



**Grammatical Development among Chinese L2
Learners: From a Processability Account**

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Declaration

I certify that this thesis which I now submit for examination of the award of Integrated Doctor of Philosophy (IPh.D.) is entirely my own work and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

This thesis was prepared according to the regulations for a postgraduate research study at the School of Education, Communication and Language Sciences at Newcastle University, and has not been submitted in whole or in part for another degree in any other universities.

The work reported in this thesis conforms to the principles and requirements of the University's guidelines for ethics in research.

Signature: ...Xiaojing Wang (Queen).....

Date:10th Nov, 2011.....

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Abstract

This study is to investigate the second language acquisition of Chinese grammatical structures by eight Chinese L2 learners. Adopting the theoretical framework of Professor Manfred Pienemann's Processability Theory (PT), this study focuses on the confirmation and extension of the developmental sequence of the grammatical items found by Zhang (2001 and 2008) and Gao (2005).

In essence, this study employed a longitudinal and cross-sectional design. Eight Chinese L2 students from the undergraduate Chinese programme at Newcastle University have been voluntarily selected to join my study. These eight students have a variety of language learning experience and backgrounds, but most importantly (different from other PT-based studies), they have been taught using a completely different textbook and curriculum when compared with the PT-driven developmental sequence. The interviews (elicitation tasks and free talk) were carried out on a regular basis over one academic year. Data was then transcribed and grammatical features tagged.

Data analysis was performed through distributional analysis which detailed the linguistic environment of each grammatical item across the PT stages. Emergence criterion has been stipulated and applied to locate the acquisition point of each form. At the same time, a further textbook analysis has been conducted to identify the relationship between the instructions and natural acquisition stages.

The results have shown that the overall grammatical progression in the subjects' interlanguage was compatible with the processing hierarchy hypothesized in the PT, regardless of the learners' first language and language learning experience. Moreover, the acquisition patterns are never altered by the teaching instruction; instead, the acquisition speed has been somehow influenced by the teaching instruction and other factors. One issue

which should be addressed is the exceptional cases identified in the study, which require further work in this area.

Apart from that, the research has also shown that the adequate tasks are required in language teaching and grammatical structure elicitation. Therefore, four tasks have been designed and tested across the proposed Chinese processing hierarchy for the benefit of Chinese L2 learners.

List of Abbreviations

ADJ: Adjective

ADV: Adverb

ASP: Aspect (marker)

ATT: Attributive

CL: Classifier

COMP: Complement

CSL: Chinese as a second language

DC: Complement of degree

DMTH: Developmental Moderated Transfer Hypothesis

ESL: English as a second language

EXP: Experiential (marker)

FT/FA: Full transfer, full access

GCSE: General Certificate of Secondary Education

HSK: Hanyu Shuiping Kaoshi (Chinese proficiency test)

IL: Interlanguage

IP: Imperatives

L1: First language

L2: Second language

LFG: Lexical Functional Grammar

LOC: Location

MM : Multidimensional Model

N: Noun

NP: Noun phrase

NUM: Number

OAC: Open Access Centre

OBJ: Object

PCL: Particle

PERF: Perfective (marker)

POSS: Possessive (marker)

PRES: Present tense

PRED: Predicate

PRO: Pronoun

PROG: Progressive (marker)

PT: Processability Theory

RC: Relative clause (Complement of Result)

SF: Sentence-final

SLA: Second language acquisition

SPEC: Specifier

SUBJ: Subject

SVO: Subject + Verb + Object

T/TOPI: Topic

TBLT: Task-based Language Teaching

TTR: Type-token ratio

UG: Universal Grammar

V: Verb

VF: Verb-final

VP: Verb phrase

XP: X-phrase

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Chapter 1 Introduction: The Wider Context

1.1 Background

Over the last two decades or so, a large number of scholars have focused on a variety of topics in second language acquisition (SLA) research. Despite the intensity of SLA research, the knowledge gained has not yet influenced the language teaching profession very much. It is actually suggested that knowledge about the nature of SLA should make up part of what should be taken into account in language teaching (Cook, 2008).

From another perspective, among the mainstream languages in the world, Standard Mandarin Chinese, namely Chinese or PuTongHua, has occupied an important position. The research about Chinese language has been conducted for more than 40 years (Chao, 1968; He, 2004; Gao, 2005; Zhang, 2001 and 2008). Studies in Chinese, longitudinal as well as cross-sectional, are from a wide range of backgrounds (Yuan, 1997, 2002 and 2007; Pienemann, 1998b and 2005; Gao, 2005; Zhang, 2001). Although these studies represent a range of research aspects, they have seldom been conducted through elicitation of the structures in the area of the developmental stages among the learners who take Chinese as a second language (L2) in the non-native context. This study aims to rectify this deficit.

To be specific, this study explores the developmental trajectory for Chinese L2 learners and then the elicitation tasks are designed to facilitate language assessment and teaching. The fundamental theory to support my research in the developmental stages in learners' L2 is from Pienemann's Processability Theory (1998b, 2005, and 2008b), where Pienemann has claimed that L2 learners follow a universal grammatical route in the process of acquiring a second language.

Although quite a few studies (Kawaguchi, 1996, 1999, and 2005a; Håkansson, 2001) are being carried out based on Processability Theory in a variety of languages, only a small amount of work is done related to Chinese due to its complexity (Gao, 2005; Zhang, 2001 and 2008).

1.2 Introduction of Zhang's and Gao's Studies and My Research Focus

One of the main studies about Chinese L2 acquisition development by Zhang (2001) examines the development of eight Chinese morphemes in three learners. Zhang (2001) has developed a sequential hierarchy of eight Chinese morphemes based on Processability Theory, which are 1) Adjective marker *-de*, 2) Possessive marker *-de*, 3) Attributive marker *-de*, 4) Experiential marker *-guo*, 5) Progressive marker *-zhe*, 6) V-complement marker, *-de* 7) Classifier and 8) Relative clause marker *de*.

Following Zhang's research, Gao (2005) has then conducted a similar study among two groups of Chinese L2 learners. She has identified similar findings with Zhang's (2001) and also found several grammatical structures at the syntactic levels, such as *ba* structure and topicalization in Chinese. However, Gao's (2005) research design was not explicitly discussed in terms of the backgrounds of her research subjects and the approaches used in data collection.

In Zhang (2008), the proposed hierarchy in Chinese has also been extended to the syntactic aspects: 1) Topicalization: OSV, SOV; 2) XP SV(O)/S XP VO: adv-fronting and subordinate clause; 3) Canonical SV(O): declaratives and interrogatives (y/n, wh-question, intonation). However, Zhang used elicitation tasks when retrieving data which seems artificial; also her research participants have been taught through the sequence which follows the processing hierarchy – hence, it could hardly conclude whether the instructions would constrain the Chinese L2 acquisition. Therefore, in order to develop the hypothesized stages in Chinese and cover the gaps discussed above, my research will attempt to test and extend the existing processing hierarchy in a different group of Chinese L2 learners, and then generate the required tasks from an application to practice.

These objectives will be accomplished in terms of a) to apply the processing hierarchy in a different group of Chinese L2 learners to validate Zhang's (2001 and 2008) and Gao's (2005) results; b) to develop the current Chinese L2 hierarchy in the syntactic area; c) to design tasks for the elicitation (and acquisition) of particular structures. My study thus explores the predictive and explanatory power of Processability Theory in the acquisition of Chinese as a second language.

1.3 Outline of My Study

In general, the purpose of the study is to obtain additional empirical support for the sequence of the acquisition of Chinese as a second language and to develop tasks that can be used for a learnable and/or teachable syllabus. Processability Theory is used as a descriptive framework because previous work on Chinese as a second language has successfully used this framework. In addition, Processability Theory has been shown to be typologically plausible and also useful as a general framework for the Teachability Hypothesis.

The study has been divided into two parts. Part one aims at validating the research results and fulfilling the research gap received from Zhang (2001 and 2008) and Gao (2005) in terms of a different group of informants and different research methods. In part two, the starting point of the research comes from the difficulty encountered in part-one research. The research data in part one is generated from natural speech (as well as a few designed tasks), which is an extremely time-consuming process. In this case, appropriate tasks are designed for the quick and purposeful speech output.

In part one, Chapter 2 briefly examines the foundations of Processability Theory (PT). This is followed by a summary of the key aspects in the PT, which mainly states the universal processing sequences, its underlying principles and relevant theoretical grounds. In particular, the explanation of the processing hierarchy will be clearly illustrated as well as a critical debate regarding the PT. In the end, this chapter investigates the relationship between teaching approaches and the learners' language development based on the Teachability Hypothesis and the Processability Theory - its purpose is to discuss the potential connection of these two constructs.

Chapter 3 provides information about the Chinese language. Like European languages, Chinese has its own specific features from the perspective of morphosyntax. For example, Chinese is a tenseless language. On this basis, the employment of PT to Chinese L2 learners requires further considerations rather than other Germanic languages that PT originally relies on.

In Chapter 4, the review of the literature aims at identifying the gap of the L2 Chinese research in the aspect of language processing. Zhang's (2001 and 2008) and

Gao's (2005) studies, as well as a few other studies in Chinese that have also explained the processing or development of a number of Chinese morphemes and syntactic structures, are described and reviewed with particular focus.

The Methodology part - Chapter 5 - reports on the research question, design, research methods, research subjects and the working procedure. In this chapter, the relevant issues about data description, data selection, and data analysis are discussed. Besides, a large body of literature and discussion of task design has been provided. Due to the nature of PT, I specially discuss the analytical issues which may affect the determination of interlanguage status, such as transcription convention and emergence criterion.

In Chapter 6, the collected data is analyzed and discussed. The chapter provides a detailed account of the grammatical development in the 9-month-production of eight learners of Chinese. All the subjects' language production is analyzed following the PT hierarchy. The data has been investigated further by examining the possible effects that data elicitation methods and formal instruction have on speech production and ultimately on the output of the learner language. The analytical results will firstly be compared with the results in previous research. Moreover, an additional textbook analysis will be carried out. The grammatical contents of different textbooks as well as the actual teaching curriculum will be evaluated and compared regarding to the PT route, which could then verify the relevance between learners' language development and the teaching contents.

In part two, Chapter 7 firstly provides the essential framework for task design. Then, the tasks used in previous PT-based studies are critically reviewed. On the basis of a pilot study conducted among a group of Chinese native speakers and Chinese L2 learners, a variety of tasks are designed and revised according to the different grammatical structures at PT-driven stages in Chinese.

In the end, the final chapter reiterates and summarizes the key findings of my study. It reflects on the limitations of this research and makes some recommendations for future Chinese L2 research either within the PT framework or in terms of language

development. My experience gained through this practice is also illustrated.

Chapter 2 Theoretical Foundation of Processability Theory: a Review of Literature

Second Language Acquisition (SLA) studies under Universal Grammar (UG) have usually investigated ‘what’ the language acquired is, but rarely explain clearly ‘how’ the language is acquired. VanPatten (1989) has emphasized that the processes underlying acquisition itself have never really become a focus of inquiry in SLA. Processing-constraint theories then work on this logical problem.

Norris and Ortega (cited in Doughty and Long, 2005) have claimed that the epistemological approach to SLA focuses on the construction of linguistic mental representations and does not concern itself much with interpreting how such representations become available to the learners in a predictable route. However, recently, the emphasis has been put on this issue and an increasing number of studies have been done on this aspect. One of the goals of SLA is to clarify how learners can acquire complex second language (L2) properties, and why they may not acquire all aspects of L2 grammatical features in their lifetime. Reasons are being investigated from different angles. From a psychological point of view, this logical problem can be explained as a mathematical issue, which requires a dynamic human processor added by Processability Theory. My research then fits into the area of investigating how an L2 is processed according to Processability Theory.

This chapter takes up the focus on the literature review relating to L2 development and processing. The aim of this review is to provide the necessary background and foundation for the present study on language processing constraints and the grammatical structures regarding L2 developmental procedures. This review concentrates on the linguistic concepts which accounts for the transition mechanisms of L2 processing and the research efforts in the construction of the L2 developmental route.

Firstly, an introduction of Processability Theory will be outlined to draw a full picture of the theoretical basis that the current study ‘relies on’. Then, the fundamental research required during the building up of this Processability Theory is

to be sketched in order to reinforce the comprehension of its core inclusions and concepts. Afterwards, the fundamental concepts of Processability Theory are demonstrated based on typological plausibility, psycholinguistic constraints, processing hierarchy as well as the empirical support in various language backgrounds. Moreover, a framework for psycholinguistic language processing - Lexical Functional Grammar - will be introduced since it is required for the explanation and interpretation of the language features regarding Processability Theory and its underlying processing route. Further discussion and critique of Processability Theory will be provided with detailed arguments and examples. Finally, the challenge of Teachability Hypothesis as well as learnability issues will be stated for the application of Processability Theory in practical teaching and learning.

2.1 Introduction of Processability Theory (PT)

Since the mid-1980s, Pienemann (1984 and 1985) and his colleagues have tried precisely and empirically explain the deep insights of L2 development from a psycholinguistic point of view. Then, Pienemann (1998c) established a universal hierarchy to explain the processing complexity. Tests by him and his colleagues have found that instruction and learners' L1 backgrounds will have little effect on learners' L2 acquisition if the learners are not yet ready to integrate the new linguistic knowledge into the existing mental system. PT was 'born' out of this background.

The aim of PT is to solve the developmental problem: what causes development of L2 competence to follow a describable route? The actual construct assumed in this theory is that language processing mechanisms constrain SLA. Therefore, language development occurs mainly based on the removal of these processing constraints (Pienemann, 1998c).

It is stated by Pienemann (1998c) that the three main features of PT are 1) language-specific, 2) incremental and 3) linear. The explanations are as such - the language processing procedure is universal but also language-specific. For example, when applying the processing hierarchy onto a particular language, the grammatical features of this target language should be considered. As highlighted by Pienemann

(2008a), some scholars (Pienemann, 1998c; Pienemann, 2004; Pienemann, Di Biase and Kawaguchi, 2005) attempted to apply the developmental hierarchy generated for English or German to other languages without the comprehension of the features of the target languages. One applies the processing hierarchy of English to Chinese which is not feasible since, for instance, there is no tense aspect or third-person (3rd person) singular in Chinese language as there is in English. Henceforth, linguistic features of each individual language should be specifically identified as well as the recognition of the universal property of the developmental trajectory. No contradictions could be located in this perspective.

The language-specific feature also yields multiple structures at every single processing stage. It establishes that structures belonging to the same stage are all processable in the same manner.

Within the umbrella of PT, the learners' L2 production follows the sequence of processing routines which the current state of the computational mechanism - language processor - can manage. Thus, Pienemann (1998c) has claimed that development of language builds on learners' current linguistic capacity and knowledge. Following the preceding stages, linguistic competence is incrementally accumulated. Put very simply, L2 ability at any one stage implies the existence of L2 ability at all earlier stages (Doughty and Long, 2000). The developmental stages in PT could not be jumped and the learners' language production can only proceed to the point where the structure of a phrase has been created and the associated lemmata are activated (Pienemann, 2005).

Accordingly, the developmental trajectory of the L2 knowledge follows a sequence of linearity (Cook, 2009; Glahn et al., 2001; Pienemann, 1998c). However, even though the output of the processor is linear, it may not be mapped onto the underlying meaning in a linear way (Pienemann cited in Pienemann and Kessler, 2011). Such linearization problems operate at the grammatical level, involving the storage of the grammatical information. Henceforth, if a learner has not developed a required procedural skill in the implicational hierarchy, the hierarchy will be cut off on the way

to the target grammar. ‘The rest of the hierarchy will be replaced by a direct mapping of conceptual structures onto surface form as long as there are lemmata that match the conceptually instigated searches of the lexicon’ (Håkansson, Pienemann and Sayehli, 2002: 263).

It seems that the task of acquiring a language focuses on the production of relevant structures, but in fact, it is to process the procedural skills needed for the production of these grammatical structures; otherwise, learners may just remember the structure per se as a chunk. Therefore, under the developmental dimension of PT, stages are explained in terms of a universal hierarchy of processing procedures: skill-based, language-specific, and lexico-grammatical ‘encoding operations’ (Levelt, 1989).

Within the formulation of the PT framework, processing capacity is articulated in a number of psycholinguistic models and theories including feature unification (which guarantees that each component or constituent in a sentence do actually fit together) and information exchange between constituents of a string (Pienemann, 1998c). Originally, this theoretical basis formed the processing hierarchy of English as a second language (ESL), under a series of empirical studies (Johnston, 1985; Pienemann, 1998c; Pienemann, 2005; Kawaguchi, 2005a). In Johnston’s (1985) cross-sectional study of 16 Polish and Vietnamese learners of English which included 12 of the grammatical rules contained in the ESL table, the results have showed an implicational table with 100% scalability.

Further evidence to support the proposed ESL hierarchy is provided by a cross-sectional study of 13 ESL children learners acquiring 14 structures (Pienemann and Mackey, 1993) which also results in an implicational table with 100% scalability.

To extensively support the feasibility of this processing hierarchy, additional longitudinal evidence has been found regarding the cumulative fashion of interrogatives implicit in the ESL scale (Cazden et al. 1975; Rosansky, 1976). Six Spanish ESL learners were studied and the results were aligned with the identified ESL processing procedures drawn from PT. These processing procedures applied to English are displayed below in Table 2.1.

Processing Procedure	L2 Process	Morphology	Syntax
6 S-bar procedure	Main and sub-clause	--	Cancel Inversion
5 S-procedure	Inter-phrasal information	3sg-s	Do-2 nd , Aux-2 nd , Neg-do2nd
4 Phrasal procedure (Verb Phrase)	Phrasal information within Verb Phrase (VP)	--	Y/N Inversion Copula Inversion
3 Phrasal procedure (Noun Phrase)	Phrasal information within Noun Phrase (NP)	NP agreement	Adv-fronting, Do-Front, Neg+V
2 Category procedure	Lexical morpheme	Plural-s, past -ed Possessive pronoun	Canonical order
1 Word/lemma	Words	Invariant forms	Single constituent

Table 2.1 ESL Processing Procedures (Pienemann, 2003: 695)

In Table 2.1, an implicational scale of ESL processing hierarchy is laid out for investigation. Grammatical structures are listed on the left-hand side, while the morphological and syntactic patterns have been separately listed in the table. During the actual speech production and comprehension of L2 English learners, the above path illustrates the way interlanguage grammars are processed incrementally in the linguistic system. It outlines the model of psycholinguistic processing assumed by PT and illustrates how stages fall out of it.

It is seen that the morphological forms of English included in this hierarchy have matched the processing procedures in a straight-forward manner. At stage 2, the diacritic features such as the plural forms in English occurred at the lexical level; therefore, no information exchange is required for this process as long as the diacritic feature is to be marked in one constituent only. T

At stage 3, information exchange exists in the noun phrase (NP) between the head of the NP and other NP constituents. For instance, in the plural agreement of the phrase ‘three books’, the number ‘three’ should be matched with the noun ‘books’ within the phrase. In terms of the language with VP, phrase information exchange would occur at stage 4 within VP. For instance, in the questions containing a copula (e.g. Is she good?), the copula has to be brought into initial position. The subject and the copula are then inverted. Students at this stage could not distinguish direct and indirect questions in English (Pienemann cited in Pienemann and Kessler, 2011).

Inter-phrasal information, at stage 5, needs to be in place for the operation to be

executable - there is an exchange of information across constituent boundaries. In the Subject-Verb agreement marking (3rd person singular), the features 'person' and 'number' have to be unified and deposited in the S-procedure. By current development of ESL procedures, *Cancel Inversion* lies at the sixth stage of the hierarchy, which includes the information exchange between the main clause and the subordinate clause. It represents that the word order phenomena observed in direct questions do not apply in the context of indirect questions (Pienemann cited in Pienemann and Kessler, 2011). Therefore a matrix clause would be added to resolve the problem.

