauses and non-canonical topicalization structures also proved difficult. Without the assumption that the analytical tool of LFG allows the categorization of NP+VP+(NP) to the SV(O) category, the categorization of predicative clauses such as *wo jiao Anna* ('my name is Anna') and *Zhongguo hen da* ('China is big') as SV(O) is not obvious. A discussion on the exact criteria of what structures are allowed within the SV(O) category when applied to Chinese is thus called for.

Additionally, coordinated subclauses often appear in a subject-predicate form and with an omitted subject and/or a conjunction in the initial position (Shi & Huang, 2016). This also poses a problem of segmentation, since grammatical structures often stretch over conversational turns. The fact that Chinese hardly has any tense, case, or agreement morphology and thus must rely on context poses a problem on identifying clause finiteness that arguably is not the case for languages with richer morphology inflection. Since a compound sentence can only be identified as such when all clauses are considered, the distinction between a null-subject main clause and a coordinate subclause may also be a question of context only. Implications thereof on processability have been discussed, albeit not in detail, in prior PT studies on Chinese.

Y. Zhang (2008) suggested the rather broad definition of 'subclause' to be categorized on stage 3 of the hierarchy, while Wang (2011) questioned this categorization. She argued that 'subordinate clause' is too broad of a concept to be categorized into one single category, and that its variations are too complex to all be acquired at the same level of the hierarchy. Still, Wang (2011) included the categorization in the hierarchy used for her own research data, and concluded from the production of one of her test subjects that the category should be divided into coordinate and adverbial clause, both positioned on stage 3 of the hierarchy. In a later publication however, Wang (2013) argued that the production of coordinate clauses, being independent SVO structures linked by a coordinating conjunction, only requires the lexical category procedure and therefore should be categorized on stage 2. In light of these contradictory discussions, the categorization of subclauses based on theory alone seems far

too precarious. As called for by Wang (2011), more empirical data is needed for support of any of these claims.

The identification of the topicalization structures applied to the stages 3 and 4 in the hierarchy also brings about difficulties. Topic is described as the phrase of a discourse that usually is placed in the initial position of an utterance, and that the rest of the discourse, i.e. the comment, is understood to be about (Shyu, 2016), and Chinese is often considered a topic-prominent language (Y. Zhang, 2005). Except from the canonical T=(S)VO structure where topic coincides with the subject function, the topicalization structures in the hierarchy represent syntactic structures in which the initial position is held by another constituent than the subject, hence deviating from the canonical word order which makes for the complexity of the structure. Gao (2005) pointed out that topic is often implied in context, which might well be the case in dialogues used in the current study where the topic often is introduced by one participant and commented on by another. When object topicalization appears in null-subject utterances, it is realized as NP+V+NP (noun phrase + verb + noun phrase), and is thus indistinguishable from the structure where the initial NP occupies the subject function.

The same problem appears with adjunct-fronted null-subject utterances, where the implicit subject could be positioned either before or after the adjunct, making it impossible to differentiate T(=S)VO from T(=Adjunct)SV(O) (Gao, 2005). In conclusion, “only when both topic and subject are present in an utterance can one claim the separation of topic from subject function, and the emergence of topic as a grammatical function” (Gao, 2005:177). Gao (2005) suggested that only utterances of the basic NVN form, that is, with an NP at the pre-verbal position, should be used for the identification of topicalization structures. Gao (2005) further acknowledged that this exclusion of utterances may reduce sample size, which poses a problem in my study seeing as the sample is small to begin with. Moreover, the differentiation of SV(O) structures into ‘declarative’ and ‘interrogative’ categories further reduces the sample by excluding exclamative, vocative or directive clause types, as well as comment type structures without subject and predicate.

The discussion as presented above is by no means exhaustive, but points to the larger issues of reliability and replicability when operationalizing the PT framework without sufficiently detailed categorization criteria.

4.5 Data Analysis

Most studies on production output within the PT framework have applied the emergence criterion as the operational definition for determining the acquisition status of the learner at a given point in the learning sequence. In a similar fashion, the point of emergence of the items will be defined in my study in order to mark the presumed point of instruction of the sequenced content. The “emergence” of the items will be identified at its first occurrence in the sample texts, which will be annotated in relation to whether or not it has been or is explicitly taught within the unit of its occurrence. In complement to the emergence/instruction points, the number of occurrences within the unit will also be annotated to enable a frequency analysis.

The coding of the texts will be done by hand, since an automated coding through software would neglect the categorizations of context necessary for my analysis. Furthermore, the occurrence of a morpheme cannot simply be counted upon emergence of its form, since the same character/pinyin can have multiple functions (e.g. the *-de* 的 morpheme can function as adjective, possessive and relative clause marker etc., depending on its linguistic context).