From another perspective, this identified ESL hierarchy, constrained by the developmental skills, has been used as a measurement of English language among L2 learners with various L1 backgrounds. A shorthand version of the original procedure has been developed by Pienemann (1998c) called Rapid Profile, which is based on on-line observation of the English L2 learners' language production with the assistance of the designed tasks by Pienemann (1998c).

To get a complete picture of PT, PT is currently being extended to incorporate pragmatic principles into the developmental approaches to SLA research (Pienemann, Di Biase and Kawaguchi, 2005). In other words, PT is to be enriched with a variety of linguistic aspects and principles in the future.

2.2 Foundation Research Regarding PT

Around 30 years ago, Dulay and Burt (1973 and 1974) reported that English children acquiring English as an L2 follow a particular order for acquisition of grammatical morphemes, regardless of their L1s. Krashen (1985) has then shown and concluded that language learners acquire certain grammatical structures in a predictable order, some structures tending to come earlier, and others later. But no specific and systematic picture of the acquisition order has been drawn from these findings. Recently, additional studies have contributed to this area in SLA (Pienemann and Johnston, 1993; Shi, 1998, etc.).

Under recent investigation, Hawkins' (2003) findings have led to a general agreement that L2 learners follow a predictable route of development mainly independent of age, native language, type of exposure, or educational background, indicating that a universal developmental trajectory exists. To be more specific, Nunan (cited in Nunan, 1987) has highlighted that early morpheme order studies indicated a predetermined order of acquisition, which could not be changed by instruction. Therefore, if teachers attempted to teach learners what they were not ready for, the results would be confusion and false hypotheses (Corder, 1981; Pienemann, 1998c).

In this context, PT proposes a hierarchy that provides information for teachers/instructors to use when helping L2 learners to construct knowledge. Two main aspects should be discussed before going further with the theory. First, the concept of interlanguage must be clearly identified as a key stage of language development discussed within the theory; in addition, the fundamental research which has been conducted for the construction of PT also needs to be illustrated.

2.2.1 Interlanguage and its Underlying Perception

The prior language knowledge of the learners will, to some extent, condition the way the learners construct their acquisition of a new language. It is evident that even though first language (L1) does play a certain role in the process of L2 acquisition, learners cannot simply map their L1 features onto the target language (Dulay and Burt, 1974; Dulay, Burt and Krashen, 1982; Langman and Bayley, 2002; Su, 2001). Also, it has been emphasized that language learners are not parrots simply repeating words they hear; instead, they mentally construct their linguistic systems according to the new target language system (Selinker, 1972; Pienemann, 1995).

Selinker (1972 and 1992) has conceived of this linguistic system as interlanguage which is a dynamic system with increasing complexity. In the construction of an interlanguage grammar, L2 learners need to construct a target grammar that goes beyond the finite input data (Richards and Sampson, 1974; Corder, 1981; Yip, 1995).

During the process of language construction, interlanguage presents in a state of flux with unstable consistency (Littlewood, 1992; Yip, 1995). Interlanguage is a product in the process of moving from L1 to L2. It seems that L2 learners go through a series of transitional stages towards the target language from the initial-state grammars that these learners construct, so interlanguage is in a status of change which indicates the unstable property of this linguistic system. It could develop gradually or it may fall back to an earlier status (Towell and Hawkins, 1994).

Normally, it is expected that a learner's interlanguage moves closer and closer to the target language and contains fewer and fewer errors. Some scholars have claimed that ideally interlanguage growth develops as a gradual progression with a sequence to follow; that is to say, interlanguage growth occurs on a continuum in which some new rules (applied and developed by learners) slowly spread and acquire a greater coverage within the grammar (Corder, 1981; Smith, 1994). However, from the observations of L2 learners, some errors probably never disappear entirely. Such errors are pinpointed as *fossilized* and become permanent features of learners' interlanguage speeches (Littlewood, 1992).

Fossilization is actually a unique characteristic of interlanguage. Once interlanguage's permeability is lost, the structural features are maintained in the developmental process and then become subject to fossilization (Pienemann, 1998b). Long (2003) defines fossilization as the continuity which results in the learners' interlanguage competence being non-target-like. Some language learners may stabilize at a certain stage of language acquisition and their interlanguage development may cease in which case even conscious efforts are often fruitless. Minor changes may sometimes be observed, but the learners will backslide to a stable state in the end (Bley-Vroman, 1990; Eubank, Selinker and Smith, 1995; Smith, 1994).

From the features of fossilization, it is seen that there are certain constraints which hold back the development of a learner's L2. Ideally, these constraints, inherent in a certain developmental hierarchy, will be gradually moderated and removed during the

language learning and development (Pienemann, 1998c); fossilization actually indicates that there is no release of certain processing constraints in the developmental process and then the interlanguage has to be stopped or held back. From the processing perspective, learners' interlanguage is expected to develop with no fossilization.

It may be asked whether there is any possibility that learners with various L1s might follow a similar series of transitional stages, thus, could their interlanguage developmental routes be different from each other?

Clahsen and Muysken (1986) have observed that a group of adult L2 learners of German (with different L1s) acquired German word order patterns in the same set of stages. They therefore claimed that learners from different L1 backgrounds processed L2 knowledge independently of their L1s. Another study by Håkansson, Pienemann, and Sayehli (2002) has showed that Swedish learners of German cannot acquire verb-second pattern at the initial stage, though this pattern does exist in both German and Swedish languages. From this case, it can be seen that the typological difference does not necessarily shorten or extend the learning barriers. Other empirical evidence has also indicated that typological proximity does not guarantee L2 learners' ready access to L1 knowledge and the processing constraints may override typological distance (Di Biase, 2002; Håkansson, Pienemann, and Sayehli, 2002).

Pienemann (1998c) has proposed that L2 learners with different L1s deal with learning problems inherently in a strikingly similar sequence, which states that SLA is typically 'staged'. These stages therefore form the basis for Processability Theory (Cook, 2009).

2.2.2 Fundamental Research

In the process of building up the concept of Processability Theory, several substantial concepts have been investigated and contribute to it: the Multidimensional Model (Meisel, Clahsen and Pienemann, 1981), the Strategies Approach and the Predictive Framework (Pienemann and Johnston, 1986) are outlined below.

First and foremost, the Multidimensional Model focused on the issue of determining developmental sequences in SLA. Its key concepts consist of implicational scaling, probabilistic rules, emergence criterion and variation and development dimensions in L2 dynamics (Meisel, 1991; Meisel, Clahsen and Pienemann, 1981). The Multidimensional Model (MM) utilized implicational scaling and probabilistic rules to operationalize the emergence criterion for acquisition. As the descriptive framework for dynamic processes in L2 development, the Multidimensional Model has assumed that interlanguage development is not linear and contains at least two dimensions. This assumption has an impact on determining stages of development. Larsen-Freeman and Long (1991) have noted that any deviation from a proposed acquisition route could be interpreted as the variational interlanguage features. However, this shortcoming has been resolved in PT which 'now formally constraints development as well as variation in a predictable and testable manner' (Kessler, 2008).

Additionally, the Strategies Approach was originally developed by Clahsen (1984) to explain the development of German L2 word order. The Strategies Approach enables one to predict the course of development of L2 linguistic forms in language production across languages. There is a set of processing strategies accounted for the interlanguage development process. In other words, the Strategies Approach has provided an advanced explanation for the developmental dimensions discussed in the Multidimensional Model (Kessler, 2008).

The Predictive Framework (Pienemann and Johnston, 1987) aimed to sketch the Strategies Approach and extend the scope of the Strategies Approach. However, this framework has been quickly replaced by new developments in the present PT since it lacks typological plausibility (Kessler, 2008). Even though the Predictive Framework has attempted to include the aspects of L2 morphology for application in target languages, its speech processing strategies were conceptualized too closely to specific languages.

In conclusion, all these three concepts have given rise to the development of PT.

Each point has its own drawbacks, which have been resolved and consummated in the current PT, ‘especially the lack of falsifiability in the Multidimensional Model and the inability of the Strategies Approach to link to grammatical knowledge and its lack of typological plausibility’ (Kessler, 2008).

The next section will include a discussion of the theoretical basis of PT in previous studies. Pienemann’s PT has provided sufficient support for the comprehension of the universal processing hierarchy across languages.

2.3 Theoretical and Empirical Basis of PT

As a complete theory of language acquisition, it should explain the ‘what’ and the ‘how’: what causes the development of the target language and how learners follow an identical route when progressing towards the target language. PT is such a theory, as it explains the key psychological aspects of human language processing in order to account for the developmental problem - that language development follows a particular route universally (Pienemann, 1998b and 1998c).

The overall design of PT does allow for both ‘what’ and ‘how’ issues to be addressed. This is possible mainly because of the inclusion of a grammatical theory (Lexical Functional Grammar) that has a high degree of psychological and typological plausibility and that allows one to model several key aspects of language generation using feature unification.

Littlewood (1992) has stated that L2 learners could actively construct rules from the available input they encounter and then adapt these rules in the direction of the target language. PT then fits into this tradition to devise an explanatory account of the mental operations that underlie the learners’ linguistic knowledge.

2.3.1 Typological Plausibility and Psycholinguistic Basis

A variety of issues is being explored in SLA, such as how are two languages represented in one mind? Simply said, how are two languages processed in one mind? The answer could be found within the psycholinguistic perspective. The conceptual developments in language are aiming at extending learners’ ability to formally

account for a larger range of phenomena within a typologically and psychologically plausible framework.

The notion of ‘exchange of grammatical information’ within PT is a productive concept for typologically different languages. Among the current studies, PT has been tested mainly with European languages, such as English, Italian and other Germanic languages, and then with Asian languages, such as Japanese and Chinese. In this case, typological predictions, derived from the general architecture of PT for specific languages, are borne out through longitudinal and empirical investigations. Pienemann (1998a) thus concluded that PT is typologically plausible.

PT states that, at any stage of development the learner can produce only those L2 linguistic forms which the current state of the language processor can handle (Pienemann, 1998c; Pienemann, 2005). In this case, it is crucial to comprehend the architecture of the language processor which accounts for language processing in real time and within human psychological constraints, such as speech processing, mental lexicon and the access to a grammatical memory store (Levelt, 1989; Paradis, 1994). In this grammatical memory, specialized grammatical processors can deposit information of a particular nature. Stated simply, the grammatical processing procedures within the implicational hierarchy are held temporarily in the grammatical memory stores while the other messages are still being processed.

According to the previous discussion, the structure of the mental lexicon and the lexically driven nature of language production are mainly supported by a range of psycholinguistic empirical evidence. At this point, it is necessary to understand the gist of the processing routines based on PT and then to comprehend the linearity of these universal stages in the hierarchical arrangement of syntactic constituents.

2.3.2 Processing Hierarchy - Morphemes and Syntactic Development

The core of PT is a hierarchy of language processing procedures. This hierarchy illustrates the specific procedural skills needed in processing the target language, yielding developmental trajectories for the given target languages (Pienemann, 1998c).

Pienemann (1998b) has described the language as a building and each specific language developmental stage as blocks. Therefore, if one building block of the hierarchy is missing, the top is hard to reach.

It is hypothesized that the sequence of developmental stages is in part due to the fact that processing procedures are constructed language-specifically for each L2 or in other words, afresh for each L2 (Pienemann, 1998c). In this case, a working definition of processing procedure, which counts as grammatical encoding operations, should have light shed on. Levelt (1989) has explained that the human brain can automatically construct phrases and clauses from the grammatical properties of lemmas to spoken messages through grammatical encoding operations. From the psychological point of view, this ‘mechanical’ construction could then contribute to the comprehension of processing procedures in PT.

The procedural skill of processing each lower level is a prerequisite for the functioning of the higher level. As a common sense, simpler structures are processed before the complex ones and the beginning point of language input is very much the same around the world (Dale, 1976). The structural complexity can account for the fact that phrasal agreement is acquired before inter-phrasal agreement since inter-phrasal marking consists of grammatical agreement across syntactic constituents and phrasal agreement is concerned within the same constituents (Mansouri cited in Di Biase, 2002). In a nutshell (Pienemann, 1998c: 80):

‘A word needs to be added to the L2 lexicon before its grammatical category can be assigned. The grammatical category of a lemma is needed before a category procedure can be called. Only if a phrasal procedure has been completed and its value returned an Appointment Rules determine the function of the phrase. And only if the function of the phrase has been determined can it be attached to the S-node and sentential information be stored in the S-holder’.

On this basis, Pienemann (1998a, 1998b and 1998c) has systematically generated a universal developmental sequence. This order follows the order of activation of grammatical encoding in human brains. The following Table 2.2 outlines this developmental sequences designed by Pienemann (1998c),

Processing Procedures	Grammatical Development
5 Sub-clause Procedure	Main and sub-clause
4 S-procedure	Inter-phrasal procedure
3 Phrasal Procedure	Phrasal procedure
2 Category Procedure	Lexical procedure
1 Word/Lemma access	/

Table 2.2 Processing Hierarchy and Grammatical Development (Pienemann, 1998c)

Based on this universal sequencing of processing resources in Table 2.2, PT views L2 learning as the cumulative acquisition of skills necessary to display these resources. Cumulative learning process can be represented by successive additions of linguistic rules to the interlanguage system.

As shown in the table, the processing procedures are acquired in their implicational sequences from basic word/lemma access to the sub-clause procedure which develops in an incremental path. Learners at stage 1 identify words and lemmata, which is the basic component of grammatical structures and the starting point of L2 development. For example, a word like ‘light’ or ‘cup’, or a formula such as ‘what’s your name?’

After words and formulaic expressions are added to the L2 lexicon, the category procedure at stage 2 can then be assigned with the support of a language processor. The category procedure functions on the lexical level. In English L2 processing hierarchy, the canonical word order SVO or plural forms exists at this stage. For instance, the plural –s in ‘light-s’ is a lexical morpheme, which is a bound form of the word. Therefore, no exchange of information with other constituents is required for its production (Zhang, 2001).

At stage 3, phrasal procedures require information exchange within an NP. Such as in the phrase ‘two kids’, the number ‘two’ needs to be matched with the noun ‘kids’ in the plural form. Therefore, the features of the two constituents within the phrase are unified, which results in a well-formed English NP. However, there is no inversion and the canonical order of the sentence remains the same.

At the syntactic stage 4, it allows the grammatical information exchanges within the sentence. As seen in the example below, the feature between the NP and VP is unified across the phrasal boundary. The insertion of the verbal affix ‘-s’ relies on

information contained in the subject NP, namely the feature PERSON and NUM and their values. In other words, the singular verb ‘sees’ in the VP has matched the 3rd person ‘Peter’ in feature, which states the information exchange with VP (the 6 stages only exist in the language where there is an NP).

Ex 2.1 Peter sees a dog
 Peter: NP, [NUMBER = singular]
 [PERSON = 3rd]
 sees a dog: VP, (SUBJ) [PRED ‘PETER’]
 (PRED) [‘SEES’]
 SEES <+PRESENT>
 (ASP) = PRESENT

Pienemann (1998c) categorises the next stage as: the operation of main clause and subordinate clause - the feature unification occurs between different clauses. This stage is then featured and grounded with complex sentence structures, such as subordinate clauses and embedded clauses. At this stage, learners will tackle some atypical structures in L2s. For example, ‘he wants to know whether he could go to school’ rather than ‘he wants to know whether could he go to school’.

In the PT hierarchy, information exchange (the principles of grammatical information transfer between different constituents to generate certain structures) procedures are the main construction for the development of language skills stage by stage. Figure 2.1 has been adopted from Pienemann (2008b: 16) to illustrate the concept and framework of information exchange.

Information exchange			
Stage	locus of exchange	example	illustration
Sentence	within sentence	Peter sees a dog	
Phrase	within phrase only	two kids	
Category	no exchange	talk-ed	

Figure 2.1 A Simplified Account of Processing Hierarchy (Pienemann, 2008b: 16)

In the above figure, the place of information transfer is listed in the left column while the second column illustrates the locus (types) of information exchange moving from no exchange to within phrase and then within sentence. The examples are presented in the following column and the ESL (English as a second language) structures are given in the last column to describe the information transfer involved in the generation of these structures (Pienemann cited in Pienemann and Kessler, 2011).

Generally speaking, the processing hierarchy within PT is defined by the types of information exchange and universally applicable features. In the next section, a variety of studies are reviewed to provide the empirical and evidential support for the Processability Theory and its universal hierarchy.

2.3.3 Empirical Support of PT in Different Backgrounds

VanPatten (2003) has demonstrated that there are well-documented developmental stages of languages for certain phenomena in German, Arabic, French, Swedish, and some other languages.

Evidence shows that the universal hierarchy of PT is appropriately flexible to incorporate language-specific typological features (which counters views of UG scholars, such as Schwartz and Sprouse, 1994). Such language-specific features allow the processing hierarchy to be applied to different types of languages (Mansouri cited in Pienemann, 2005). A few researchers (Di Biase and Kawaguchi, 2002; Mansouri, 1997; Pienemann, 1998c; Pienemann and Håkansson, 1999; Taylor, 2004; Zhang, 2001; etc.) then attempted to apply this processing hierarchy to individual language in different bilingual contexts. They have related a set of linguistic structures of the target language to the general hierarchy of processability and more specifically to the exchange of grammatical information involved in producing these structures. The outcome of the process is the language-specific prediction for the sequence of a given language (Kawaguchi, 2005a). In this case, the universal hierarchy can be interpreted as the specific typological peculiarities of the target language.

Such studies are largely based on cross-sectional and longitudinal design of the

acquisition of German, (Pienemann, 1998c), Swedish (Pienemann and Håkansson, 1999), Italian (Di Biase and Kawaguchi, 2002), Japanese (Di Biase and Kawaguchi, 2002; Kawaguchi, 2005a and 2005b; Iwasaki, 2003; Itani-Adams, 2003), Chinese (Zhang, 2001 and 2008; Gao, 2005), Arabic (Mansouri, 1997 and 2002), Spanish (Taylor, 2004), and Turkish/German/English (Pienemann, 2005; Özdemir, 2004). Glahn et al. (2001) have also tested the framework of PT with specific reference to affixation in attributive and predicative adjectives in Scandinavian languages. The results strongly support the predictions made over PT. Subsequent research in line with all these studies was then used to characterize the developmental orders in different bilingual relationships or to extend the current state of the processing sequence, such as this study.

The first attempt to apply Pienemann’s theory to Japanese as a second language acquisition was Kawaguchi (cited in Di Biase, 2002) who focused on examining the acquisition order of verbal morphology. Japanese is an Asian language with SOV in canonical order. It is a very typical attempt for applying PT in such an Asian language, which is typologically distant from European languages. Kawaguchi (1996) has endeavored to investigate the developmental sequence of Japanese L2 and extend PT to the lexical mapping level for over 10 years. She did cross-sectional as well as longitudinal studies to verify the valid application of PT and the developmental trajectory of Japanese L2 in morphology and syntax. The following table shows the grammatical processing procedures within Japanese L2 (adapted and revised from Pienemann, 1998c: 211).

	Processing procedure	L2 process	Morphology	Syntax
5	S-procedure	main and sub clause	/	/
4	Inter-phrasal procedure	Inter-phrasal information	/	/
3	Phrasal procedure	Phrasal information	V-te V	Topicalization
2	Category procedure	Lexical morpheme	Vaff	Canonical order SOV
1	Word/lemma	Words	Invariant forms	Single constituent

Table 2.3 Processing Procedures Applied to Japanese (Pienemann, 1998c: 211)

This Table 2.3 demonstrates the processing hierarchy applied to Japanese as a

second language (JSL). This implicational scale develops from simple word and lemma to the phrasal affixes attached to the verb and topicalization. It is seen that Japanese L2 learners can acquire the SOV at the initial stage whatever their L1s are, which has supported that Japanese L2 processing is aligned with the universal processing sequence. Kawaguchi (cited in Di Biase, 2002) has claimed that information on JSL acquisition has provided encouraging grounds for testing and extending PT, and also proved the possibility of applying the universal processing hierarchy in other Asian languages. After Kawaguchi, a few other researchers (Iwasaki, 2003 and 2004) have begun to apply the processing procedural skills onto Japanese from different perspectives.

The practical application of PT in Chinese was initially carried out by Zhang (2001 and 2002a). Gao (2005) then carried out a cross-sectional study to test a wider application of PT in Chinese and develop the processing stages in the morphosyntactic area, such as topicalization and *ba* structure. Both Zhang and Gao's studies support PT and its underlying processing hierarchy, even though a few violated cases existed in Zhang's (2001) research (this issue will be explained in detail in Chapter 4).

Additionally, research on Swedish in PT has already been conducted for about 20 years (Pienemann and Håkansson, 1999). On the morphology of Swedish as a second language, five different forms of articles for singular and plural forms were investigated. Since 'nouns in Swedish can be morphologically marked for gender, number and definiteness' (Pienemann, 1998c: 183), the case/gender marking in Swedish then occurs at the lexical level, namely stage 2.

Another case has been investigated by Håkansson, Pienemann and Sayehli (2002) that explored the transfer of the verb-second structure in German L2 learners of Swedish. In both languages, the canonical order is SVO with the 'verb-second' rule, so the verb remains in the second position in the presence of an adverb or other preverbal constituents. Even though Swedish learners of German hold the same grammatical feature as verb-second, these German L2 learners have no advantages in

this aspect as other learners with different L1s also acquire this feature in German at the beginning stage. This fact has demonstrated that typological proximity is not always advantageous for L2 learning.

In general, empirical evidence and relevant research results within the framework of PT have been primarily provided by studies investigating the order of acquisition of specific morphosyntactic structures. A large number of findings do substantiate the acquisition orders in line with the PT predicted sequence (Kormos, 2006).

As a matter of fact, PT's original predictive range for SLA has mainly accounted for obligatory operations. For example, in the English L2 hierarchy, the obligatory operations are SVO canonical order and the auxiliary verb fronting. Accordingly, the extension of PT (Pienemann, 2005) provides a wider developmental dimension of syntactic structures at each stage, such as question forms and topicalization. As demonstrated in Kawaguchi (2006), this syntactic extension does develop the universal hierarchy of PT in a more complex and advanced direction.

2.4 Lexical Functional Grammar: an Overview

As discussed above, the processability hierarchy is based on a universal set of processing resources modeled using Lexical Functional Grammar (LFG). As a generative model of syntax developed in response to certain criticisms of the dominant transformational approach, LFG is not a theory but 'a formal architecture for modeling syntax, based on the theoretical motivations' (Hsu, 2009: 13). It assumes a multi-dimension of syntactic representation at various levels for the given language in a semantic structure (Niedle, 1994). Moreover, LFG is seen as a unification-based linguistic formalism that provides natural explanations for many facts about language acquisition (Pinker, 1996 and 2005; Sells, 1995).

Within the Processability Theory, the psycholinguistic basis is connected to and classified by LFG with feature unification and lexical mapping since LFG takes grammar properties as the starting point. Inclusive in feature unification, three key features are shared with Kempen and Hoenkamp's (1987) procedural account of language generation: (1) the lexical-driven grammars, (2) the functional annotations

of phrases and (3) the reliance on lexical feature unification as a key process of sentence generation (Pienemann, 1998c).

Theoretically, feature unification illustrates that ‘the grammatical information has to be matched between parts of the sentence’ (Pienemann, 2008a: 140). This process can then simply be seen as information matching. LFG uses formal approaches to account for such processes. For example, the lexical entries of ‘a cat’ below illustrate this feature unification,

Ex 2.2 a cat

a:	DET	SPEC = ‘a’
		NUMBER = singular
cat:	NOUN	PRED = ‘cat’
		NUMBER = singular
		PERSON = 3rd

This NP has been functionally well-formed since the NUMBER in ‘cat’ has been matched with the PERSON as 3rd person singular. To achieve the agreement marking, the value for the diacritic feature NUMBER is unified between the DET and the NOUN in the lexical entry; thus phrasal procedures need to be in place for this operation to be executable.

Another example that shows the feature unification explained in LFG is in the sentence of ‘Mary eats an apple’. The value of every lexical entry should be annotated and unified to match the number, tense, person and aspect as follow,

Ex 2.3 Mary eats an apple.

Mary:	N,	PRED = ‘Mary’
eats:	V,	PRED = ‘eats’ (SUBJ, OBJ)
		TENSE = present
		SUBJ PERSON = 3rd
		SUBJ NUMBER = singular
an:	DET,	SPEC = ‘an’
		NUMBER = singular
apple:	N,	PRED = ‘apple’
		NUMBER = singular

In this example, the insertion of the verbal affix ‘-s’ (eats) relies on information contained in the subject NP, namely the features PERSON and NUMBER, and their value of the 3rd person and singular. It is actually the process of feature unification, occurring between the NP (Mary) and VP (eats) at the level of an inter-phrasal

procedure.

According to the theory of LFG, syntactic information is represented by three parts: (1) a constituent component (c-structure) that generates the superficial syntactic structure tree which refers to the hierarchical organization of constituents, represented by the phrase structure rules and tree diagrams; (2) a functional structure (f-structure) that contains the representation of grammatical functions needed in interpreting the sentence in the form of an attribute-value matrix - information from the lexicon and the constituent structure is assembled in the functional structure in LFG; (3) an argument structure (a-structure) that contains syntactic and other information in relation to the generation of sentences (Bresnan, 2001; Niede, 1994; Pienemann cited in Pienemann and Kessler, 2011).

Additionally, Lexical Mapping Theory (LMT) is also a component of LFG that refers to the mapping of a-structure onto f-structure – the specific semantic roles could be interpreted through various grammatical functions. It has been addressed by Pienemann (1998c and 2005) that mature languages should allow for a wider range of relationship between a-structure and f-structure (including passive, topicalization, etc.). Henceforth, the principles under LMT can account for these developmental processes. As SLA starts with a linear relationship between a-structure and f-structure, the change of this linear relationship will require additional processing resources. A good example is given in the English passive voice.

Ex 2.4 Peter sees a dog.
see <experiencer, theme>
SUBJ OBJ

Ex 2.5 A dog is seen by Peter.
seen <experiencer, theme>
Ø SUBJ (ADJ)

adopted from Pienemann (cited in Pienemann and Kessler, 2011: 42)

The difference between the two examples above is that in Ex2.5 the constituent ‘a dog’ that is the OBJ in Ex2.4 is promoted to be the SUBJ, and the constituent ‘Peter’ that is the SUBJ in Ex2.4 is defocused and realized as the ADJ. This identification of functional assignment in grammatical passive constructions requires that the learners

unify information from different sources - the VPs and the NPs - which call for an inter-phrasal process (Kessler, 2008).

LFG posits that natural language utterances are composed of multiple levels of representation that are derived in parallel, rather than in series as claimed in transformational frameworks. Here is a sample representation in LFG of the English sentence -Mary likes John (Hsu, 2009: 14).

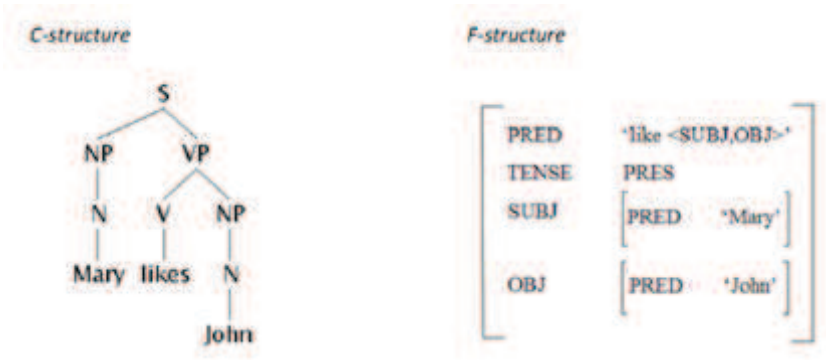


Figure 2.2 The Lexical Construction for 'Mary likes John'

Within the above c-structure, the sentence has been simply distributed in the form of word element; in other words, this structure presents the morphologically complete words in the tree diagram. Within the f-structure matrix, attributes (which are symbols, such as SUBJ, OBJ, TENSE, or PRED) are arranged in the left column while values (which can either be a symbol like PRES or a semantic form in single quotes as in Mary and John) are on the right. F-structure information has been encoded with the lexical entries of the individual elements of the sentence (Hsu, 2009).

In fact, LFG has been employed by a few researchers for various reasons. Levelt (1989) has employed LFG in his Speaking Model in the context of language generation since the feature unification in LFG could help analyze language processing in an incremental way and it is suitable for computation. De Bot (1998) also holds such an opinion that the architecture of LFG coincides with most of the key points related to language processing.

LFG is Levelt's (1989) choice, as it is also Pienemann's (1998c). Pienemann (1998c) has formalized the distinction implementing LFG, which demonstrates the flow of grammatical information in the production of linguistic structures and shows an analysis of the psycholinguistic process of grammatical information exchange.

Simply stated, the reason to utilize LFG to present processing hierarchy is that every processing procedure in the hierarchy can be captured through feature unification in LFG. In other words, feature unification is one of the key concepts that relates LFG to the psycholinguistic concept of language output, reflecting the time-course of real time processing (Levelt, 1989; Pienemann, 2008a). This grammatical relationship is derived exclusively via a hierarchical underlying structure.

The grammatical information exchange, which is the key component of processing hierarchy in PT, can be fully interpreted and identified at the lexical level through feature unification. Also, the language acquisition process can most plausibly be viewed as a lexically driven process. To work on this lexical-driven basis, LFG can incorporate the process of language generation with each lexical item. Therefore, the generated flow of the grammatical information in morphological and syntactic structures could illustrate and model the incremental reality of the language development sequence on the psychological validity (Håkansson, Pienemann and Sayehli, 2002).

Another advantage of choosing LFG in a PT context is: LFG could be applied to a wide range of linguistic phenomena across typologically different languages (Pienemann, 1998c and 2005). PT stages can then be identified and interpreted within each individual language structure.

In short, from a typological point of view, LFG promises to afford a valid application of the PT hierarchy of processing procedures.

2.5 Discussion and Critique of PT

As the basis for L2 profiling, PT has the explanatory merits for the development of lexical entries with grammatical features, phrase structures and morphology in SLA. It could therefore benefit either the language learners or the linguists and teachers in comprehension of the underlying route for the language acquisition. Pienemann (1998c and 2005) has proposed the processing constraints to explain why certain

structures are learned earlier or later. Granted, not everyone holds this view.

Some scholars have claimed that L1 grammar can ‘bulk-transfer’ to L2 and that learners reset the parameters with different values in their L1s (Eubank, 1993; Schwartz and Sprouse, 1994 and 1996). It is termed Full Transfer, Full Access (FT/FA). FT/FA hypothesizes that the initial state of L2 acquisition is the final state of L1 acquisition (Full Transfer) and that failure to assign a representation to input data will force subsequent restructurings, drawing from options of Universal Grammar (UG) (Full Access) (Schwartz and Sprouse, 1996). To be specific, Eubank (1993) has insisted that both lexical and functional categories can be transferred from L1 to L2; while Vainikka and Young-Scholten (1994 and 1996a) believed that transfer is only limited to lexical categories but not functional categories.

However, Pienemann (1998c) has claimed that the above assumption is empirically implausible on the basis of the Developmental Moderated Transfer Hypothesis. The initial state of the L2 does not necessarily equal the final state of the L1, because there is no guarantee that ‘the given L1 structure is processable by the under-developed L2 parser’ (Håkansson, Pienemann and Sayehli, 2002: 250-251). Instead, L1 transfer is constrained by the processability of the given structures.

Håkansson, Pienemann and Sayehli (2002) have looked into the transfer of ‘verb-second’ in Swedish learners of German, which exists in both Swedish and German. Based on FT/FA, these German L2 learners should be able to acquire this ‘verb-second’ structure at the initial stage. However, the results have shown that this structure is not transferred unless the learners have acquired the stage 1 and stage 2 of the processing hierarchy.

It has also been argued that though PT comprises a number of principles of great generality, accounting, in principle, for the acquisition of any structures in a language, the use of the term ‘process’ and the nature of supporting evidence are problematic in PT (Bialystok, 1998; Dyson, 2004; Hulstijn, 1998). The issues of mental representations are not referred to in a clear manner. How does processing work in the brain? Is the learner’s individual brain capacity considered in PT?

In fact, Pienemann (1998a) pointed out that PT does not take the initial state or general learning mechanisms as its point of departure; instead, it argues in terms of processing constraints. Given this feature, PT does not predict that whatever can be processed will be definitely acquired. Indeed, the theory predicts that what cannot be processed will never be acquired. Regarding the processing procedure working in the brain, Pienemann (1998c and 2005) has illustrated its process with Levelt's (1989) Speaking Model. The individual learner's brain capacity has not been taken as a core issue within the processing hierarchy but it should be considered for the future extension of PT.

Furthermore, Hulstijn (1998) has considered that all processing prerequisites in PT except one (perceptual salience) are all formal in nature. Being the only non-formal principle, perceptual salience is to account for the emergence of adverbials at the sentence initial positions. However, a full explanation of SLA should be based on both formal (morphosyntactic) and informational principles, which are to be integrated in a developmental pattern. According to Hulstijn (1998), PT has not entirely succeeded yet in explaining how language learners cope with informational and linguistic demands at various stages of language development.

In fact, the role of non-formal principles, such as allowing semantic-informational and formal principles to compete with each other in different ways at different stages of development, has been investigated and extended in the research collection of Pienemann (2005), from which this issue has been discussed within the Lexical Mapping Theory. In the extended architecture of PT, an additional set of semantic principles has contributed to the formal modeling of levels of processability, namely the mapping of a-structure onto f-structure in Lexical Mapping Theory (Pienemann, 2005).

Another question that has been deliberately addressed: how does application shape development. White (1991) has argued that the performance could not account for competence since it is believed that the performance could be 'cheating' in some cases. Obviously, the foundation of PT is built upon the examination of the learners' use of

languages, which seems to violate White's opinion.

As a matter of fact, the learners' performance has been sketched as a 'real-time use of the grammar in the comprehension and production of utterance' (Hawkins, 2003: 23). From Pienemann's (1998c and 2005) viewpoints, L2 learners progressively annotate the L2 lexicon with grammatical information and build up procedures that can hold this information. The processing architecture develops competence since innate knowledge per se cannot explain features of L2 development. Moreover, Pienemann collected the performance data through the longitudinal as well as cross-sectional studies, which could largely avoid 'cheating' over the time scale.

As for the emergence criterion used in PT, some arguments have occurred and caused intense debates. In the emergence criterion, the emergence frequency of a grammatical structure is not fixed. From the previous research related to PT, some scholars take the emergence criterion as being three times, whereas others take it as four or five times. In this case, it is hard to decide which one is more reliable. If a person has successfully presented one structure in one data clip three times, some researchers may class it as having been acquired, yet others may not, based on the different criteria. In this case, some scholars are in favor of the analytical approach that combines emergence and accuracy (Bardovi-Harlig, 1994 and 2000; Norris and Ortega cited in Doughty and Long, 2005). This combination is more informative than an exclusive focus on emergence or accuracy, which would benefit teachers in assessing the learners' acquisition level.

However, in the PT-based studies, the combination of the emergence criterion with the accuracy criterion could somehow enable the research to be sophisticated and may also result in other unexpected issues, for example, how to link these two criteria at one time. During an informal talk with Professor Pienemann, he has suggested that the point of implementing PT into SLA was mainly to help the learners' acquisition of particular language structures. Even though the learners may be under-evaluated due to the setting of different emergence criteria, they would still benefit when the instructor(s) could reinforce certain grammatical items in lessons.

Another case to challenge PT is carried out by Dewaele and Véronique (2001). They have applied PT to test the agreement in French adjectives with the focus on the accuracy levels in gender assignment, among the French interlanguage of 27 Dutch L1 speakers. Their findings have proved that the accuracy rate for gender agreement in French cannot be reduced due to the variations in data density, non-application of the rules or a different form-function relationship, as Pienemann suggested.

However, firstly, this piece of research was originally not undertaken to fit into a study within PT, as PT does not apply to the concept of language accuracy. Besides, on the basis of Pienemann's (1998c) statement, gender is a lexical feature which should be discussed and acquired for every lexical item. Therefore, it has been stipulated that a learner's ability to transfer grammatical information at the PT levels can be tested only if the gender assignment has been established for every item in the given learners' lexicon. Yet, no explicit information has been provided in this perspective.

In addition, on the basis of a longitudinal study of six ESL learners, Dyson (2004) has investigated the proposals which have been made about variation in stages within the paradigm established by the MM. Dyson's (2004) recent research has generated inconsistent evidence with PT, but this counter-evidence is, in fact, not reliable.

Dyson (2004) has addressed that one of his informants did not acquire the predicted morphology in the proposed trajectory, which falls short in the aspects of productive tokens and contexts. But he has proved that the output of the informants' syntactic structures did follow the predicted route in PT. In this case, the 'problematic issue' occurred in the acquisition of morphology could be interpreted as a variety of causes.

For instance, it could be due to a problem in research design. Dyson's data collection lasted for 10 months with 6 data sessions. Therefore, there is no guarantee that the learners could or could not in fact present certain morphology in between the two data sessions, as Dyson (2004) has stated that the students may meet the acquisition criteria of different stages in the same sample. Also, as indicated in Dyson (2004), no contexts or a lack of contexts could lead to the absence of morphology in

the language production.

Looking at another aspect, Jordan's (2004) evaluation of PT also contains a considerable number of critical points. The key concern of Jordan concentrated on the limited scope of the current format of PT and its hierarchical restriction. Pienemann responded to this issue with an extending theory of processability in Pienemann (2005). Since the original version of PT only presents the language development on the language itself, the whole scope of the extended PT, including the semantic role of the language, has been developed in a wider context.

To summarize, the criticism of PT could provide more explicit ideas for further examination and discussion. Some violated samples discovered in previous PT-based studies should be investigated from a more scientific perspective. Importantly, some of the above critiques have pointed out the weaknesses in PT and thus have stimulated the development of PT in different aspects.

2.6 Context Basis and Exploration for Teachability Hypothesis

In a general sense, teaching is only successful if it activates the learning process in the students' minds. This statement can then be extended by stating that the measure of good teaching is that the students could learn through the instructions; otherwise the teaching has no function. Yet in practice, this fact is frequently ignored by teachers (Cook, 2009), as many believe that good instruction should allow the designed activities to be completed appropriately. These teachers, however, disregard the tangible evidence regarding whether the students have learnt anything (Cook, 2009).

'Thirty years of modern SLA research has repeatedly demonstrated that learners do not acquire grammatical structures or lexical items on demand, or in the order in which they happen to be presented by a teacher or textbook' (Long, 2007: 121), but they do acquire the grammatical structures in the same or a similar sequence, regardless of instructions, pedagogic focus or learnability (Ellis, 1990; Hyltenstam and Pienemann, 1985; Lightbown, 1985; Nunan, 1987; Pienemann, 1984). In this case, could instructions make any difference to learning? It seems that formal instructions may have little effect on language acquisition. However, that is not the case.