Since the grammatical items representing the hierarchical levels have already been selected through LFG analysis in the prior studies of Y. Zhang (2001; 2008), Gao (2005), Wang (2011) and Brolin (2017), f- and c-structure analyses of the textbook content in my study would be excessive. Instead, I will present the textbook content through interlinear glosses of the structures marking the point of emergence of the grammatical items in the data sample, as illustrated in the examples column of table 4.1 (section 4.3).

Once the targeted structures and items have been identified in the text samples, the occurrences of the targeted items will be counted and annotated in relation to their respective sample unit. The results will be presented through an implicational scale, in which the alignment with the PT hypothesized sequence can be interpreted through comparison with an idealized implicational scale, illustrated in table 4.2 below.

	Morphemes	L(esson) X	L X+1	L X+2	L X+3	L X+4
5	ba-structure					+
	bei-structure					+
4	de (RC)				+	(+)
3	Classifier			+	(+)	(+)
	-de (V-COMP)			+	(+)	(+)
2	-de (ATT)		+	(+)	(+)	(+)
	-de (ADJ)		+	(+)	(+)	(+)
	-de (POSS)		+	(+)	(+)	(+)
	zhengzai (PROG)		+	(+)	(+)	(+)
	-guo (EXP)		+	(+)	(+)	(+)
1	Single constituents	+	(+)	(+)	(+)	(+)

Table 4.2: Idealized implicational scale of morpheme order sequence

4.1 Ethical Considerations

Vetenskapsrådet⁸ stipulate four requirements of ethical practice for research within the field of humanities and the social sciences, all of which concern the handling of sensitive data in relation to study participants. Although the consideration of ethical aspects is of the most importance when carrying out research involving human subjects, and the current study relies

⁸Vetenskapsrådet, or The Swedish Research Council, is a government agency within the Ministry of Education in Sweden, funding research in all scientific disciplines.

on published materials alone, the first rule stating that the researcher ought to inform those concerned by the current study (Vetenskapsrådet, 2002) has been taken into consideration. The publishers of *Lai ba!* and *Zhongwen Haoxue 1* have been informed via email, and have granted their consent to me using their textbooks in the current study.

5. Results and Discussion

This chapter contains two subsections presenting the analysis results and discussion of the two respective textbooks. The chapter should be read as one entity, seeing as part of the discussion on the results of *Lai ba!* in 5.1 also applies to those in 5.2 of *Zhongwen Haoxue 1*.

5.1 Lai ba! Content Sequence Order

An overview of the results on morpheme occurrences in *Lai ba!* is presented in the implicational scale below (table 5.1). In the table, the first column presents the grammatical items separated by each level of the PT hierarchy. Horizontally on the first row, each cell represents the categorized units, where L1:1 stands for sample text no. 1 in chapter 1 of the textbook. The results are presented in the remaining columns, where each number amounts to the occurrences of the respective item within the sample text. Since the occurrences of words/single constituents at stage 1 are irrelevant to my study, the number on this row instead represents the total number of characters (or corresponding amount when pinyin is used) within each unit. The number of characters per unit provides a means through which the proportional frequency of item occurrence can be measured. The proportional distributions are illustrated in figure 5.1 and 5.2.

	<i>Lai ba!</i> Morphemes	L0	L1:1	L1:2	L2:1	L2:2	L3:1	L3:2	L4:1	L4:2	L5:1	L5:2	L6:1	L6:2	L7:1	L7:2	L8:1	L8:2	L9:1	L9:2	L10:1	L10:2	Total	
5	ba-structure																					0		
	bei-structure																					0		
4	de (RC)																			2	3	5		
3	Classifier								6	9	6					1	2	6	1	2	1	2	36	
	-de (V-COMP)																					0		
2	-de (ATT)															1					1	2		
	-de (ADJ)														4		1	2	1	4	4	4	21	
	-de (POSS)								8	2	14				1		1	2		3	2	2	1	36
	(zheng)zai (PROG)																					0		
	-guo (EXP)																7		3			10		
1	Characters total	32	38	64	94	126	126	132	169	143	139	172	148	108	186	219	206	281	224	332	210	136	3285	