In the early 1980s, a crucial assumption was made that languages are teachable and that linguistic structures can be taught in many different orders, which was seen as the right direction in language acquisition for a long time. Pienemann (cited in Pfaff, 1986), along with other researchers, have found evidence which to some extent goes against this assumption. Pienemann (1989) has claimed that a new language structure is only teachable through explicit instructions when the learner's natural processing mechanisms are ready to receive it. Otherwise, if the learner's natural mechanisms are not yet ready, explicit teaching and practice will be ineffective on acquisition (Littlewood, 1992).

Accordingly, Pienemann (1984, 1985 and 1989) has formulated a 'Teachability Hypothesis' based on the psycholinguistic concerns in SLA. The Teachability Hypothesis does suggest that the instruction and course design should follow the sequences of learners' natural acquisition to benefit the L2 learners, but with the consideration of learnability issues (Littlewood, 1992).

2.6.1 Learnability Issue

It is the common sense that language learners could easily acquire simpler constructions preceding a complex one under the adequate exposure to the input knowledge (De Villiers and De Villiers, 1979). As for the L2 learners, the learnable constructions are usually considered to be simple. Therefore, responding to the question 'what is learnable?' It is suggested that the Learnability Theory has attempted to provide an explicit answer to the logical problem of language acquisition and specifies how a learner develops from an initial state to the target grammar with the mental device, on the basis of exposure to evidence in the target language (Pienemann and Håkansson, 1999).

In fact, L2 learners usually confronted the same problem as the one posed for L1 acquisition: the input data does not seem sufficiently informative to allow learners to work out the complexities of the target language (Yip, 1995). The available and adequate input then positions a very important role to allow learners to process and

produce the L2; however, what does 'adequate input' mean? Krashen (1985) has proposed a Natural Order Hypothesis and suggested that the adequate input is the comprehensible input which is at the stage of 'i'+1. Unfortunately, this is such a simple and blurred explanation which ignores the development origins constrained by the architecture of human language processing. Therefore, it becomes crucial to explore a more learnable syllabus and to design learnable materials for L2 learners.

Pienemann then proposed a theory which adds the Learnability Theory to the perspective of processability. Processability Theory is such a theory which explains the developmental process and processability of the language development with respect to learnability (Pienemann, 1998b). In other words, learnability has claimed that the L2 learners follow a certain logical route towards the target language and the processability has comprehensively explained what the route is.

Why are certain aspects of an L2 more difficult to acquire than others? What sets of linguistic strings are learnable? What are the predictable sequences of these learnable linguistic items processed by learners? Should teachers teach these learnable items and if so, what should be taught? PT aims to resolve these issues with the determined sequence in which procedural skills develop. On this basis, the concern of teachability has been built on as one of the extensions of learnability and processability.

2.6.2 Exploration of the Teachability Hypothesis

Based on several studies done in SLA, Nunan (cited in Nunan, 1987) has proved that there is a predetermined order of acquisition for certain grammatical morphemes, but the input that the learners received from the naturalistic settings and/or the classrooms may not appear to have any great influence on the development of these morphemes. Johnston (1987), and Towell and Hawkins (1994) have also confirmed that the underlying process of acquisition is independent of the order in which rules are taught in classes.

Håkansson (2002) has then pointed out that the teaching syllabus sometimes mismatches the learners' capacity for learning. Some teaching materials are unable to

relate explicit instructions to the build-up knowledge of the language system, and then relate the instructions to the creation of linguistic competence (Towell and Hawkins, 1994; Hawkins, 2003). Therefore, Pienemann (cited in Hyltenstam and Pienemann, 1985) has introduced the principles of syllabus construction that (1) new structures should build on previous ones; (2) simple structures should be taught before complex ones; and 3) interaction between grammatical structures should allow the expected structures to be introduced naturally. However, there are various measures to define what simple is and what should be introduced straight after the old structures (Pienemann, 1998b). Therefore, these basic principles remain ambiguous in teaching.

From the beginning of 1980s, Pienemann and his colleagues started to propose an interesting explanation, termed as the Teachability Hypothesis, for the disparity between instruction and acquisition, in terms of a discussion of the language processing constraints (Nicholas, 1985; Pienemann, 1985). Corder (1981: 77) has already addressed that 'effective language teaching must work with, rather than against, natural processes, facilitate and expedite rather than impede learning'. Accordingly, Pienemann (1984, 1985 and 1989) has claimed that learners should be taught what can be processed and is therefore learnable on the basis of the universal processing route.

Theoretically, the Teachability Hypothesis was tested in a classroom study (Pienemann, 1984) in which ten Italian-speaking children learnt German L2 at the developmental levels ranging from X (a certain developmental stage) to X+2. All these participants were instructed to learn structures of X+3. In the end, the research results showed that only the participants whose current language was at stage X+2 could possibly acquire the structures of X+3, which indicated that the processing prerequisite for the structures of X+3 is the acquisition of stage X+2. Similarly, X+2 cannot be introduced without processing the structures at stage X+1 (Kawaguchi, 2005c).

This study has proved that the constraint in language development could not be overridden by any type of input or instructions (Clahsen, 1984; Pienemann, 1984). In

relation to PT, the Teachability Hypothesis has further predicted that stages of SLA cannot be skipped nor altered through teaching intervention, because of the cumulative nature of the processing strategies. In other words, the intervention of language teaching should be constrained by ‘teachers’ judgments as to the potential target forms’ learnability (hence teachability)’ (Long, 2007: 123).

Learners cannot run before they can walk. It has accentuated the fact that a given construction will effectively allow the learners to benefit from teaching only when the learners are ‘well-prepared’ (Smith, 1994). As Pienemann (1998c) has concluded, only if the learner has reached the stage where he/she is ready to work in his or her linguistic system will the instruction have an effect on acquisition. Therefore, according to the processing hierarchy and the learner’s psychological constraints, the teaching sequence is required to ally with the order of acquisition.

In fact, the Teachability Hypothesis has provided the order of the presentation of the structural contents, i.e. what grammatical items to teach and when. Following this hypothesis, grammatical ‘items can only be learned when they are one stage ahead of a learner’s present processing capacity’ (Nunan, 1987: 89). Consequently, the teaching contents should be better structured and should fit in to reflect the developmental stages, since the instruction normally attempts to promote the L2 development (Pienemann cited in Hyltenstam and Pienemann, 1985; Smith, 1994).

Berti and Di Biase (2002) have conducted a study to verify the efficacy of form-focused instruction in L2 teaching when the grammatical items to be focused upon are decided on the basis of the learners’ developmental stages. Interestingly, learners in Berti and Di Biase’s study were able to move from stage 1 to stage 3 in 18 weeks following the form-focused instruction under the umbrella of PT. Notwithstanding that the Teachability Hypothesis constrains the possible influence of instruction on the acquisition process; it does not negotiate its influence on the speed of acquisition, the frequency of rule application and the different contexts in which the rule has to be applied, wherever the interlanguage development fulfills the requirements for such an influence (Pienemann cited in Pfaff, 1986).

It is seen that formal instruction can advance language acquisition when the learner is developmentally ready for a particular structure (which is evident from a number of experiments and longitudinal and cross-sectional studies (Pienemann, 1998c; Kawaguchi, 2005c)). However, research has shown that learners need to ‘build up all processing strategies in a lockstep fashion, but the presence of all processing procedures does not guarantee that the structure will emerge at that point’ (Pienemann, 1998c: 251). In other words, the Teachability Hypothesis defines constraints on teachability which do not predict sufficient conditions for teaching to be successful. Therefore, from this perspective, one can easily agree with the view that the same input may have an effect on one learner but not on another.

In addition, the delayed effect of the instruction could also occur with a diversity of explanations, ‘among [which] are frequency related features of classroom discourse (Ellis, 1984), the difference between input and intake (Krashen, 1981 and 1989), the psycholinguistic constraints on speech processing and teachability (Pienemann, 1984, 1989, and 1998c)’ (Zhang, 2002b: 36).

As a consequence, the explanatory power of the Teachability Hypothesis is based on the hierarchical nature of the processability hierarchy. Given that every processing procedure in that hierarchy forms a key prerequisite for the next stage higher, none of the stages/prerequisites can be skipped through instruction. In other words, the effect of teaching is constrained by processability. Besides, the limits on the effects of instruction on SLA should be observed and analyzed to be incorporated into PT.

2.6.3 Challenges of the Teachability Hypothesis

Do we need a formal structural syllabus? How should it be constructed? Is grammar best taught implicitly or explicitly? Should there be a focus on form, and when should it occur in the overall curriculum? Which forms are amendable to a focus on form? Are some forms resistant to a focus on form? Can tasks and techniques be designed during which problematic forms are likely to arise, so that an opportunity to focus on form occurs only if a learner asks for it?

Some years ago, Krashen (1985) has claimed that teaching has a minimal effect on acquisition. He (1985: 35) has demonstrated that ‘not all the research literature concludes that language teaching is good for SLA’. In all cases, the Teachability Hypothesis may not be effective, since students have a rich source of comprehensible input outside the classroom which they can take advantage of. In addition, even though the appropriate instruction could accelerate learning, some research results suggest the contrary - that premature instruction can actually be harmful, and not just ineffective (Boss, 1996; Johnston, 1987). The Teachability Hypothesis does not imply an alternative teaching method or provide explicit help to teachers to make choices about what structures to present and what errors to correct in terms of the premature input.

Even though ‘practice does not make perfect in language learning because neither teaching nor practice can beat the natural order of acquisition’ (Pienemann, 2008a), appropriate instructions constrained by processability could have a positive influence on L2 learners’ language acquisition, as proposed by the Teachability Hypothesis. Pienemann cited in Pfaff (1986: 162) has suggested that ‘in order to develop psychologically founded language teaching methods, it will be necessary to more closely investigate the process of transmission of rational knowledge to the unconscious system of language processing’. Thus, the blind point – the potential negative effects from premature input – probably could be ‘swept away’.

Moreover, the recent research in PT has applied the Teachability Hypothesis to error correction. Kessler et al. (cited in Pienemann and Kessler, 2011: 153) have concluded that ‘not all learner errors should be treated in the same way’ as there are developmental errors and variational errors. Developmental errors occur since the learners could not process the input in the current state of interlanguage development while the variational errors are due to the choices made by the learners when they try to solve the developmental problems. In this case, if the learners are not ready to process the grammatical structures at certain stage, correcting their developmental errors could not lead to any success in the acquisition process. However, ‘not

correcting variational errors may lead to a simplified variety in interlanguage development, which may result in stabilization' in language acquisition (Kessler et al. cited in Pienemann and Kessler, 2011: 154).

In addition, the Teachability Hypothesis completely rules out the possibility that a learner could have the chance to beat the acquisition order of a given language (Johnston, 1987). In fact, some examples in previous studies have already shown that 'exceptional cases' do exist, due to unconfirmed reasons.

In conclusion, even though Pienemann's ideas on teachability offer the teacher 'more hope to actively assist the learning process' (Smith, 1994: 118), as it currently stands, the Teachability Hypothesis should be built up strongly with more experiments and research evidence to prove its generalization.

2.7 Summary

The description of the fundamental issues of the language processing and development in this chapter has provided the required concepts in the Processability Theory, from fundamental studies, through the empirical basis, and then to the Lexical Functional Grammar. The fundamental research contributing to the founding of PT has been paid more attention, due to the fact that it is important to know what is inclusive in the processability hierarchy. Besides, the theoretical and empirical support explains how the L2 learners move towards the target languages; while the LFG could present the process of the movement of the lexical items explicitly.

Basically, Processability Theory (which is a psychologically plausible grammatical model) involves the psycholinguistic processes in the acquisition of a language. It hypothesizes different approaches, from lexical entries to syntactic structures, along the lexical-grammatical continuum. It is stated by Pienemann (1998c and 2005) that the key idea behind PT is that language acquisition is constrained by language processing. The processing procedure is incremental and its components operate largely automatically, which could not be consciously controlled.

The implicational hierarchy underlying PT has suggested that learners must

develop procedures in a predetermined sequence over time in order to use their implicit systems for production in communicative contexts. Pienemann posits further that the processing devices will be acquired only if the learners have acquired the necessary processing prerequisites in the production process (VanPatten, 1996 and 2003).

In addition, PT affords a new perspective on how a learner acquires the language and how a teacher teaches the language based on the prerequisite knowledge and natural acquisition orders. In one sense, PT provides a wider theoretical context for the 'Teachability Hypothesis'. The danger of some teaching approaches ignores the learners' mental architecture of the language processor and the central psychological mechanisms. The Teachability Hypothesis, built upon learnability issues, has then provided thoroughly information in these aspects. The inclusion of language processing in a syllabus does guarantee that it is in accordance with the principles which underlie the learner's own reconstruction of the target language (Pienemann, 1995). Without a doubt, the drawbacks of the Teachability Hypothesis should also be significantly investigated against the counter-evidence.

Generally speaking, the Processability Theory, building on LFG, learnability, interlanguage dynamics and relevant models, explains and predicts the sequential acquisition process of a second language as a result of the hierarchically-ordered development of the processing procedures. It enables a clearer view of morphosyntactic development and variation. Apart from that, the Teachability Hypothesis, added on PT, allows the teacher to comprehend what structures to teach and how to avoid ineffective structural teaching objectives.

According to these theoretical rationales and previous research, my study is going to contribute to the PT application in acquiring Chinese as a second language at the morphosyntactic level; therefore, the next chapter will discuss the relevant features in the Chinese language.

Chapter 3 Chinese: A Review

Chinese is one of the most isolating languages in the world, with the largest number of native speakers. It is isolating because the morphological or syntactic markers rarely appear in a Chinese sentence and the Chinese language appears with few inflections (Yip and Rimmington, 1997). Chinese is divided into eight major dialects, among which the official language of media, government, and education in the People's Republic of China is known as PuTongHua, or modern Standard Chinese (in this study it has been simply called Chinese) (Yip and Rimmington, 1997; Yip, 1995). In Chinese, the written Romanization system (phonetic alphabet), called *PinYin*, was officially adopted for pronunciation (Li and Thompson, 1976, cited in Bodomo and Luke, 2003).

Compared with other western language systems, such as Germanic languages, Chinese has no gender, no number, no case markings, no agreement markings (complete absence of agreement phenomena) and no tense suffixes (Li et al. cited in Chen and Tzeng, 1992). For instance, time reference is represented lexically (e.g. 'san nian hou' as *three years later*), or with aspect marking (*-zhe, -le, -guo* in Chinese). Also, the grammatical agreement through morphological markings, such as the subject-verb agreement in English, is absent in Chinese (Zhang, 2001 and 2002a). In the aspect of syntax, Chinese permits several pragmatically conditioned word order variations that would be unacceptable and ungrammatical in English, including SOV, OSV, and VOS. The canonical order SVO in Chinese is frequently permuted in spoken discourse where the object and the other constituents are usually placed at the front (Zhang, 2005).

In addition, there is a tendency towards an omission of constituents at both sentence and discourse levels, if they can be inferred from the contexts. This omission includes not only subject and object arguments, but also predicates and other heads of phrases, in some cases (Guo et al., 2007; Lu et al., 2001). As a typical pro-drop language (abbreviated from pronoun-dropping), Chinese is a language where pronouns can be elided or deleted when considered unnecessary or redundant by the speakers (Li and

Thompson, 1981; Lu et al., 2001). The other features of Chinese in the area of syntax will be discussed in the following sections.

According to the general description of the importance and the features of Chinese, in this chapter, I am going to illustrate Chinese language only in some typical grammatical morphemes and syntactic aspects, in terms of processing concerns and developmental considerations, from the language-specific point of view.

3.1 Nouns and Classifiers

Nouns in Chinese do not change for number or for case. For example, the pronoun ‘wo’ in ‘wo xihuan xuexi’ (as *I like studying*) and in ‘mama da le wo’ (as *Mum beat me*) has no change in case marking, as in subject and object. Differently in English, ‘me’ and ‘I’ indicates different cases as object and subject. To be precise, contexts determine the case of the noun in Chinese, while syntax determines the case in English.

An unqualified noun therefore can be singular or plural in different contexts. The plural is not marked through lexical means but sometimes through the plural marker *-men*. Then numerals are placed before the nouns to specify the number (Yip and Rimmington, 1997). For instance, the number ‘san’ (as *three*) in ‘san ben shu’ (as *three books*) is placed before the noun ‘book’ (as *shu*) to indicate its number. Between the number and the noun, a classifier is placed to specify the category of the noun, as ‘ben’.

Norman (1991) has already highlighted that one of the most distinctive characteristics of Chinese is the use of classifiers. As a grammatical class, an appropriate classifier is normally used in conjunction with numerals or demonstrative pronouns to count things or persons, or to indicate the frequency of actions (Guo et al., 2007). There is a general classifier *-ge*, but most classifier words are specific to particular nouns or probably some sets of nouns (Norman, 1991; Yip and Rimmington, 2004; Li and Thompson, 1976 cited in Bodomo and Luke, 2003; Chao, 1968). In the following example, Ex3.1, it is seen that *-zhang* is a classifier for the pancake. To explain this example in detail, Ex3.1a has illustrated the simplified lexical entries of

this classifier example with feature unification, which ensures that this NP is well-formed. Since the features are unified in each entry, if any value of the lexical items changes, the feature unification process would be thereafter held back and the NP itself would be marked as an ungrammatical item.

Ex 3.1 san zhang bing
 three CL pancakes
three pancakes

Ex 3.1a san: DET, (SPEC) = ‘SAN’ (three)
 zhang: CL, (NUM) = +
 (SHAPE) = PIECE, FLAT AND THIN
 (HUMAN) = -
 bing: N, (PRED) = ‘BING’ (pancakes)
 (NUM) = +
 (SHAPE) = PIECE, FLAT AND THIN
 (HUMAN) = -

In this instance, a number of features in the lexical entries of the NP ‘san zhang bing’ (as *three pancakes*) have been demonstrated. The numeral feature is present in all three entries: *san* is to present the number directly; *zhang* as a classifier indicates the shape of the object while the object *bing* also holds the numeral feature. In addition, the minus value for HUMAN is unified in the classifier *zhang* and the noun *bing*.

However, sometimes classifiers may seem to be missing in certain NPs. One possibility is that the noun itself may be a classifier (Yip and Rimmington, 2004), for example, ‘yi fenzhong’ (as *one minute*). ‘fenzhong’ means ‘minute’ in English and simultaneously it also holds the classifying property. Another situation, where a classifier seems to be missing, is in quadrisyllabic expressions and established idioms (Yip and Rimmington, 2004), such as the Chinese idiom ‘yi ye zhang mu’ (as *one leaf blocks your eyes*). In this established idiom, the classifier for ‘ye (as *leaf*)’ is missing and it left the number and the noun.

3.2 –de in Chinese

Nouns in Chinese may form morphosyntactic relationships with other grammatical categories, such as adjectives. The grammatical feature which marks the relevant

word classes as adjectives is *-de*. The marker *-de* can be categorized as:

(a) an attributive, indicating the attribution of the focused nouns, such as in ‘diannaο (*computer*) -de shijie (*world*)’ OR ‘diannaο shijie’ (as *computer world*)’

(b) a modification to be applied as an adjective with or without *-de* in ‘xin (*new*) -de shu (*book*)’ OR ‘xinshu’ (as *new books*)

(c) a possessive or genitive indication of possession with or without *-de* in ‘wo (*I*) -de mama (*mother*)’ OR ‘wo mama’ (as *my mother*) (Yip and Rimmington, 2004).

In general, two features of the Chinese attributive words can be observed. Firstly, Chinese is a left-branching language, so the attributive word almost always precedes the noun it modifies. Secondly, the marker *-de* is regularly placed between the attributive word and the noun, which marks the preceding phrase as a modifier of an NP (Yip and Rimmington, 2004; Chao, 1968).