Table 5.1: Progression sequence and distribution of morphemes in *Lai ba!*

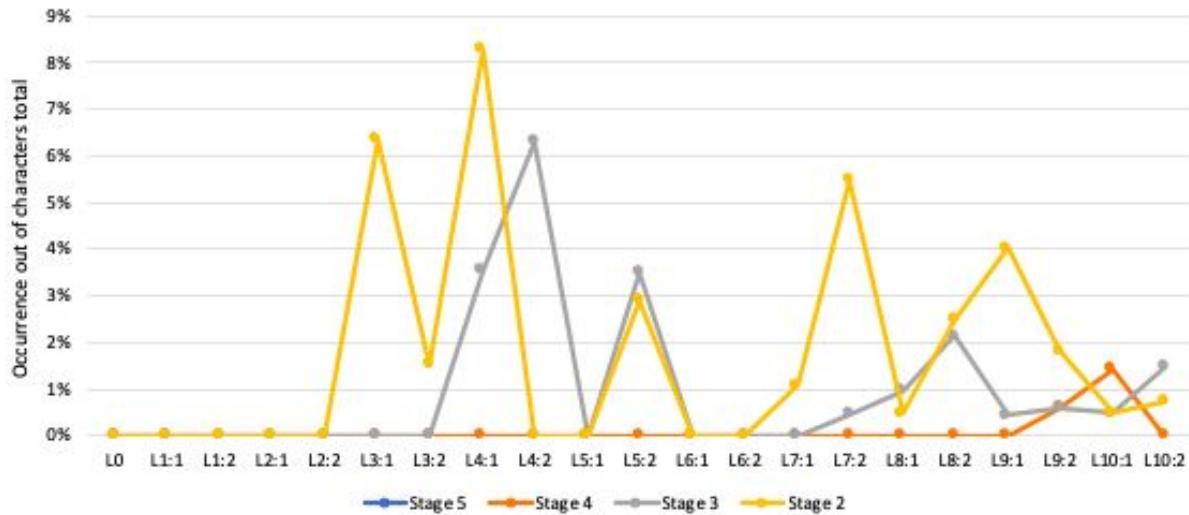


Figure 5.1: Distribution of PT hierarchical stage content (% of characters total per unit) in *Lai ba!*

The data as presented in table 5.1 show that the progression of introduced items follow the sequence as predicted by PT. Items from stage 2 are introduced after stage 1 where lexical items from the L2 are accessed, items from stage 3 are introduced only after the occurrence of items accessed through the category procedure on stage 2, and items from stage 4 occur only after the items on stage 3 accessed through the phrasal procedure have been introduced.

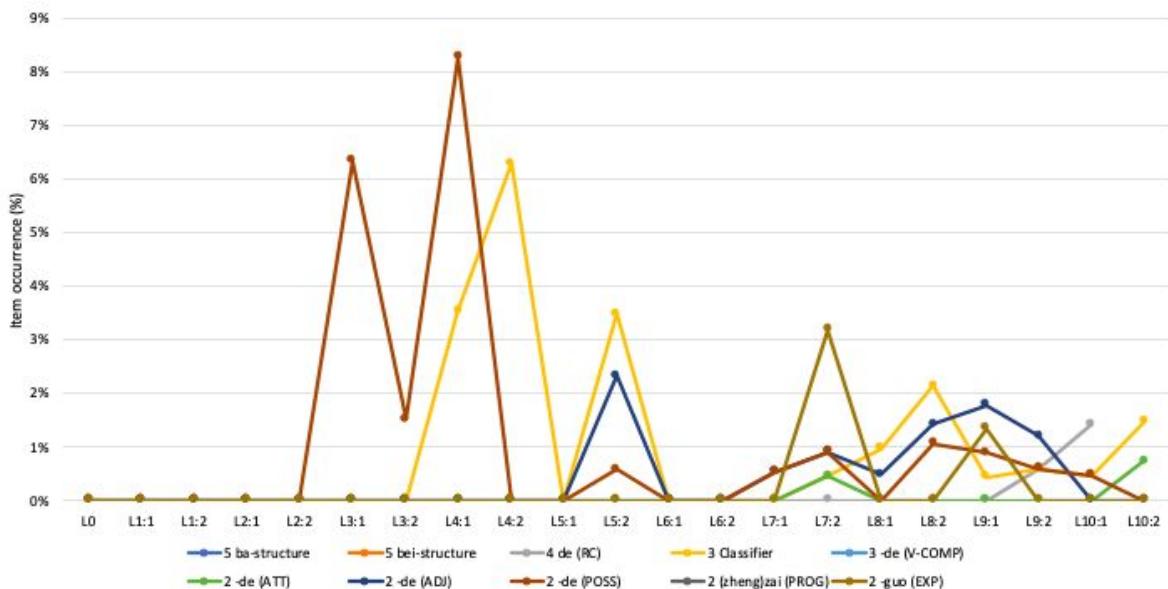


Figure 5.2: Distribution of item occurrences (% of characters total per unit) in *Lai ba!*

As evident from figure 5.1 and 5.2, although the point of introduction is sequenced successively, the distribution of frequency is not. The effect of the amount and frequency of input on acquisition is not discussed within PT however, and the uneven distribution does not compromise the alignment to the hierarchy and its implications on learnability. While one can only speculate about the principles or approaches undertaken by the textbook writers and whether the thematic content of the textbook was built around the teaching objectives or vice versa, it can be assumed that the thematic or communicative content of each chapter at least

to some extent governs the distribution of certain grammatical items and structures possible through the linguistic environments provided. On the other hand, the fact that *Lai ba!* does provide explicit instruction on certain grammatical items and that the grammatical items targeted for my analysis (with the exception of *-de*(POSS)) spike in number of occurrences within the respective chapters where they are first introduced indicates that the grammatical items also govern the thematic content to some extent.

As is evident from the scale (table 5.1) and figure 5.2, the verb complement *-de* on stage 3 as well as the progressive marker (*zheng*)*zai* never appear in the text samples. Furthermore, the experiential marker *-guo* (ex 1) as well as the attributive and adjective markers *-de* appear much later in the sequence than the possessive marker *-de* representing the same hierarchical stage. As accounted for in section 3.2 in this paper, not all structures within one stage of the hierarchy must be produced in order to mark the learner's access to the procedure required for the next stage. Thus, although not all items of stage 2 have been introduced prior to those representing stage 3, all items on stage 3 are still deemed learnable by the PT hypothesis, since the acquisition of one stage 2 item marks the learner's access to the procedural stage.

<i>wo</i>	<i>mei</i>	<i>jian-guo</i>	<i>zheme</i>	<i>piaoliang-de</i>	<i>fangzi</i>
1SG	NEG	see-EXP	such	beautiful-ADJ	house

'I've never seen such a beautiful house'

Ex 1: emergence of experiential marker *-guo* in L7:2 (Bengtsson & Friberg, 2008:119)

This part of the analysis calls for bringing back the discussion on measuring prospects of acquisition in light of the relation between production output and instruction input. As described in section 3.3, PT studies on production output often apply a context criteria to determine the acquisition point of a certain grammatical item. Although the importance of the frequency of the type of input aligning with Pienemann's (1985) 'general input' category remains unknown up to the point where knowledge on *how* the input is utilized in the classroom, the theory of the importance of lexically varied contexts to avoid chunk learning in output should also apply on input. In the case that the text samples in this study are used not only as exercises for comprehension, I want to argue that there is a higher probability that a learner will learn an item as separate from their context if the item is introduced in varied lexical contexts, as opposed to it being introduced in only one context. That is, the more varied the contexts in which one specific item occurs, the less the chance that linguistic content provided from the general input is learned as chunks. One could even argue that the case of varied contexts is even more vital when applied to written Chinese as opposed to written languages based on segmental scripts, since word boundaries are not apparent through spacing between characters and thus have to be learnt upon each introduction of a new word, phrase or formulae. Consequently, lexically varied contexts should create a higher probability of the learner using the item in question in a new lexical context in their own production. This will be elaborated on in the following subsection where a more detailed account of the analysis is provided.

5.1.1 Possessive Marker and Classifiers

In light of the discussion above, the contexts in which the respective morphemes occur should be varied prior to the introduction of items from subsequent levels. Among the units stretching between stage 2 and the first occurrence on 3 in the implicational scale, 10 possessive markers were featured distributed over two sample texts of lesson 3. In its first occurrence, the possessive marker appears in a lexical context that we shall refer to as the personal pronoun context (ex 2). Among the remaining occurrences within L3:1, -de (POSS) appears 5 times with a preceding pronoun (*wo*, ‘I’; *ni*, ‘you’), once with a personal name/lexical noun (*laoshi*, ‘teacher’; *Chen laoshi*, ‘teacher Chen’) and once with a relative pronoun (*shei*, ‘who’). In L3:2, -de (POSS) only occurs twice in the pronoun context.

Similarly, the variety of lexical contexts in which the classifier on stage 3 occurs could bear implications on the acquisition process that provides access to the subsequent stage 4. As accounted for in section 4.3.1, certain features of the noun, such as shape and function, trigger the identification of the classifier that must match those features. For this reason, a valid criterion for the classifier category in terms of context variety could be the simple differentiation of the surface form, e.g. *ge*, *zhi* and *fen*, which are all found in the text samples. The classifier first occurs in L4:1 (ex 3), where the generic *ge* is used to classify *shouji* (‘cellphone’), followed by *ben* specifying *shu* (‘book’). In the following chapters leading up to L9:2 where the relative clause marker is introduced, 8 different classifiers are introduced (including *ge* and *ben*).

<i>zhe</i>	<i>shi</i>	<i>ni-de</i>	<i>shu</i>	<i>ma?</i>
this	be	2SG-POSS	book	Q
‘is this your book?’				

Ex 2: emergence of possessive marker -de in L3:1 (Bengtsson & Friberg, 2008:53)

<i>zhe-ge</i>	<i>shouji</i>	<i>shi</i>	<i>ni-de</i>	<i>ma?</i>
this-CL	cellphone	be	2SG-POSS	Q
‘is this your cellphone?’				