3.2.1 *-de* (POSS)

The earliest use of *-de* (to compare with other kinds of *-de*) is very common with possessives, as in ‘wo-*de*’ (*my*). According to Zhang’s (2001) research, the possessive suffix *-de* can be categorized into four groups:

(a) pronominal, such as in

wo-de mama
wo-POSS mama
my mother

(b) *-de* deletion in ‘pronominal + kinship terms’, such as in

wo (X) mama
I (X) mother
my mother

(c) single noun (*-de* cannot be deleted), such as in

laoshi-de mama
laoshi-POSS mama
teacher’s mother.

(d) noun phrase, such as in

laoshi-de nüer-de shu
laoshi-POSS daughter-POSS shu
teacher’s daughter’s book.

Based on the four different occurrences of possessive *-de*, the pronominal situation (a) is considered with its deletion situation (b). *-de* could only be omitted in an NP as

it is used with the ‘pronominal + kinship terms’ in Chinese. Moreover, in the situation of a single noun and the NP, the possessive *-de* should emerge to mark the lexical variation in the acquisition process. Among the four situations above, the morpheme *-de* serve as a suffix in the grammatical phrase formation (Li and Thompson, 1976, cited in Bodomo and Luke, 2003). For instance, in the following Ex3.2 and Ex3.2a, *-de* is served as the suffix which marks the possessive status of the agent ‘wanju’ (as *toy*).

Ex3.2 wo *-de* wanju
 I POSS toy
my toys

Ex3.2a wo-*de*: N, (AGENT) = +
 (POSS) = +
 wanju: N, (AGENT) = +

3.2.2 *-de* (ATT)

-de (ATT) is an attributive suffix, marking the focused noun as a modifier or marking the property of the head noun, as in Ex3.3: the house is made of wood, and *-de* is to mark the attributiveness (wooden) of the house.

Ex3.3 mutou *-de* fangzi
 wood ATT house
a wooden house

Ex3.4 zhongguo *-de* daxue
 China ATT/POSS university
Chinese university

Ex3.4a zhongguo *-de* N, (AGENT) = +
 (POSS) = +
 (LOC) = +
 (ATT) = +
 daxue N, (AGENT) = +

The above examples Ex3.4 and Ex3.4a are presented with LFG to functionally explain the attributive marker *-de* in the NP; all functions could be presented in the same lexical entry. It can be seen that in this lexical entry there is no information exchange required between the modifier (*zhongguo*) and the modified (*daxue*) to

correctly express this NP.

3.2.3 *-de* (ADJ)

From the perspective of language acquisition sequence, Zhang (2001) has observed three Chinese L2 learners in the university, where she found that *-de* (ADJ) as a lexical morpheme, emerged much later than the other two morphemes in learners' interlanguage. In the traditional analysis, the adjective suffix *-de* is usually treated as a marker of an NP (Chao, 1968) or a nominalizer (Li and Thompson, 1981) which indicates that the adjective suffix *-de* exists within an NP.

There are two types of adjective in Chinese: a) adjectives are mainly monosyllabic and allow *-de* (ADJ) to occur optionally when they are placed between the nouns and modifiers to form an NP, as in Ex3.5; b) adjectives are largely polysyllabic (it means that the qualifier is of two or more syllables), and *-de* (ADJ) has to be used in an NP (Yip and Rimmington, 1997). This group could be subcategorized as Ex3.6 which is derived from monosyllabic adjectives through the addition of an adverb; as in Ex3.6a the adjective is polysyllabic.

Ex 3.5 monosyllabic
da -de qiqiu OR da qiqiu
big ADJ balloon
big balloon

Ex 3.6 adverb (adj.)+ monosyllabic
hen da -de qiqiu
very big ADJ balloon
very big balloon

Ex 3.6a polysyllabic
piaoliang -de qiqiu
pretty ADJ balloon
pretty balloon

However, some exceptions need to be labeled. In some set phrases in Chinese, such as idioms, even though the modifiers are of more than two syllables, *-de* still has to be deleted.

3.2.4 V-de

-de also exists with verbs in Chinese. The description of the action is always marked by *V-de*, hence the following lexical items, usually adverbs, called a post-verbal modifier or complement. In the example of Ex3.7, the verb ‘*zou*’ has two arguments, subject and verb-complement as shown in Ex3.7a. This subcategorization is changed by the suffix *-de* (COMP), which marks the verb ‘*zou*’ featuring these two arguments:

Ex 3.7 ta *zou-de* hen man.
 He walk-V-COMP very slowly.
He walks very slowly.

Ex 3.7a *zou-de*: V, PRED = ‘ZOU-DE <(SUBJ)(V-COMP)>’

Ex 3.7b SUBJ | [PRED ‘TA’]
 | PRED [‘ZOU-DE <(SUBJ) (V-COMP)’]
 | V-COMP [PRED ‘MAN’] |

In addition, Ex3.7b has functionally and noticeably illustrated the relations of each lexical item in Ex3.7. The existence of V-COMP ‘man’ (*slowly*) is due to the subcategorization of *V-de* which requires it – the V-COMP is then the feature of this *V-de*.

3.2.5 Missing -de

As discussed in the three grammatical morpheme types of *-de* in the NPs (*-de* in VPs could not be omitted), sometimes, *-de* is optionally present. To sum up the situations discussed above, the following three items demonstrate when the morpheme *-de* is not necessarily required:

(a) When nominal constituents sometimes serve as attributives to form established expressions by being placed in front of the qualified head nouns, such as in ‘lengshui zao’ (as *cold-water shower*), *-de* is deleted (Yip and Rimmington, 1997). Besides, as with numerals and classifiers, demonstrative expressions do not require *-de* when they are associated with the head noun directly (Yip and Rimmington, 2004).

(b) Pronouns used in the possessive forms allow head nouns with or without *-de* (as

in the phrase *my mother* which could be either *wo-de mama*, or *wo mama*). Chao (1968) and Yip and Rimmington (2004) have highlighted that the presence of *-de* in this case usually depends on the intimacy of the association or on the rhythm of the utterances.

(c) Monosyllabic adjectives as seen in Ex3.5, and certain nouns referring to geographical entities, as seen in ‘zhongguo ren’ (as *Chinese people*), can normally modify nouns without an intervening *-de*. Chao (1968) has considered such combinations without *-de* as quasi-compounds, that is, more like words than phrases.

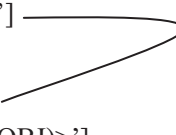
However, when monosyllabic adjectives are modified by degree adverbs, *-de* is necessarily present, such as in: ‘hen da de fangzi’ (as *very big house*) (Yip and Rimmington, 2004).

3.2.6 *de* (RC)

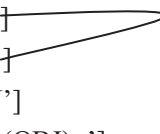
Different from English, Chinese is based on left-branching construction (Erbaugh cited in Slobin, 1997a). Therefore, the modifiers should be placed before the modified constituents. According to Chao (1968), consistent with the ‘modifier-modified’ word order in the NPs, the descriptive clause in a Chinese relative clause is also placed preceding the head noun. As mentioned by many researchers, a relative clause in Chinese must be attached to the modification marker *de* (Cheng and Huang, 1996; Chien cited in Chen and Tzeng 1992; Norman, 1991). The morpheme *de* is then to be placed between the two constituents to mark the relative clause.

In the example below, Ex3.8a, ‘qian’ (as *money*) is the head noun, while in Ex3.8b, ‘ren’ (as *person*) is the head noun. In Ex3.8a-1, it can be seen that ‘qian’ is supposed to be the direct object of the action ‘gei’ (as *give*) which is in fact moved after the marker *de* (RC). As shown in the f-structure analysis in Ex3.8a-1 and Ex3.8b-1, ‘qian’ is the object of ‘gei’ in Ex3.8a-1, but ‘ren’ becomes the object of ‘gei’ in E3.8b-1.

Ex 3.8a ni gei ____ de qian hen duo.
 you give RC money very many
 The money that you gave is quite a lot.

Ex 3.8a-1	FOCUS	[PRED ‘QIAN’]	
	SUBJ	[PRED ‘NI’]	
	OBJ	[]	
	PRED	[‘GEI<(SUBJ)(OBJ)>’]	

Ex 3.8b *gei qian* *de* *ren* *shi* *ni*.
 give money RC person is you
 The person who gave the money is you.

Ex 3.8b-1	FOCUS	[PRED ‘REN’]	
	SUBJ	[]	
	OBJ	[PRED ‘QIAN’]	
	PRED	[‘GEI<(SUBJ)(OBJ)>’]	

In general, compared with *-de* (ATT), *-de* (ADJ) and *-de* (POSS) marking the relationship in the NPs at the lexical level, *de* (RC) marks the relationship between the constituents at the inter-phrasal aspect.

3.3 Progressive Markers *zai-/zhengzai-* and *-zhe*

Chinese is a tenseless language (Lin, 2003; Norman, 1991). In Chinese, the tense is not marked by the inflection of the verbs; instead, it is marked by its aspects, such as *-zhe*, *-le*, *-guo*, *zai-/zhengzai-* or by the time-referenced vocabulary. Therefore, the manipulation of the time-referenced words and aspects aims at creating tenses in Chinese. From one point of view, the constituents indicating time, or time period, could be placed in the utterance to present different tenses. For example, if ‘*zuotian*’ (as *yesterday*) is inserted in a sentence, the sentence should be in the past tense, without changing the form of the verb. Alternatively, certain aspect markers should be attached with the verbs in the sentences to indicate tenses (Jin and Hendriks, n.d.; Li and Thompson, 1976 cited in Bodomo and Luke, 2003).

In a variety of aspect markers in Chinese, actions can be shown to be durative in several ways; perhaps the most common way nowadays is to place an aspect marker before the verbs in the utterances. As in Ex3.9, *zhengzai-* as a progressive marker has been placed before the verb ‘*chi*’ (as *eat*) and marked the sentence to be a progressive tense.

Ex3.9 tamen qidianzhong *zhengzai-* chifan.
 they 7 o'clock PROG eat food
They are/were eating at 7 o'clock.

In the example of Ex3.9, the information of the grammatical aspect is encoded in the lexical entry of the verb ‘chi’, which indicates the progressive tense for the action. The functional analysis of the lexical entry of action ‘chi’ is displayed in Ex3.9a:

Ex3.9a [zhengzai- chi] V
 PROG eat
eating
 zhengzai-chi: V, [(PRED) ‘CHI <(SUBJ) (OBJECT)>’]
 [(ASP) PROG]

zhengzai-, sometimes shortened as *zai-*, is often considered as the progressive marker in Chinese. It presents an internal interval of a durative event (an event lasts for a period of time); alternatively, it can refer to continuing or persistent ‘action in progress’ as in Ex3.9 (Jin and Hendriks, n.d.).

Another, somewhat less common, progressive form is the durative aspect suffix *-zhe*, which can only be applied to a few groups of verbs, such as to see, to eat, and to hear. Unlike *zhengzai-* appearing before the verbs, *-zhe* appears after the verbs, which is used to turn the action verbs into stative verbs: ‘kan dianshi’ (as *watch TV*) and ‘kan *-zhe* dianshi’ (as *is watching TV*). *-zhe* indicates the manner of existence, state of action or accompanying manner (Li, 1990; Lee, 1996; Norman, 1991; Yip and Rimmington, 1997).

3.4 Experiential/Perfective Markers *-le* and *-guo*

As stated above, Chinese has no tense changes on verbs. ‘Event time is marked by timing adverbs under contexts’ (Erbaugh cited in Slobin, 1997a: 387). However, it is not necessary to have a relevant context but it is necessary to have a tense marker in Chinese. It can be seen that whether or not the progressive or the experiential marker is used in a sentence, is a matter of how the action or event is viewed, or experienced, by the speakers.

In order to indicate past tense in a Chinese utterance with no changes on verbs, and to present the speakers’ viewpoints, the aspect markers *-le* or *-guo* should be attached

to the verbs in the utterances.

Ex 3.10 ni chi-*le* fan zai qu ba.
you eat-PERF food then go PCL.
Go after you ate.

(Norman, 1991: 163)

This example shows that the verbal suffix *-le* refers to the past tense in the sentence. In order to make a comparison with example Ex3.9 and Ex3.9a, the lexical entry of Ex3.10 is illustrated functionally, as in Ex3.10a.

Ex 3.10a [chi-*le*] V
eat EXP
ate/have eaten
chi-*le*: V, [(PRED) 'CHI <(SUBJECT) (OBJECT)>']
[(ASP) EXP]

In the example Ex3.10, the aspect marker *-le* indicates the completion of the action 'chi (as *eat*)'. The notion of completion indicated here is naturally associated with the fact that something has already taken place (Yip and Rimmington, 2004).

Grammatically, *-le* can appear in verb-final (VF-*le*), sentence-final (SF-*le*), and both verb-final and sentence-final (VF/SF-*le*) positions (Jin and Hendriks, n.d.). Chao (1968) speculated that the difference between VF-*le* and SF-*le* is that SF-*le* relates that past event to the present - similar to the English present perfect. When *-le* follows a verb phrase at the end of a sentence, it often functions both as aspect marker, indicating a completed action, and as a sentence particle (Li and Thompson 1981; Yip and Rimmington, 1997; Smith, 1997; Zhu, 1982).

The aspect morpheme *-guo* is another experiential marker. It simply means 'having the experience of doing something'. The verbal aspect suffix *-guo* denotes that an action is a prior occurrence of an event within a defined period of time and is discontinued into the present (Hawkins and Liszka cited in Hout, 2003; Jin and Hendriks, n.d.; Parkard, 2000; Yip and Rimmington, 1997).

As we explored above, Chinese words have few inflectional morphemes indicating categories such as tense and number of the subject or object for verbs, or categories such as gender and case for nouns. In the following sections, features at the syntactic level in Chinese will be the major focus.

3.5 Topicalization

A topic is recognized as the phrase in a discourse, that the rest of the discourse is understood to be about, by interlocutors (Chao, 1968). The remaining part of the sentence functions as a comment to interpret the topic. Hawkins (2003: 210-211) has claimed that ‘topic construction involves the highlighting or foregrounding of a particular constituent which is already known from the discourse or context of utterance, and then using the rest of the sentence to say something about it’.

Chinese marks such a discourse role as topic-prominence, in which the emphasis of the utterance is placed on the topic or the focus of a sentence. The topic constituent is positioned at the initial place, thus accounting for topicalization. One of the syntactic features in Chinese language is the greater use of topicalization (Chao, 1968).

In word-order typology, similar to the English language, the unmarked word order for Chinese follows the canonical principle of SVO (Hawkins, 2003; Huang, 1982); however, there are other word order variations: OSV, SOV (or (S)OV) and OVS (Li et al. cited in Chen and Tzeng, 1992). The OSV and OVS aim to emphasize the object of the sentence. In SOV, the object is definite, which suggests a particular object, and is usually preceded by *ba*. The examples of these syntactic structures are as follows:

(a) SVO: Wo mai *-le* yi ben shu.
I buy EXP (ASP) one CL book.
I bought one book.

(b) OSV: Shu, wo mai *-le*.
Book, I buy EXP.
The book, I bought it.

(c) SOV: Wo ba shu mai *-le*.
I *ba* book buy EXP.
I bought the book.

(S)OV: shu mai *-le*.
book buy EXP.
The book is bought.

(d) VOS: Mai *-le* shu, wo.
buy EXP book, I.
I bought the book.

In topicalization structures, the focus of attention of a certain utterance is moved as the topicalized element, as shown below (Teng, 2007):

Ex 3.11 Zhe ben shu, wo bu zhidao.
This CL book, I not know.
This book, I do not know.

In the above case, Ex3.11, ‘zhe ben shu’ is actually the object of the main utterance ‘wo bu zhidao’, which has been moved to the topic position of this sentence, to draw the attention and/or to emphasize its importance. In fact, the topic of a sentence is the main theme that the sentence includes. Any element which exists at the beginning of a sentence could be seen as a topic. Almost any constituent can serve as a topic in a sentence in Chinese. Thus, both SOV and OSV are legitimate orders and are frequently used in Chinese (Su, 2001).

On the linguistic basis, two views have been held. One group insists that the topic is actually inserted, while the others believe that the topic is moved. In either way, the topic must appear at the very beginning of the sentence. Therefore, time and place could be the topic, as long as they are placed at the beginning of a sentence at the ‘topic’ position.

Ex 3.12 zuotian xue xia de hen da.
Yesterday, snow drop V-de very big.
Yesterday, there was heavy snow.

In this example, ‘zuotian’ as a time adverb has been placed at the front of the sentence, thus functioning as the topic. Moreover, sometimes, the topic of a sentence is a set or a domain which is called a dangling topic, such as in Ex3.13:

Ex 3.13 shuiguo, ta xihuan pingguo.
Fruit, he like apple.
For fruit, he likes apples.

The topic in this example is ‘shuiguo’ which functions as the domain of the actual object ‘pingguo’ discussed in the comment clause.

Apart from that, it is also the case that a sentence sometimes has both a subject and a topic, or, the topic could be the subject in some cases. When both a topic and a subject appear in a sentence, the topic is assigned at the beginning of any constituents in such a sentence, obviously before the subject. Erbaugh (cited in Slobin, 1997a: 392) offered an example, such as:

Ex 3.14 mugua, zhexie dou lan diao le.
Papaya, these all rotted away EXP.
All of these papayas are rotted.

In this case, ‘mugua’ is the actual topic positioned ahead of the subject ‘zhexie’, even though they both indicate the same item ‘mugua’. The following two examples Ex3.15 and Ex3.15a stand for another two different but usual types of topicalized sentences.

Ex 3.15 zhe ge dongxi, wo bu xihuan (X).
This CL thing, I not like.
I don't like this (thing).

The topic is co-indexed with a null form in the above example Ex3.15. There is a position available (marked as X) inside the comment clause for the sentence-initial NP, the topic - ‘zhege dongxi’. Therefore, in this example, the topic is originally the object of the comment clause, which is moved to the topic position. The following topicalization sentence has been presented in a different way:

Ex 3.15a zhe ge dongxi, wo yinwei ta mei shui hao.
This CL thing, I because it not sleep good.
I didn't sleep well due to this (thing).

The topic in Ex3.15a is coreferential with a resumptive pronoun in it. There is a structural position inside the comment clause co-indexed with the topic – ‘zhege dongxi’ and ‘ta’ indicates the same thing. However, the difference between sentence Ex3.15 and Ex3.15a is very clear. The ‘topic’ in the first sentence has a grammatical position in the comment clause – the object of the comment clause; while the second topic does not.

To summarize the different types of topicalization structures in Chinese, the following table is presented to illustrate the varieties from the grammatical perspective (Su, 2001). One thing to note is that the adjunct-fronting (which is an individual case in topicalization) is not considered in the following table. For instance, ‘zai gongyuan, wo sanbu’ (as *in the park, I walk*), the adjunct has been placed as a topic with no movement of the rest grammatical constituents.

Discourse principle	Function of topic	Example
T(=S)VO Canonical order	Topic=Subject	Mama xihuan youyong. Mum like swim. <i>Mum likes swimming.</i>
T(=O)SV	Topic=Object	Youxi, wo xihuan. Game, I like. <i>I like games.</i>
T SVO	+ Topic,+ Subject	Na zhi mao, ta de zhuren shi xiaoming. That CL cat, it-POSS owner is xiaoming. <i>The owner of the cat is xiaoming.</i>
T S V Comp	+ Topic, + Subject	Zhe ben shu, wo du de hen lei. This CL book I read V-de very tired. <i>I had a hard time reading this book.</i>
T(=O)V	+ Topic, - Subject	Na ben shu jie zou le. That CL book borrow away ASP. <i>That book is borrowed.</i>
T(S)V TOPI=OBJ	- Topic, ± Subject	Pingguo diu le ma? Apple lose EXP Question marker? <i>Were the apples lost?</i>

Table 3.1 Variety of Topicalization in Chinese

Different from the adjunct-fronting structure (which could also be seen as one of the topicalized structures), there are another six different types of topicalization structures shown in the above table. From this table, it can be observed that the topicalization is rather complicated in Chinese syntax. The topics take different roles and functions in different types of topic-prominent sentences. From the last two varieties in the table, the topicalized sentences are in the passive voice. In this case, the different topicalized structures are supposed to be acquired at different levels, due to their diverse grammatical features.

In the first place, the topic is the subject (SUBJ). In this case, the topicalization sentence would follow the normal canonical word order in Chinese. As in ‘youxi, wo xihuan’ (as *game, I like.*), there is a gap, such as an object (OBJ) (in the above example) or adverb, in the main sentence which could be filled in by the topic without any effect on the sentence grammar (Chomsky 1978, 1981 and 2000). Secondly, there is no gap in the main sentence for the topic but there is a pronoun which could be replaced by the topic as in ‘Na zhi mao, ta de zhuren shi xiaoming’. ‘ta’ (as *it*), as a pronoun, in the comment clause indicates ‘na zhi mao’ (as *that cat*). While in ‘na ben

shu jie zou le’, the sentence is in passive voice. ‘na ben shu’ (as *that book*), functioning as the SUBJ as well as the topic of the sentence, is borrowed by someone.

The above topicalization structures could be, in some cases, present in English grammar while the following topicalization sentence can typically be found in Chinese language. There is neither a gap for the topic in the main sentence, nor is there a replaced position for the topic. In Table 3.1, ‘Pingguo diu le ma’ is a very typical Chinese topicalization; the topic takes the same role of the object in the passive voice.

Example: Pingguo diu le ma?
Apple lose EXP Question marker?
Were the apples lost?

In this above case, it involves the deployment of the sentence procedure by the learners. The topic, *pingguo*, also functioning as the SUBJ within the sentence, marks the disentangling of the canonical association between the positions of the elements at the sentence level. Further discussion and acquisition of these topicalization structures will be conducted on the basis of my data analysis in Chapter 6.

3.6 Question Forms

A common feature of questioning in Chinese is that the word order remains the same as in the statements. Therefore, unlike in some Germanic languages, there is no change of the grammatical order in Chinese question forms. According to LFG, a Chinese *wh*-question is characterized by canonical order and direct mapping. The mapping process involved in a Chinese *wh*-question is linear and perfectly aligned, following the canonical order of its declarative counterpart, while an English non-echo *wh*-question has the *wh*-constituent in the focus position (usually moving the *wh*-constituent to the front of a sentence), hence, non-canonical mapping. This *wh*-movement is subjected to subjacency, a constraint on constituent movement at the level of surface structure (Schachter, 1998).

Question forms in Chinese are very simple. Chinese is a *wh-in-situ* language; the *wh*-constituent in Ex3.16b does not move and thus shows no effects of subjacency (Schachter, 1998). The order of *wh*-question matches the declarative statement

(Ex3.16a), using a *wh*-pronoun, such as in Ex3.16b – ‘shenme’ (as *what*):

Ex 3.16a [ni xihuan pingguo.] statement
You like apple.
You like apples.

Ex 3.16b ni xihuan shenme?
You like what?
What do you like?

Based on the sentences above, the question formulation in Ex3.16b is *wh-in-situ*. The question word ‘shenme’ in E3.16b replaces the original object ‘pingguo’ in Ex3.16a; thus, ‘shenme’ remains in the position of ‘pingguo’ in the syntactic construction.

Differently, yes-no questions can be formed in other ways. A question particle ‘ma’ is always added at the end of a statement to formulate such questions in Chinese. As we can see in Ex3.17a and Ex3.17b, the difference between the two sentences is the added *ma* at the end of Ex3.17b to mark the sentence as a question:

Ex 3.17a [ni shi laoshi.] statement
You be teacher.
You are a teacher.

E3.17b ni shi laoshi ma?
You be teacher Q-particle (PCL)?
Are you a teacher?

‘ne’, as another question particle, solicits agreement or requests missing information, as in ‘hai you ne?’ (as *And?*). It could be therefore summarized that no syntactic movement could be observed in Chinese questioning (Erbaugh cited in Slobin, 1997a; Yip and Rimmington, 2004).

3.7 Passive Voice

The structure of Chinese passive sentences has historically been one of the most heavily discussed issues in Chinese syntax (Hsu, 2009). However, the Chinese passive voice relies as much on meaning as on form. Chinese verbs in themselves lack any distinction of active and passive; as is evident from Chao’s (1968) well-known example: ‘yu chi-le’ meaning either ‘*the fish has eaten (it)*’ or ‘*the fish has been*

eaten'. The passive voice can be expressed by simply posing an agent followed by the prepositions; the common colloquial agentive prepositions are 'rang' (as *let*) and 'jiao' (as *ask*). Sentence Ex3.18 shows this simple passive feature (Norman, 1991: 164):

Ex 3.18 Xiaoling rang baba da-le
Xiaoling by father beat-PERF.
Xiaoling was beaten by her father.

'rang' in this sample marks the passive voice since 'baba' (as *father*) is the agent of the verb 'da' (as *beat*), who carries out the action, while 'Xiaoling' is the person who is actually beaten .

In fact, the most common form of passive voice in Chinese is the notion of 'bei' structure, which can be used for replacing 'rang' in most cases of the passive voice. It is commonly considered approximately equivalent to the passive voice in English.

'bei', a disposable verb, is understood as the indicator of a passive relation, and as the matrix verb whose subject precedes it (Kit, 1998). Actually, the passive 'bei' structure is actually a missing-object construction, where the subject of 'bei' is coreferential with a missing-object gap of a post-*bei* VP (Hsu, 2009). Chinese 'bei' sentences, different from the passive sentences in English, contain a set of syntactic structures which carry the meaning of 'suffering'. The passive meaning is attached to the 'suffering' construction. For example, in the following Ex3.20, 'Zhangsan' is the person who suffered and he is scolded by 'Lisi'. The passive meaning 'ma' (as *scold*) is attached to 'bei'.

Essentially, in 'bei' construction, the original object of the verb is shifted to the beginning. Then 'bei' is between the shifted object and the predicate verb as a cue to role assignment and mark of an OSV structure (Li et al. cited in Chen and Tzeng 1992; Yip and Rimmington, 2004). For example:

Ex 3.19 Fan bei chi le.
Rice BEI eat EXP.
The rice has been eaten.

In this 'bei' structure, the rice is eaten and 'bei' actually marks the passive voice in the sentence. Also, observing from most of the 'bei' sentences, there is always a verb following the passive 'bei', as in the above example, 'chi' as a verb follows 'bei'. The

following example is a another ‘bei’ structure, where ‘bei’ is followed by a post-*bei* noun.

Ex 3.20 Zhangsan *bei* Lisi ma le.
 Zhangsan BEI Lisi scold ASP.
Zhangsan was scolded by Lisi.

In this use of ‘bei’, ‘Zhangsan’ is the affected patient while the post-*bei* noun ‘Lisi’ could actually be omitted in the sentence without suggesting the agent of the action. The example of omission is shown below with the description of f-structure. The illustration of f-structure has clearly described the structure in the ‘bei’ sentence, in which ‘bei’ could be seen and functions as a verb.

Ex 3.21 Zhangsan *bei* ma le.
 Zhangsan BEI scold ASP.
Zhangsan was scolded.

f-structure:

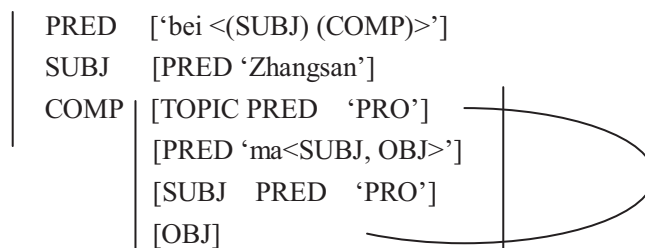


Figure 3.1 f-structure of Ex3.21

Another perspective held in the ‘bei’ construction - ‘bei’ could be treated as marking the passive voice of a sentence rather than marking the post-*bei* verb to be passivized (Guo et al., 2007). The following example has explained this issue:

Ex 3.22 Lisi *bei* dahuo shao le fangzi.
 Lisi BEI fire burn ASP house.
Lisi's house was burned by the fire.

This utterance is in the passive voice. However, in this expression, different from Ex3.20 and Ex3.21, ‘Lisi’ as the subject is not actually connected with the verb ‘shao’ (as *burn*). ‘Lisi’ is not the affected patient of ‘shao’; instead, his house is burned (Hsu, 2009). Therefore, even though this sentence is in passive voice, the post-*bei* verb ‘shao’ is not passivized regarding the subject.

3.8 *ba* Structure

The *ba* construction refers to another typical syntactic construction in Chinese, but

very little research has been done on the acquisition of this structure among Chinese L2 learners (Ding, 2007).

The *ba* construction is often called the disposal construction, whose form states ‘how a person is handled, manipulated, or dealt with; how something is disposed of; or how an affair is conducted’ (Bender, 2000: 126). From different grammatical perspectives, *ba* has been viewed differently. Some researchers take *ba* as a verb meaning ‘to take, to hold or to grasp’. For instance, Bender (2000: 126-129) has proposed that *ba* is treated as a verb and a *ba*-object as the topic of the *ba*-complement. In the light of typological studies of resultative, the *ba* construction is identified as the *ba* resultative construction, in which *ba* is argued to have developed an abstract meaning of ‘bringing about a resultative state’ (Ding, 2007). *ba* is consequently argued to be the head of the periphrastic resultative construction, where its verbal status has remained.

Others believe that *ba* should be treated as a case marker to mark the direct object to be assigned before the original predicate in the sentence (Chao, 1968). Chao (1968) has stated that *ba* construction is to emphasize the action occurred to the object.

Bender (2000: 108-122) has challenged the concept of treating *ba* as a marker for direct objects. Obviously, the post-*ba* predicates cannot assign two direct objects in one sentence. Moreover, the object of *ba* should be considered as long-distance dependencies: a *ba*-object as the topic of the *ba*-complement. According to Bender (2000), the phenomenon of the *ba*-object being the topic of complement is recognized as the internalization of the topic and is treated thus in the interlanguage data in my study.

Grammatically, *ba* construction engages the syntactic verb movement in structures. The original verb which is controlled by the subject should be moved after the object; thereafter, the sentence structure is shifted to S(*ba*)OV (Bender, 2000). From the LFG point of view, this structure movement involves the unification of the feature requiring the inversion of the object and the actual action verb in the sentence, and requires an information exchange between two internal constituents: the object NP

and predicate complement on the syntactic level.

Ex 3.23a Zhangsan *ba* Lisi da-le
 Zhangsan *ba* Lisi hit ASP
Zhangsan hit Lisi.

f-structure:

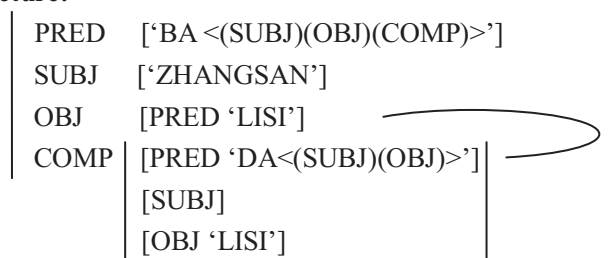


Figure 3.2 f-structure of Ex3.23a

Ex 3.23b Zhangsan da-le Lisi.
 Zhangsan hit PREP Lisi.
Zhangsan hit Lisi.

In Ex3.23a and Ex3.23b, the English translations are identical even though the structures of the Chinese expression are different. *ba*, in the example of Ex3.23a, takes the verb function, which turns the object as the complementary descriptors. The NP marked by *ba* tends to appear as an affected patient, and syntactic objects which are unable to undergo any change or effect of any kind are unlikely to be found marked by *ba*. So in the example, 'Lisi' is the patient NP who is beaten by 'Zhangsan' (Ziegeler, 2000). In Chinese oral conversation, Ex3.23a is a more common type of utterance.

It can be seen that *ba* is quite complex and difficult to analyze. L2 learners may hardly master its syntactic structure(s) whose L1 does not possess this kind of construction. Therefore, Bender's treatment of *ba* could facilitate the comprehension of this structure and provide a more direct and consistent functional representation of sentences with the *ba* structure.

Among all of the diacritic features in Chinese grammar discussed above, Huang and Yang (2004) has claimed that 'ba' structure and 'bei' structure (passive voice) are important grammatical aspects in teaching Chinese to the speakers of other languages. Based on their statistics, nearly 50% of Chinese L2 learners failed using 'ba' and 'bei' construction in HSK (Hanyu Shuiping Kaoshi, as *Chinese proficiency test*) which is

an authorized Chinese exam for Chinese L2 learners. Therefore, it is significant to provide effective input of ‘ba’ and ‘bei’ structure to the L2 learners at the right time. The efficient teaching approaches are to be discussed later in this study.

3.9 Summary

To sum up, this chapter has described the diacritic features of the Chinese language in relation to the basic LFG framework, from morpheme to syntax. The patterns of information exchange underlying such morpheme and syntax have also been analyzed. Based on the LFG analysis in Chapter 2, the feasibility of applying PT to Chinese language acquisition has been explicitly verified. Nevertheless, the previous study of Chinese, as L1 or L2 acquisition, and the practical application of PT hierarchy into Chinese as a second language acquisition, will mainly be discussed in the next chapter - Chapter 4.

Chapter 4 Studies on Chinese as a Second Language

Studies related with Chinese as a second language (CSL) have been carried out since 1980s, among which, most of the studies focus on Chinese interlanguage, or Chinese teaching and learning strategies (Yip, 1995; Yuan, 1995). These studies, so far, have contributed to the understanding of CSL acquisition research; however, Shi (2006) has commented that studies related to CSL have insufficient theoretical support and simplified research methodology in the acquisition of specific grammatical features, compared with the research done in relevant areas in other languages. In recent years, studies on language processing have been turned into a hot debate from different perspectives, such as the acquisition of grammatical morphemes and syntax, or the design of the SLA textbook aligned with the processing route (Pienemann, 1988; Pienemann and Johnston, 1993; Pienemann, 2008a). Following this trend, a few studies in discussing the CSL acquisition route have taken place (Zhang, 2001; Gao, 2005).

In this chapter, the studies regarding CSL acquisition from the aspect of morphemes to syntax will be reviewed; in particular, the studies in terms of the CSL development within the scope of PT will be critically discussed and paid value to.

4.1 Overview of Previous Studies

As mentioned earlier, research in the acquisition of Chinese as a second language is still quite sparse. With the demand of Chinese language and the increasing number of Chinese L2 learners throughout the world, there is a growing body of new research on CSL acquisition.

From the late 1980s, a few studies, discussing CSL, have emerged in the aspect of acquisition orders. Tian et al. (1987) have researched the spoken data of nine Chinese L2 learners, under Chinese contexts, about the relationship between the acquisition order and the grammatical difficulty. According to the observation from Tian et al. (1987), it is found that the easiest grammatical items (i.e. serial verb sentence) are

obviously acquired first, and the most difficult ones (i.e. ‘ba’ and ‘bei’ structure) are finally observed in the learners’ output data.

In the late 1990s, Qian (1997) attempted to test the acquisition order of directional complements among Japanese learners of Chinese through translation and multiple choice questionnaires. Her research was carried out based on the written texts. Among the 100,000 written sentences collected from students’ articles or letters, 401 structures of directional complements have been found. It is proposed by Qian (1997), that the structure with the least mistakes is to be acquired earlier. However, only 11% of the directional complement is connected with verbs, since the students could avoid applying them in sentences. Therefore, a questionnaire has been distributed for further investigation. This questionnaire has been designed with a purpose, so the answers could objectively illustrate the correct rate of the learners’ use in certain complementary constructions. In the end, the sentence structure with the highest correction rate is recognized to acquire at an early stage.

With reference to the present situation of teaching directional complement, this paper also suggests ways to improve teaching. Qian (1997) believed that teaching approaches could not alter the natural order of language acquisition. She has referred to four different CSL textbooks which have been designed for Chinese L2 learners worldwide. Interestingly, the researched acquisition order of directional complements is very similar with the order in textbook contents, with very few differences. Qian (1997) has then claimed that the current textbooks only require slight revision and could improve the learning outcome, following the investigated natural acquisition sequence of directional complements. Apart from the above examples, Lin (2001) has outlined another different acquisition path for Korean learners of Chinese in the syntactic aspects.

However, the CSL studies in terms of acquisition orders conducted so far are still not sufficient (different research presents different acquisition paths), compared with similar studies done in the European or Generic languages. Moreover, these CSL research and experiments had an identical ‘blind area’ in their original study design,

where the strong theoretical basis for the prediction of the acquisition sequence is insufficient.

Therefore, the Processability Theory then proposed a profiling procedure and basic principles to allow researchers to rely on and also to provide them with a more stable scientific basis.

4.2 CSL Studies on Morphemes

Wei (2000: 41) stated that ‘SLA processes and developmental patterns can be best explained and predicted in terms of the nature of different types of morphemes being acquired’. According to this, quite a few studies on Chinese L2 morphemes have been widely carried out.

To discuss, in detail, the focus of a number of studies on the acquisition of the L2 Chinese aspectual morphological system, this started with longitudinal case studies, such as Sun (1993), Wen (1995a) and Zhao (1996). These three studies all contributed to the use of EXP-*le* in the learners’ interlanguage. All these studies have been taken among Chinese L2 beginners. Generally, an overuse of *-le* in the language output has been observed. Since the learners in the studies are all English native speakers, the researchers assumed that the research subjects treated VF-*le* as a resembled English past tense marker, which in fact, is more complicated than the English past tense.

In particular, Sun (1993), focusing on the use of *-le* in the interlanguage, has found that SF-*le* or VF/SF-*le* appeared earlier than VF-*le* in the learners’ acquisition path. The difference between VF-*le* and SF-*le* lies present in a past event, whereas the SF-*le* relates that past event to the present or any reference time, similar to the English perfect.

Later, Wen (1995a) has explored the acquisition of *-le* by English native speakers. She then discovered that VF-*le* occurred in the students’ interlanguage earlier than the SF-*le* or VF/SF-*le*, which violates Sun’s (1993) work. The results were generated according to the percentages of the correct use of *-le*. In Wen (1995a), the correct use of VF-*le* is 75% against 41.5% of correct use of SF-*le* among the beginners. Similarly,

the percentage is 82.7% and 77.3% respectively among the advanced learners. With further research, Wen (1997) extended the earlier study with three tense-markers in were acquired before *-zhe*.

It can be seen that the different sequence in acquiring *-le* has occurred between Sun (1993) and Wen (1995a). Even though the acquisition could not be simply measured for the correctness in usage as in Wen (1995a), Sun (1993) also provided no reliable research methodology or data, thereafter. In this case, each piece of research could only present the phenomenon among that specific group of learners under particular acquisition criteria, which could not be universally valid.

Afterwards, Yang et al. (2000) have examined the acquisition of the same three morphemes by English native speakers through a cross-sectional design: VF-*le*, *-guo* and *-zhe*, for the elementary learners; *-guo* seemed to be the most difficult, while VF-*le* the least difficult for acquisition. Yang et al. (2000) then further examined the acquisition of the same *-le* morphemes by 26 native Korean and Japanese speakers through the test data and natural data in written form. These research participants have been classified through their competence level from a beginners' level to a higher level. All the data has been categorized into the computer as a data set for analysis. Except for the repeated findings compatible with early studies, Yang et al. (2000) also found that VF-*le* is a continued problem with both beginners and intermediated learners.