Ex 3: emergence of classifier in L4:1 (Bengtsson & Friberg, 2008:67)

Since no exact criteria on differentiating contexts have been provided in the previous research accounted for in this paper, no further conclusion can be drawn from this than the suggestion that the varying contexts of the possessive marker and the classifier respectively provide better prospects for acquisition than they would if introduced in single contexts only.

5.1.2 Adjective and Attributive Marker

In lesson 3 where the character *-de* was first introduced in relation to the sample text providing the first occurrence of the possessive morpheme, *-de* is explained as a *relations-partikel* (‘relationship marker’) marking possessions and relationships between items or occurrences⁹ (Bengtsson & Friberg, 2008:60). When *-de* occurs as an adjective

⁹Author’s translation; “För att beskriva tillhörighet (ägande) eller samhörighet (två saker som är förknippade med varandra) använder vi oss av partikeln 的.”

marker in L5:2 (ex 4), an explanation of its adjective marking function is provided, namely “in order to use an adjective to specify a noun we use 的. The main word comes last, the adjective is first, and 的[*de*] is placed in between¹⁰” (Bengtsson & Friberg, 2008:91). In the following contexts in L5:2, -*de* (ADJ) is used together with an adjective, preceding and specifying a noun (see ex 4). However, when -*de* (ADJ) occurs again in L7:1, it is featured with an implicit object (see ex 5), i.e. not followed by a noun as described in the explanation provided in lesson 5. The -*de* morpheme should in this case be interpreted as a nominalizer of the adjective (Y. Zhang, 2001). However, *la-de* occurs in the complementary word list as a single unit with the description *spicy (food)* (‘*kryddstark (mat)*’) (Bengtsson & Friberg, 2008:117), thus providing a solution to the problem of introducing a new morphological structure by teaching the specific example of *la-de* (‘spicy’) as one chunk. In light of this, the occurrence of -*de* (ADJ) in example 5 (L7:1) was not annotated in the data.

Similarly, the single occurrence of -*de* (ADJ) in L8:1 also appears with the function of marking the adjective as a predicate (Li, 2016). However, in the word list the word is annotated as *tian* (‘sweet’) without the -*de* attached, which indicates that the phrase is not intended to be learnt as a chunk and the adjective marker must be encoded within the phrase.

<i>keshi</i>	<i>wo</i>	<i>mei</i>	<i>you</i>	<i>hao-de</i>	<i>hanyu</i>	<i>cidian</i>
but	1SG	NEG	have	good-ADJ	chinese	dictionary
‘but I don’t have a good chinese dictionary’						

Ex 4: emergence of adjective marker -*de* in L5:2 (Bengtsson & Friberg, 2008:85)

<i>ni</i>	<i>neng-bu-neng</i>	<i>chi</i>	<i>la-de?</i>
2SG	can-NEG-can	eat	spicy- <u>ADJ/NOM</u>
‘can you eat spicy[food]?’			

Ex 5: occurrence (not annotated) of adjective marker -*de* in L7:1 (Bengtsson & Friberg, 2008:117)

<i>dou</i>	<i>hen</i>	<i>tian-de</i>
all	very	sweet- <u>ADJ</u>
‘(they are) all very sweet’		

Ex 6: occurrence of adjective/nominalizing marker -*de* in L8:1 (Bengtsson & Friberg, 2008:135)

The -*de* morpheme appeared with the function of attributive marker only twice, distributed in two separate chapters. The new linguistic context of the -*de* morpheme is not clarified in either of the chapters, even though it is used differently than explained in L5 (Bengtsson & Friberg, 2008) as previously cited. Since the attributive function of the -*de* morpheme is very similar to the adjective marker in function and to the possessive marker in grammatical context a differentiation between them might not have been called for when designing the textbook in question. This issue of identification was demonstrated by Y. Zhang (2001) with the example clause *Beijing-de daxue* (‘Beijing-POSS/ATT universit[ies]’). She argued that if Beijing is interpreted as the ‘owner’ or ‘operator’ of the university, the genitive (possessive)

¹⁰ Author’s translation; “Om vi vill använda ett adjektiv för att precisera ett substantiv använder vi 的. Huvudordet står sist, och adjektivet står först, med 的 mittemellan.”

function of *-de* is called for, while the interpretation of Beijing as the location of the universities calls for the attributive function of *-de* (Y. Zhang, 2001:73-74).

The ambiguity of this identification is illustrated in example 7, where the *jiaju* ('furniture') NP occupying the subject position could either be interpreted as modified by the noun *yijia* ('Ikea') which calls for the attributive marker nominalizing the NP, or as 'owned' by Ikea which calls for the possessive marker. The occurrence was annotated as attributive in the implicational scale however, since this seemed the most accurate interpretation. In contrast, the nominalized 'seven o'clock' adverbial bound to the *-de* morpheme in example 8 could be more unambiguously identified as attributive to the head noun *che* ('vehicle[train/bus etc.]')

<i>jiaju</i>	<i>dou</i>	<i>shi</i>	<i>ruidian</i>	<i>yijia-de</i>
furniture	all	be	Sweden	Ikea- <u>ATT/POSS</u>
'all furniture is from Ikea'				

Ex 7: emergence of attributive marker *-de* in L7:2 (Bengtsson & Friberg, 2008:119)

<i>wo-men</i>	<i>xiang</i>	<i>zuo</i>	<i>qi-dian-ban-de</i>	<i>che</i>
1-PL	want	sit	seven-o'clock-half- <u>ATT</u>	vehicle
'we want to take the seven thirty train'				

Ex 8: occurrence of attributive marker *-de* in L10:2 (Bengtsson & Friberg, 2008:179)

5.1.4 Relative Clause Marker

As a modifier in fairly complex structures, the relative clause marker *-de* appeared only in the last chapters of the textbook in accordance with the PT hierarchy. On a further note, applying the categorization of *-de* (RC) at stage 5 as suggested by Brolin (2017) on the analysis would not change the alignment to the PT hierarchy in terms of its incremental progression sequence.

<i>wo-men</i>	<i>xiang</i>	<i>qu</i>	<i>de</i>	<i>difang</i>	<i>tai</i>	<i>duo</i>
1-PL	want	go	<u>RC</u>	place	too	many
'there are too many places that we want to visit'						

Ex 9: emergence of relative clause marker *-de* in L9:2 (Bengtsson & Friberg, 2008:159)

Further can be noted that none of the items categorized to stage 5 occur in the sample texts, which aligns with the idealized progression sequence (table 4.2) seeing as they require the procedure for exchanging information between main and subordinate clause predicted to be activated only after all lower stages have been accessed.

5.2 Zhongwen Haoxue 1 Content Sequence Order

An overview of the results on morpheme occurrences in *Zhongwen Haoxue 1* is presented in the implicational scale below (table 5.2). As illustrated in table 5.2 and figure 5.3, the sequencing of the introduced items does not follow the progression predicted by PT since the classifiers representing stage 3 are introduced prior to the introduction of stage 2 items. This

implies that the textbook contents would be instructed prior to the learner's readiness as predicted by PT if taught following the chapter sequence determined in the textbook.

It is necessary to point out that the introduction point of items categorized to stage 2 only precede that of stage 3 with one chapter. If the data sample was unitized differently, for example according to the themes that each contains three chapters, the introduction of stage 2 and stage 3 items would appear to coincide.

Zhongwen Haoxue		Total																							
Morphemes		L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L17	L18	L19	L20	L21	L22	L23	I
5 ba-structure																							0		
bei-structure																							0		
4 de (RC)																							0		
3 Classifier																							8		
-de (V-COMP)																							0		
2 -de (ATT)																							4		
-de (ADJ)																							4		
-de (POSS)																							13		
(zheng)zai (PROG)																							0		
-guo (EXP)																							0		
1 Characters total		0	11	18	21	27	42	43	27	18	44	55	45	33	33	23	34	52	41	46	41	33	37	32	869

Table 5.2: Progression sequence and distribution of morphemes in *Zhongwen Haoxue I*