Differently, Teng (1999) has attempted to research the acquisition of Chinese *-le* from a longitudinal view. His written data tracked the interlanguage progression of nine English learners of Chinese, spanning over nine months. Among all the 919 valid written sentences regarding *-le*, 82.7% was correct. To review the data sources, it is found that the perfective *-le* was acquired later than the inchoative *-le*. However, after reviewing a few textbooks, Teng (1999) has claimed that in no textbooks of Chinese, the sequence of instruction of grammatical items and constructions was explained, or justified, on any theoretical grounds. For this purpose, Teng (1999) has then concluded that a textbook designed to follow the acquisition order of Chinese is very

demanding in CSL.

Referring the aspectual system in Chinese, Jin and Hendriks (n.d.) have detected a possible order in the appearance of three tense-aspectual markers in L2 Chinese: firstly *-le*, then *-zai* (or *-zhengzai*) and finally *-zhe*, among 30 Chinese L2 learners of English, 30 Chinese L1 learners and 10 Chinese adults. All of the L2 subjects have learned Chinese for at least six months and lived in the Chinese-speaking contexts for more than one month. They have been divided: lower intermediate, intermediate and upper intermediate groupings, according to a cloze test scores; while the native control team has been grouped based on different ages: 5 years old, 7 years old and 10 years old. These informants are asked to tell stories based on two sets of pictures to an imagined interlocutor, who could not see the pictures.

Differently from some studies discussed above, Jin and Hendriks (n.d.) have attempted to use spoken data, instead of the written form, which would better represent the immediate acquisition of Chinese among these L2 learners. Reviewing all of the collected data, more than 60% of the predicates are without aspect markers. An interesting finding was that the L2 learners are more reserved in using aspect markers than Chinese L1 learners. The L2 learners start by using VF-*le* with all of the situation types and find *-zhe* rather difficult at the beginning. They have used aspect markers cautiously, even though these three markers are not as obligatory as the English tense markers are (Jin and Hendriks, n.d.).

According to the L2 learners' preference in organizing discourses, it is found that they do not use *-zhe*, at all, at the beginning, which indicates that *-zhe* is acquired later in the development of aspect marking in L2 Chinese. In summary, there is a clear developmental pattern of a strong preference of *-le* at 94% with most probably VF-*le*, VF/SF-*le*, then *-zai* and eventually *-zhe* (Jin and Hendriks, n.d.).

Reviewing the above studies, the different research results could be caused by a variety of reasons, for example, different research methods or different L1s of the research samples. Yuan (2000) has then carried out research, covering samples with diverse backgrounds. The research has shown that French-speaking and

English-speaking learners of Chinese are very accurate in positioning verbs in Chinese, which is the verb-in-situ language, even though their L1s have the value of verb-movement. In other words, this study has proved that the learners' L1s do not determinatively affect the way how they acquire their L2, which indicates that the outcome of SLA cannot be altered by their L1s.

Additionally, in Yuan's (2002) further research, regarding the acquisition of intransitive verbs for L2 learners, 48 native English learners learning Chinese and 18 Chinese L1 speakers, have taken part in this study. He has found that some of the participants may improve but the acquisition of the other students may be held back for some reasons. Meanwhile, Yuan (2002) has also pointed out that his research design is not very reliable due to the limited sample size; thus further study should be carried out to verify the current findings.

Moreover, Lin (2007) has investigated the Chinese L2 learners' acquisition of attributive words. His research targets cover a range of learners with different L1 backgrounds. Henceforth, he has found that Chinese L2 learners with various L1s would present the same tendencies from L1 to L2 in learning attributive words. He also emphasized that the influence from L1 has gradually disappeared when moving towards the target language.

In recent years, studies on Chinese morphemes have been extended beyond the investigation of stages of acquisition; instead, focus has been moved to a combined concept of application of natural acquisition with the teaching curriculum.

Li (2004b) has assumed that the acquisition has little relationship with the teaching input. In his study, Li (2004b) has carried out a one-month investigation of the Chinese auxiliary *-zhe*, among 12 Chinese L2 learners of Japanese, Korean, Indonesia and Vietnamese. With three different tasks, Li (2004b) therefore concluded that learners tended to use *-zhe* in their task-completion process, after they just learned this auxiliary through formal instruction in the class. However, the frequency of correct *-zhe* application has significantly reduced in the following two tasks. Li's (2004b) sample learners showed that they were not able to produce the auxiliary which has

been taught in the lessons. It is therefore claimed that learners cannot acquire *-zhe* for two possible reasons: on the one hand, the teaching input is not very effective to facilitate acquisition; on the other hand, learners are not adequately prepared in their mental lexicon to acquire it (Li, 2004b).

Even though many scholars have proposed and proved that the principles of morpheme acquisition are acquired by order in CSL (Li, 2004b; Teng, 1999; Yuan, 2000), for the grammatical complexity of Chinese language, the acquisition hierarchy of CSL is still around basic or several particular morphemes. Hence, the research should be pushed forward to cover a wider range of morphemes, and even syntax, with the theoretical support. The next section will mainly discuss the CSL studies in terms of syntactic acquisition orders.

4.3 CSL Studies on Syntax

The learning process indicates the procedure of how a learner gets rid of the processing constraints (Pienemann, 1998a and 1998c). With the acquisition of simple morphemes, the learner moves to the acquisition of syntactic structures.

Shi (1998 and 2006) has outlined that there must be a potential developmental sequence in syntax for Chinese L2 learners to follow. According to the four primary hypotheses of Language Acquisition Device and Universal Grammar Hypothesis, the Creative Construction Hypothesis, the Recreation Hypothesis and Pienemann's Teachability Hypothesis, Shi (1998) has concluded that Chinese L2 learners follow certain acquisition routes of the 22 sentence types: the Natural Order and Acquisition Order. In Shi's (1998) opinion, the Acquisition Order is extended on the basis of Natural Order under certain external influential factors. Shi (1998) inferred that the input frequency, amount and timing could affect the speed of acquisition but hardly alter the order of natural acquisition; instead, she believed that cognitive difficulty could somehow decide the acquisition order.

In this research, Shi (1998) has designed a cross-sectional and longitudinal study. Based on the database, she has selected 7,611 sentences with 22 syntactic types from

Chinese L2 learners (details of data selection have not been explicitly mentioned in the research), whose L1s are Korean and English. Among all of the selected sentences, it is supposed that the sentence structure which occurs the most, with the highest correctness, is acquired first. She then used the Stage Score to identify the different acquisition stage and apply the implicational scale to divide the 22 structures into stages.

To further verify the results, Shi (1998) has, on the one hand, conducted a questionnaire among 162 Chinese L2 learners under Chinese contexts and 95 Chinese primary school students; on the other hand, she did a test among 46 Chinese L2 learners in Beijing. In the questionnaire, Shi (1998) has presented 132 sentences to the informants with six sentences in each type (22 types in total), from the easiest to the hardest through five different levels. The findings have shown that there is little difference in the acquisition order in terms of learners' L1s and personal backgrounds.

In order to prove the reliability of her proposed acquisition route, which is hypothesized below, Shi (1998) has then conducted a case study of a Korean learner of Chinese and found no alternatives.

Stage	Sentence Type
1	SUBJ+be+NP
2	what/how many (much)/how?
3	SUBJ+ have+NP
4	A than B+ADJ.(+DC)
5	SUBJ+PRED+(OBJ)+ma (question marker)?
6	SUBJ+ADJ not ADJ/V not V (OBJ)?
7	SUBJ+be+ADJ+de
8.5	SUBJ+be+timing+V(OBJ)+de why/who/where?
10	SUBJ+BA+OBJ1+V+OBJ2
11 de+be+N/V/simple syntax
12.5	SUBJ+BA+OBJ+V+RC SUBJ+BEI/GEI (passive word)+V+RC
14	SUBJ+PRED+OBJ+ba (particle)
15	SUBJ+be/V+NP+or+NP?
16	SUBJ+ be not be+V+OBJ+ne (particle)?
17	SUBJ+BEI/JIAO/RANG/GEI (passive word)+OBJ+V+RC
18	SUBJ+ not+V+OBJ+ma (question marker)?

19	A not as... as B+ADJ
20	SUBJ+(be)+VP+or+VP?
21	nandao (does that mean..?) +SUBJ+V+OBJ+ma (question marker)?
22	directional PREP+V+you (HAVE)+NP

Table 4.1 Acquisition Stage of 22 Chinese Structures among CSL Learners (Shi, 1998: 90)

To view the above Table 4.1, obviously, Shi's research (1998) has had a predictable limitation since her test has been carried out among a pre-determined series of sentence types, which did not include all the variety of grammatical aspects, such as morphemes. In addition, it seems that the acquisition stage should be organized more systematically and explicitly under grammatical frames. If the 22 sentence types in Chinese could be categorized and classified, more grammatical structures could be predicted along this acquisition order.

Some other researchers, such as Yang (2000), have also stated that teaching Chinese to the speakers of other languages should follow a certain order, which can facilitate learners' acquisition. In order to contribute to the design of textbooks and curriculum, Yang (2000) has proposed a different syntactic acquisition order for Chinese L2 learners, generated from the various textbooks and empirical studies. Theoretically, his proposed acquisition order is influenced by the grammatical difficulty which starts from easy and simple syntax to the complicated subordinate sentence. This order is divided into two parts with the boundary of the particle *-le*. However, it is hard to find out the logical underlying basis of this developmental sequence; even Yang (2000) has noticed that this acquisition order should be investigated in further research.

In fact, topicalization features in Chinese interlanguage have been pursued empirically in a large number of SLA studies (Yip cited in Selinker, 1971; Nie, 2007). As a T-SVO topicalized language, Chinese is designated 'topic-prominent' in contrast to 'subject-prominent' whose representative language is English. Therefore, it is assumed that native English speakers learning Chinese have to face the difficulties in presenting the topics at the initial case (Li and Thompson, 1981; Odlin cited in Doughty and Long, 2005).

Accordingly, Jin (1994) has investigated whether Chinese topic-prominence is a universal developmental stage or transferable typology by analyzing the behavior of 46 adult native speakers of English learners learning Chinese as a second language. One of the important results that emerged from the study states: English learners of Chinese with limited proficiency in Chinese tend to rely on structures that are similar to English, but the topic-prominent structures begin to occur at an early stage. Therefore, Jin (1994) has concluded that the native English learners, learning Chinese, follow certain developmental stages in syntactic aspect, and transfer is likely to happen only under some circumstances.

Unfortunately, Jin (1994) did not clearly specify what ‘circumstances’ could allow the transfer between the L1 and L2 and in what way; instead, Pienemann (1998a, 1998b and 1998c) have explained this in his Development Moderated Transfer Hypothesis (details have been explained in Chapter 2).

For the purpose of identifying the topic-prominent feature in CSL, Wen (1995b) has also exemplified and tested this syntactic structure among Chinese L2 learners’ interlanguage (IL), and at which stage this topic-prominence would appear. In her study, 56 American learners of Chinese and 10 Chinese learners of English had been encouraged to write sentences, with the given sentences and phrases. Within the total number of 607 sentences, interestingly, it is revealed that topicalized structures tended to be present at the early development of all learners’ ILs (no specific point of occurrence has been verified) (Wen, 1995b). In other words, even if learners’ native language does not feature topic prominence, their ILs would still display such a characteristic. Obviously, the research design is still arguable on the basis of its methodology, but the results are worthy for reference.

Due to the variety of topicalization in Chinese, it is assumed that topicalization could be quite hard to acquire by the learners whose L1 does not contain this feature. However, Fuller and Gundel (cited in Yip, 1995) have claimed that the topic-prominent acquisition stage is a universal developmental stage in ILs, independent of the L1s and L2s, which is compatible with PT principles. This premise

has been tested and coined as the Topic Hypothesis by Pienemann, Di Biase and Kawaguchi (2005). Details are presented in the Table 4.2 below:

Stage	Discourse principle	c- to f- mapping	Structural outcomes
X+2	Topicalization of core arguments	TOP I=OBJ	The TOPI function is assigned to a core argument other than SUBJ
X+1	XP adjunction	TOPI=ADJ	Initial constituent is a circumstantial adjunct or a FOCUS WH-word. TOPIC is differentiated from SUBJECT.
X	Canonical order	SUBJ = default TOPI	TOPIC and SUBJECT are not differentiated.

Table 4.2 The Topic Hypothesis of L2 Syntax (Pienemann, Di Biase and Kawaguchi, 2005)

In this table, it can be seen that the various topical structures have been categorized at different levels for acquisition, based on the research from Pienemann, Di Biase and Kawaguchi (2005). At all levels of topicalized discourses, the interlocutors can manipulate the central information by placing it in sentence-initial position, giving it prominence to guide the listeners' attention and emphasize their expression of meaning in a sentence.

Due to the different diacritic feature of each topicalized structure, their sequence of acquisition moves in a sequential order from the simple (T=)SVO, through adjunct fronting SVO, to OBJ-fronting utterances. For instance, (T=)SVO structures are likely to occur when the category procedure is operational in processing hierarchy. The explanation is simple: when the TOPI is SUBJ or the repetition of the SUBJ, the rest of constituents in the sentence are represented locally and refer to no argument functions, and therefore, they do not involve information exchange with other constituents in a sentence.

Another study is carried out by Cao et al. (2006), who have investigated a few studies in association with topic-prominence in Chinese and identified a gap – does topic-prominence universally occur, will that be influenced by L1 transfer and can any other influential factors be observed? Answers are found in their investigation. In the study, all the 90 informants, divided into Japanese native speakers, English native speakers and Korean native speakers, are at an intermediate level of Chinese. Cao et al. (2006) have used test data and production data to examine and compare the

patterns displayed with a native speaker control group, in understanding and using different topic constructions.

It is then discovered that learners do not seem to go through a universal stage of topic prominence. Instead, findings have shown that topic prominence in L1s does positively transfer to a topic-prominent target language, but this transfer is more obvious in the later stages, rather than in the earlier stages, because of the conservatism of learners. To some extent, this study held a different perspective from Jin (1994), Wen (1995b) and Pienemann, Di Biase and Kawaguchi (2005). It is assumed that the difference may be drawn from various theoretical measures, research backgrounds and methods.

In addition, Yuan (2001) has collected both production and grammaticality judgment data on Chinese adv-placement from 67 English, 48 French and 51 German learners who are learning Chinese in their home countries. A separate group of 10 native speakers of Chinese is formed as a control group.

It is known that thematic-verb-raising is possible in both French and German. The FT/FA model (Schwartz and Sprouse, 1994 and 1996) has predicted that thematic verbs would be raised from inside VPs in the production of French and German learners because their initial L2 grammars of Chinese are defined by their L1 grammars. Vainikka and Young-Sholten (1994, 1996a and 1996b) have made a further extreme prediction based on their Minimal Trees (MT) Hypothesis that Chinese L2 learners would move the thematic verbs out of VPs at an early stage of their L2, since these learners should definitely go through a stage where the head of imperatives (IP) is underspecified.

In fact, in Yuan's (2001) study, both judgment data and oral production data have clearly proved that thematic verbs remain *in-situ* in German students' Chinese output. German learners could readily accept Chinese sentences with the verb remaining inside the VPs with S-Adv.-V-XP order at the correct rate over 90%. Yuan (2001) has then cast doubt on the validity of FT/FA and MT; therefore, he concluded that the so-called 'verb-raising' phenomenon in learners' L1s was not 'inevitable' in their L2

acquisition. Therefore, the predicted full transfer of the L1 grammatical property to L2 did not seem to materialize consistently. Moreover, Yuan (2001) proposed that L1 transfer is a relative phenomenon in SLA which may take place under certain circumstances. Answers could be found in Pienemann's (1998c) Developmental Moderated Transfer Hypothesis.

Besides, Ding (2007b) did a case study based on substantial oral language materials. The informant is a 23 male student from Africa who has learned Chinese in China for more than two months. The span of the study is approximately three months. It has been conducted under natural conversation, from which 221 interrogative sentences have been selected. On the basis of frequency of application, structure difficulty and the correct rate of usage in each interrogative type, the findings have revealed the acquisition order of L2 Chinese interrogatives:

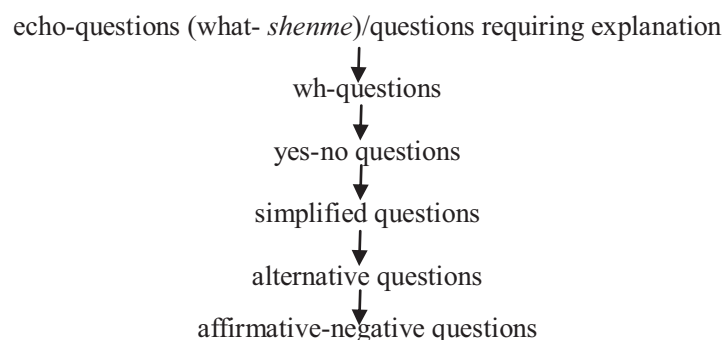


Figure 4.1 Acquisition Order of Chinese Interrogatives (Ding, 2007b)

Ding (2007b) also found out that alternative questions, and simplified questions, are in the emerging stage, and affirmative negative questions are in the embryonic stage among the research participants. However, the results from this study have an inefficient literature foundation in supporting its preliminary design.

Recently, Feng (2009) has conducted research in the area of CSL acquisition. Her main contribution is to look into the language transfer between the L1 and L2. In the end, she has found that there is definitely language transfer in SLA, including positive transfer and negative transfer. The process of language transfer is not one-way, which has been restricted by grammatical features, such as markedness or the variety of learners' previous language cognition. For example, if both L1 and L2 contain unmarked features, this unmarked feature in L1 could somehow stimulate the transfer

process into L2 (Feng, 2009).

However, according to Ellis (1985: 206), even though the markedness feature exists in L1 but not L2, learners probably produce non-marked language in their interlanguage. In this case, the L1 intervention is not 'effective'. It is assumed that the transfer of markedness between two languages is conditional: cognitive mechanism, linguistic structures and teaching factors.

Firstly, the language transfer has been restricted to the learners' cognitive recognition of the language structures and processability (Feng, 2009). As suggested by Pienemann and Sayehli (2002), the transfer from L1 to L2 is developmentally moderated. If learners have not been cognitively equipped with the certain procedural skills in the target language, they could not bring up the required items or probably use alternative way to express them. Next, the language competence of the language learners will also have an impact on the language transfer. Feng (2009) has distinguished the tested students into two groups: high competence and low competence. Surprisingly, she has discovered that the students with high competence have no apparent difference in the process of language transfer, even though she has found that the teaching focus of a particular language feature may have an effect on language acquisition.

Furthermore, the language transfer will exist in different linguistic levels: pragmatic levels, semantic levels and syntactic levels (Feng, 2009). However, based on Feng's (2009) research, negative transfer will last a longer time at the semantic and the pragmatic levels.

Different research designs have generated a variety of possibility regarding Chinese L2 acquisition trajectory. Therefore, a proved framework in constructing further research is seriously required, Pienemann then proposed the PT to provide scaffolding for researchers to lexically (grammar is lexical driven) work on Chinese development. In the following section, current studies done in CSL, under the umbrella of PT, will be discussed.

4.4 Research in CSL based on PT

Pienemann (1998c) has proposed PT as a way to account for IL developmental sequence towards the target language which is applicable typologically. In fact, every typological analysis seeks to clarify languages according to particular distinctive features, but it is of little interest if each distinctive feature is independent (Slobin cited in Slobin, 1997b). PT has drawn a clear profile which explains the relationship/dependency among the grammatical features universally. Consequently, the employment of PT in Chinese, as a second language development, is also feasible; especially, Chinese is the language with the largest number of native speakers, so the study is valuable to prove the universality of Pienemann's PT (Lin, 2001).