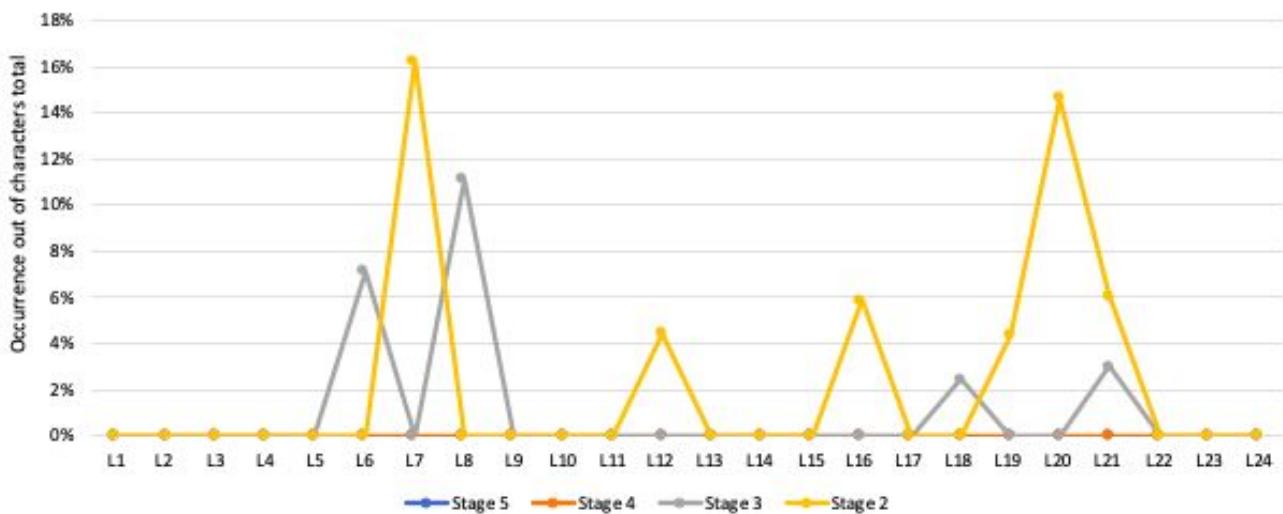


Figure 5.3: Distribution of item occurrences (% of characters total per unit) in *Zhongwen Haoxue I*

5.2.1 Possessive Marker and Classifiers

Relevant to the discussion in the paragraphs below, the linguistic environment for the possessive marker *-de* is explicitly provided in the same unit as the introduction of the

classifier (*kou*), as illustrated in example 10, where an attached footnote states that “*wo jia* is an abbreviation of *wo-de jia*¹¹”, and that *-de* is included in the ‘extra words’ list provided in the end of the chapter (Tsui & Wang Fredmark, 2011:52). In the word list *-de* (POSS) is explained within the separate items *wo-de* (‘mine’) and *ni-de* (‘your[s]’) however. In light of this, the appearance of *-de* (POSS) in L6 was not annotated in the implicational scale.

wo-0 jia you wu-kou ren
 1SG-0 family have five-CL people
 ‘my family has five members’

Ex 10: implicit emergence of possessive marker *-de* in L6 (Tsui & Wang Fredmark, 2011:52)

In the next chapter *-de* (POSS) appears again as a separate unit in the word list complementary to the initial dialogue. In the following units where *-de* (POSS) is annotated, *-de* (POSS) exclusively occurs within the personal pronoun context, as illustrated in example 11 below. If the corresponding data was found a PT study on production output (provided a lexically varied contexts criterion was applied), it would be insufficient to mark the acquisition of *-de* (POSS), and the implicational scale would illustrate the access to the stage 2 procedure at the earliest in L19 where the attributive marker makes its first appearance.

na shi ni-de xuexiao ma?
 that be 2SG-POSS school Q
 ‘is that your school?’

Ex 11: emergence of possessive marker *-de* in L7 (Tsui & Wang Fredmark, 2011:59)

Although not as varied as in *Lai ba!*, three different classifiers are introduced in the *Zhongwen Haoxue 1* text sample, namely *kou* (illustrated in ex 10), *ge* (ex 12) and *suo* (ex 14). Moreover, *ge* occurs in three different lexical contexts in terms of word classes, namely in conjunction with a wh-question phrase (ex 12a), with a number (ex 12b) and with a determiner (ex 13). In light of the discussion held in section 5.1, arguably this variety of contexts facilitates the acquisition of the classifier, which in turn enhances the chances that stage 3 has been accessed and that the learners are ready for the introduction of stage 4 items.

a) *ni-men ban you duo-shao-ge xuesheng?*
 2-PL class have many-few-CL student
 ‘how many students are in your class?’

b) *wo-men ban you shiliu-ge nansheng*
 1-PL class have sixteen-CL boy
 ‘our class has sixteen boys’

Ex 12: occurrences of classifier in L8 (Tsui & Wang Fredmark, 2011:67)

¹¹ Author’s translation; “我家 är förkortning för 我的家 (se Extra ord på s.56).”

wo xiang kan zhe-ge jiemu
 1SG want watch this-CL program
 ‘I want to watch this program’

Ex 13: occurrence of classifier in L18 (Tsui & Wang Fredmark, 2011:144)

zheli you san-suo fangzi
 here have three-CL house
 ‘there are three houses here’

Ex 14: occurrence of classifier in L8 (Tsui & Wang Fredmark, 2011:67)

5.2.2 Adjective and Attributive Marker

Similar to the stage 2 distribution in *Lai ba!*, the attributive and adjective markers emerged much later in the progression sequence than the possessive marker on the same hierarchical stage. Example 15 illustrates the first occurrence of the attributive marker, while example 16 illustrates an ambiguous context similar to example 7 discussed in section 5.1.2. Although an interpretation of the utterance as ‘this is Sweden’s colours’ (which would call for the possessive marker) could be considered equally as accurate, the occurrence of *-de* was annotated as attributive in the data seeing as all other possessive markers annotated in the text sample appeared in the personal pronoun context.

Lingling zhu zai zuo-bian-de hong fangzi
 Lingling live in left-side-ATT red house
 ‘Lingling lives in the red house to the left’

Ex 15: emergence of attributive marker *-de* in L21 (Tsui & Wang Fredmark, 2011:166)

zhe shi Ruidian-de yanse
 this is Sweden-ATT/POSS colour
 ‘this is Swedish colours’

Ex 16: occurrence of attributive marker *-de* in L19 (Tsui & Wang Fredmark, 2011:152)

The adjective marker occurs 4 times exclusively in chapter 20. As evident from example 17a and 17b below, *-de* (ADJ) is preceded by a duplicated monosyllabic adjectives in all occurrences, which can be considered as a single lexical context.

a) ta you da-da-de yanjing he gao-gao-de bizi
 she have big-big-ADJ eyes and tall-tall-ADJ nose
 ‘she has (very) big eyes and a (very) tall nose’

b) ta-de zuiba xiao-xiao-de, yachi bai-bai-de
 3SG-POSS mouth small-small-ADJ teeth white-white-ADJ
 ‘her mouth is (very) small and her teeth are (very) white’

Ex 17: occurrences of adjective marker *-de* in L20 (Tsui & Wang Fredmark, 2011:160)

As evident from table 5.2 and figure 5.3, no items from either stage 4 or 5 occur in the texts, which could indicate that the linguistic content in *Zhongwen Haoxue 1* is less complex than *Lai ba!* in terms of the processing procedures required. However, since syntax and the function of grammatical items or syntax are not explicitly explained in the textbook, it can be assumed that the thematic or communicative content of each chapter determines the distribution of grammatical items and structures and not inversely. Therefore, considering that the data sample is small and the sample texts are short (some of the units contain two separate texts), it is also plausible that the lack of grammatical items is a result of no linguistic environments being provided in which the items naturally might occur. In Pienemann's words, “[f]or the purpose of distributional analysis, sample size and range of linguistic forms interact, and the reliability of a distributional analysis increases with an increase of linguistic forms in a sample.” (Pienemann, 1998:150).

6. Concluding Discussion and Suggestions for Further Research

This study has looked into the progression sequence of grammatical content in the Chinese language textbooks *Lai ba!* and *Zhongwen Haoxue 1* through the framework of Processability Theory (PT), in the ambition to contribute to the foundation of proven science and evidence-based practice of CFL in Swedish classrooms. The targeted content was analysed in terms of its alignment with the learner progression sequence as predicted by PT. In this context, varied lexical contexts was brought up as a valuable criterion when applying the PT framework on input data, due to the implications thereof on higher probabilities of learners using items from such varied contexts productively. The findings from *Lai ba!* concluded that the targeted content in the textbook aligned with the acquisition route of L2 learners as predicted by the PT-derived hierarchy. The findings from *Zhongwen Haoxue 1* concluded that the targeted content in the textbook deviated from the predicted route and provided very little input in between each subsequent stage, although the amount of data might be considered too small to draw any definite conclusions.

While it is tempting to draw the conclusion that the content as sequenced in *Lai ba!* is learnable for students and the content in *Zhongwen Haoxue 1* is not, it is worth repeating that the alignment to the PT hierarchy is limited by the identification of coding items provided from prior research and the selection thereof, as well as the size of the data sample. Moreover, PT was developed from a descending approach as an account of explaining the developmental trajectory found to be universal among language learners. The hypothesis that the learner can produce only what they can process does not cover the importance of input or what amount of input is sufficient for acquisition. Furthermore, even though the probability of CFL learners in Sweden being exposed to Chinese input outside of the classroom can be considered relatively small, the findings from the textbook analysis does not account for any input provided from elsewhere in the classroom.

The study also discussed issues encountered upon operationalization of the framework, concluding that accessible and detailed categorization criteria for the linguistic items applied to the hierarchy is needed in favor of research validity and reliability and facilitation of

method application. This was discussed through an illustration of some of the unique features of the Chinese language impeding interpretation and operationalization of the PT hierarchy.

In light of the vulnerable status of CFL in Swedish gymnasium education today, more research on CFL instruction is needed. Further studies within the expanded framework of PT could provide findings on the amount and type of instruction input within each hierarchical stage required for the access to the procedures enabling the ascending stage progression. This calls for research studies combining textbook content sequence analysis with classroom observation studies and production data from learners within that same context. Such a study could be facilitated by an expanded set of Chinese grammatical items, which in turn can be elicited through further analysis studies on Chinese production data. The findings from such studies would, in combining proven science and evidence-based practice, positively contribute to a more secure position of CFL in Swedish classrooms.

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