Applying PT to CSL research was a pioneering area. Packard (2000) stated that most psycholinguistic research on the Chinese lexicon have tended to focus on the visual processing of character orthography, rather than speech production. Although several studies have attempted to explore the CSL in terms of particular items or the developmental route among a variety of Chinese L2 learners (as illustrated in previous sections of this chapter); the findings are rather conflicted and superficial to some extent, due to the lack of theoretical support and empirical literature. Hence, the application of PT on Chinese grammatical features in terms of oral speech data has been researched to fill in the gap (Gao, 2005; Zhang, 2001, 2002a and 2008).

In the following section, the studies in terms of the morphosyntactic development in Chinese L2 will be mainly discussed on the basis of the structured processing hierarchy.

4.4.1 Zhang's Studies

Zhang (2001) is the first scholar who carried out an empirical study using a PT-derived hypothesis for Chinese L2 acquisition. Zhang (2001) has studied the development of a range of Chinese morphemes based on three Chinese L2 learners' IL over a year in Australia. All of her participants, with different language learning backgrounds, produced the same acquisition sequence, according to the universal processing hierarchy (excluding the exceptional case). She has therefore claimed that

the processing hierarchy proposed by PT can predict and explain the IL development of Chinese morphemes for L2 learners, and she has started to draw an initial profile for the Chinese processing sequence.

As stated in Chapter 2, the processing hierarchy categorizes morphemes into three types: lexical morphemes, phrasal morphemes and inter-phrasal morphemes. The category is classified based on the level of information exchange required for the production of the morphemes. In this case, Zhang (2001) aims to test the feasibility of applying the processing hierarchy to Chinese on the formal L2 acquisition of specific featured morphemes, including:

- 1) *experiential marker –guo,*
- 2) *progressive marker zhengzai–,*
- 3) *attributive marker –de,*
- 4) *adjective marker –de,*
- 5) *possessive marker –de,*
- 6) *relative clause marker de,*
- 7) *v-comp marker, -de and*
- 8) *classifier.*

Even though a few exceptional cases have occurred against the processing orders in Zhang's study, these cases were accounted as the drawbacks of the research approaches. In the end, Zhang (2001) has categorized the eight morphemes into three different PT levels. In addition, Zhang's attempt has verified that resources to handle the computation, with respect to Chinese language, are feasible on the basis of PT. *PinYin* is a good way to transcribe Chinese (character) and suits in LFG basis, which facilitates the PT employment.

To further the research, in 2008, Zhang (2008) did an advanced analysis on the previous data from Zhang (2001); she then produced explicit results consisting of the aspects of the syntactic development in Chinese, following the processing procedures. Details of the two studies have been shown below in Table 4.3. The grammatical morphemes and syntax are described respectively according to the types of information exchange they require (Zhang, 2001 and 2008).

	Processing Procedure	Information Exchange	Zhang (2001)	Zhang (2008)
5	S-bar procedure	Main and sub-clause	/	/
4	S-procedure	Inter-phrasal information	Relative clause marker <i>de</i>	Topicalization: OSV, SOV
3	Phrasal procedure	Phrasal information	Classifier V-comp marker <i>-de</i>	XP SV(O) / S XP VO: adv-fronting subordinate clause
2	Category procedure	Lexical morphology	Possessive marker <i>-de</i> Adjective marker <i>-de</i> Attributive marker <i>-de</i> Progressive marker <i>zhengzai-</i> Experiential marker <i>-guo</i>	Canonical SV(O): declaratives interrogatives (y/n, wh-, intonation)
1	Word/Lemma	Words	Single constituent	Single words/constituents; formulaic expressions

Table 4.3 Chinese Grammatical Development in PT (Zhang, 2001 and 2008)

Seen from the above table, apparently, the basic vocabulary and formulaic expressions in Chinese should be acquired at the initial stage according to the processing trajectory. At the lexical level, *-de* (ADJ) shares with *-de* (POSS) and *-de* (ATT) the same form, but not the same grammatical function. They all present as a marker of NP. In addition, the aspectual PROG marker *zhengzai-* and the EXP marker *-guo* contain semantic information relating to the shape of the action. *zhengzai-* refers to an action in progress at the moment of speaking, while *-guo* indicates an action that took place in the past which emphasizes that the agent has experienced a certain action or event. The retrieval of these five morphemes is directly triggered by conceptualization and requires no information exchange with other constituents.

Moreover, Pienemann, Di Biase and Kawaguchi (2005) have discussed that due to the low demands on grammatical processing constraints, SVO pattern can be processed at the early stage without unification and processing exchange. In addition, Chinese interrogative sentences normally keep the original canonical SVO order as in declarative sentences. Therefore, the five morphemes are expected to emerge at stage 2 as well as the SVO canonical order which relies on the direct mapping of the semantic roles onto the surface structure.

Following the discussion from Chapter 3, the classifiers are idiosyncratic to the

nouns. Chinese has quite a variety of classifiers which relate largely to the meanings of the words they modify. In this case, the selection of the classifier in one entry shares the same feature of the head nouns within one NP. Take ‘yi ben shu’ (as *one book*) as an example. In this NP, the classifier matches the numeral word ‘yi’ (as *one*) and the noun ‘shu’ (as *book*). Therefore, the features are unified in each entry of the NP according to the value of the lexical items. If any value changes, the lexical entry would be marked as ungrammatical items. The classifiers are therefore the phrasal morpheme, which emerges after the category procedure is developed.

Similarly, V-COMP marker *-de* is to mark the complement element in a VP. In fact, the verb form should only subcategorize the subject, but in the example Ex3.7, the verb ‘zou’ (as *walk*) has two arguments, the subject and the V-COMP, which have been related regarding to the existence of *-de*. Therefore, due to the process of the information transfer occurring within this VP, V-COMP *-de* is categorized as a phrasal morpheme. From the consideration of syntactic aspect, the adv-fronting is simply the movement at the phrasal level, since only the adverbs are moved to the front and the sentence structure still remains in the canonical word order. Henceforth, the V-COMP marker *-de* and the adv-fronting is at the same stage of classifier.

In Zhang (2008), the subordinate clause also appears at stage 3. However, Chinese subordinate clause contains a vast variety which was not clearly defined in Zhang’s (2008) work. Obviously, not all types of Chinese subordinate clause can be acquired at the same level due to its complexity.

At stage 4, inter-phrasal information exchange between the grammatical constituents appears in the sentences. As in the left-branching Chinese language, *de* (RC), as a relative clause marker in Chinese, is recognized and categorized as an inter-phrasal morpheme which requires the recognition of the clause as a modifier, and the presence of a syntactic gap in the clause. This constructs a modifier-modified inter-phrasal relationship. In other words, the production of *de* (RC) requires information exchange between the modifying clause and the modified head noun, since the head noun functionally controls the empty category in the relative clause. In

the example Ex3.8a, the insertion of *de* turns the original predicative constituent ('ni gei qian', as *you gave money*) into a nominal phrase ('ni gei de qian', as *the money you gave*). Thus, the information exchange across phrases has accomplished.

As for the syntactic consideration of inter-phrasal information exchange, the emergence of (certain types of) Chinese topicalization fits into this category, since the information exchange takes place between an internal function and a function at a salient position. The function of each phrase has been shifted during the movement of the 'topic'. For this reason, it is placed at stage 4 of the processing hierarchy.

Noticeably, in both Zhang's (2001 and 2008) studies, no grammatical items at stage 5 have been observed. However, this gap has been filled in by Gao (2005) which will be illustrated as follows.

4.4.2 Gao's Study

After Zhang's (2001) first attempt of application of PT in Chinese, Gao (2005) has conducted an extensive study of the acquisition of key grammatical morphemes and syntactic markings in CSL, with distributional analysis and emergence criterion among adult Chinese L2 learners. She has identified similar findings with Zhang's (2001) study, in terms of the NP morphemes, and provided conformity of applying PT in CSL studies.

Gao (2005) has applied the longitudinal and cross-sectional method, in formal and informal contexts, to test two groups of Chinese L2 learners with a range of different source languages in both New Zealand and China. The New Zealand group consisted of nine English native speakers while the group in China was made up of 51 Chinese learners who have 11 different L1s. Her research was to examine the groups of students for approximately seven months through interviews. The average length of the interview lasts from 15 minutes to 40 minutes each time. A summary of the design of Gao's (2005) study has been displayed in the following table:

	New Zealand	China
Design	Longitudinal & cross-sectional	Cross-sectional
Participants no.	9	51
Participants background	L1 -- English	L1 – 11 different languages
Hours of instruction per week	5-6 hours	20 hours
Language ability (based on placement)	Range between beginners and advanced learners, but most at intermediate level and below	Range between beginners and advanced learners, but most at intermediate level and above
Average length of interviews	20-40 minutes	15-25 minutes
Length of recordings (total)	Similar (23-24 hours approx.)	

Table 4.4 Summary of the New Zealand and China Study (Gao, 2005: 68)

Compared with Zhang's study (2001 and 2008), participants in Gao's (2005) research cover a wider range of L1 backgrounds, such as German L1 learners and Japanese L1 learners. Using database generated from the speakers with a number of typologically different L1 languages, Gao (2005) could strongly prove the universal application of PT and then specifically provide empirical evidence against the full transfer hypothesis in the first instance.

To receive valid and reliable speech production from these informants, Gao (2005) has used some elicitation tasks for data collection. The informants are asked to start a free talk with the interviewer, through a topic-guided speech, and then complete a piece of task in the end, such as a picture description, picture-guided storytelling, and role play. The particular tasks are assigned depending on the various elicitation purposes. For instance, a role play task requires learners to use question forms, while a picture with lots of people taking different actions is suitable for the elicitation of progressive forms in Chinese (Gao, 2005).

After data collection, Gao (2005) computed the output from the informants of some language features using LFG, with syntactic concerns of typical features of Chinese language, such as topicalization and adv-fronting. According to the analyzed database, Gao (2005) has therefore hypothesized a processing hierarchy, including additional Chinese grammatical aspects, referring to Zhang (2001 and 2002a). Most importantly, a structure representing stage 5 - *ba* structure - has been generated, which marks a significant progress for the PT-driven processing hierarchy in Chinese.

	Processing Procedure	Information Exchange	Gao (2005)
5	S-bar procedure	Main and sub-clause	<i>ba</i> structure
4	S-procedure	Inter-phrasal information	Relative clause marker <i>de</i> Topicalization
3	Phrasal procedure	Phrasal information	Adjunct fronting Classifier
2	Category procedure	Lexical morphology	Canonical order: SVO Adjective marker <i>-de</i> Attributive marker <i>-de</i> Possessive marker <i>-de</i>
1	Word/Lemma	Words	Invariant forms

Table 4.5 Chinese Grammatical Development in PT (Gao, 2005)

It can be seen from Table 4.5 that the prominent structure in Gao's (2005) processing route is the existence of *ba* structure, which fits in the main and sub-clause information exchange at stage 5. In Gao's (2005) study, *ba* is treated as a verb. Thus, *ba*-object shares the most features of the topic though it is not placed at the sentence-initial position. Such treatment of *ba*-object as an embedded topic demonstrates a clear path of information exchange between two internal constituents: the object NP and predicate complement (Gao, 2005). As in the example Ex3.23, the insertion of *ba* changes the communication of the object *Lisi* and the predicate complement *da-le*.

4.4.3 Comparison of the Studies

In order to clearly view the similar studies carried out under PT contexts in Chinese, a comparison is conducted among the above three studies. The following Table 4.6 is to display the differences among Zhang (2001), Zhang (2008) and Gao (2005) from the perspective of research design:

	Informant (data used)	Research period	Research methods
Zhang (2008)	3 English-speaking adult learners, including 2 females.	36 weeks (roughly 9 months)	longitudinal design: (free talk,) tasks, questionnaires
Gao (2005)	New Zealand group (9 L1 English learners) and Beijing group (51 learners with 11 different L1s)	7 months	longitudinal and cross-sectional design: free talk, tasks
Zhang (2001)	3 English-speaking adult learners, including 2 females.	36 weeks (roughly 9 months)	longitudinal design: (free talk,) tasks, questionnaires

Table 4.6 Comparison of Zhang (2001), Zhang (2008) and Gao's (2005)

Table 4.6 sketches the three studies related to application of PT in Chinese in the past decades. The research focus has been extended from morphemes to syntactic aspects. All of the three studies have been conducted about 7 to 9 months. Basically, both research conductors have attempted to interview the informants with a variety of L1 backgrounds in different contexts, through task completion, free talk and questionnaires. Moreover, Gao's (2005) research has evidently highlighted ample subjects compared with Zhang's (2001 and 2008) studies. Therefore, the research on PT applying to CSL has been 'pushed forward' from the methodology aspect.

The following Table 4.7 is to provide a relatively complete picture for the Chinese L2 learners and their teachers, in order to comprehend the appropriate developmental path and direction in acquiring Chinese with typologically different L1 backgrounds. Generally speaking, this table shows the updated processing hierarchy formed in CSL on the basis of all PT-derived studies. The hierarchy is by nature developmental as well as implicational. The structures higher up the processing hierarchy are never transferred at the initial stage.

	Processing Procedure	Information Exchange	Zhang (2001)	Gao (2005)	Zhang (2008)
5	S-bar procedure	Main and sub-clause	/	<i>ba</i> structure	/
4	S-procedure	Inter-phrasal information	Relative clause marker <i>de</i>	Relative clause marker <i>de</i> Topicalization	Topicalization: OSV, SOV
3	Phrasal procedure	Phrasal information	Classifier V-comp marker <i>-de</i>	Adjunct fronting Classifier	XP SV(O) / S XP VO: adv-fronting subordinate clause
2	Category procedure	Lexical morphology	Possessive marker <i>-de</i> Adjective marker <i>-de</i> Attributive marker <i>-de</i> Progressive marker <i>zhengzai-</i> Experiential marker <i>-guo</i>	Canonical order: SVO Adjective marker <i>-de</i> Attributive marker <i>-de</i> Possessive marker <i>-de</i>	Canonical SV(O): declaratives interrogatives (y/n, wh-, intonation)
1	Word / Lemma	Words	Single constituent	Invariant forms	Single words/constituents; formulaic expressions

Table 4.7 Findings of Zhang (2001), Zhang (2008) and Gao's (2005)

The details above have illustrated the account of PT-based processing hierarchy in

Chinese, which is then summarized in Table 4.8. Even though the three studies have some differences in interpreting the structures (such as the different description of the syntactic structures in Gao (2005) and Zhang (2008)), the developmental sequence is still aligned with the universal processing route under the umbrella of PT. Therefore, as one of the most sophisticated languages in the aspect of grammar, Chinese could be interpreted and displayed by the LFG to notify the information exchange of grammatical procedures at each stage.

	Processing Procedure	Information Exchange	Morpheme	Syntax
5	S-bar procedure	Main and sub-clause	/	<i>ba</i> structure
4	S-procedure	Inter-phrasal information	Relative clause marker <i>de</i>	Topicalization OSV, SOV
3	Phrasal procedure	Phrasal information	Classifier V-Comp marker <i>-de</i>	XP SV(O) / S XP VO: adv-fronting subordinate clause
2	Category procedure	Lexical morphology	Possessive marker <i>-de</i> Adjective marker <i>-de</i> Attributive marker <i>-de</i> Progressive marker <i>zhengzai-</i> Experiential marker <i>-guo</i>	Canonical SV(O): declaratives interrogatives (y/n, wh-, intonation)
1	Word /Lemma	Words	Invariant forms: Single words/constituents	Formulaic expressions

Table 4.8 Account of updated PT Stages in Chinese (Zhang, 2001 and 2008; Gao, 2005)

The above three studies have provided a foundation for the further PT-related research. However, the process and approaches of data collection in these studies, such as the description of the tasks used for data elicitation, have not been explicitly interpreted. Therefore, the reliability of these studies has fallen in question. In addition, Chinese language possesses a grammatical complexity. The current amount of research is not enough to cover all the perspectives of the grammar points in CSL acquisition. In other words, an extended picture of Chinese L2 processing trajectory is very demanding. Moreover, these three studies have little relation in describing the effect of instruction on the processing route which is a possible reason affecting the language acquisition order. To this end, further studies to cover different perspectives are highly required.

To sum up, Zhang's (2001 and 2008) and Gao's (2005) studies have commenced the research in CSL acquisition regarding PT-derived profiling hierarchy, which set up the framework, database and criterion for future research. In other words, these studies are the threshold for the forthcoming research. Certainly, there are still some research gaps to fill in, in terms of the CSL developmental sequences for L2 learners.

4.5 Research Gaps in CSL Studies

The implementation of the processing hierarchy into an LFG-based description of a given language affords a prediction of the stages in which the language can develop among L2 learners (Pienemann, 1998c). Chinese structures fitted in PT are discussed in relation to the flow of grammatical information in the production of linguistic structures.

As seen in the studies above, CSL research has been conducted from morphological and syntactic perspectives among various Chinese L2 learners. An account in relation with the acquisition of CSL has been built up gradually, following the processing procedures. However, the attention on CSL acquisition has not attracted sufficient linguists or scholars to contribute under different frameworks and aspects. Thus, there is still a big leeway left in the research - which should be filled in.

In the first instance, investigation in drawing a more complete picture of CSL developmental route is one of the requested points to start with. Both Zhang's (2001 and 2008) and Gao's (2005) studies have built up a framework in this area. PT therefore serves as the theoretical basis for this type of research. Studies on PT applied in Chinese have only been carried out for about 10 years, which left quite a number of issues for further studies.

Besides, the above studies did not fully explain the developmental path with reference to teaching input among a variety of Chinese L2 learners. Zhang (2001 and 2008) only focused on the Chinese L2 learners who used the same textbook, and the study route of this textbook is quite identical with the implicational PT hierarchy. In other words, it can be assumed that the produced acquisition order in Zhang's (2001 and 2008) data follows the sequence in instruction. Therefore, whether the informants

follow the input instruction or the PT-derived universal hierarchy could be hardly proved. In the later study, Gao (2005) has overcome some of the issues and then generated a more natural database resulting in stronger evidence in research.

Gao (2005) extended her research with the Chinese L2 learners with different native languages, which could further verify the universality of the PT hierarchy from a wider range. Also, her study was done cross-sectionally as it was carried out simultaneously in China and New Zealand. However, the Chinese acquisition backgrounds of her 60 participants were not explicitly discussed in the study, which may definitely influence the reliability of this research. Moreover, the textbook used among the New Zealand learners was not specified by Gao (2005).

Generally speaking, one or two studies are not sufficient to contribute to CSL acquisition within the PT framework. The discussed researches in the past years have left big spaces for future investigation in both morphological area and syntactical development in terms of PT hierarchy. On these bases, my study is positioned to fill in these gaps: 1) the research is conducted among a group of Chinese L2 learners with different L1s; 2) these learners have different Chinese learning experience and acquisition, and their language learning background is explained clearly; 3) these learners are taught in a different textbook whose teaching route is far more different from the PT hierarchy; 4) the elicitation tasks for different grammatical structures are investigated in the research.

Chapter 5 Research Methodology

It has been widely discussed that studies on SLA developmental sequences have mainly adopted qualitative methods for collecting natural language data with a longitudinal or cross-sectional design (Brown, 1973; Corder, 1981; Clahsen, Meisel, and Pienemann, 1983; Pienemann, 1984 and 1985; Pienemann and Håkansson, 1999; Zhang, 2001; Gao, 2005; Zhang, 2008). In brief, language production data is usually collected through the following methods: tasks, interviews, observations or free conversations.

In fact, research methodology consists of a wide range of aspects, including the research principle, data collection and analysis, plus the research validity and reliability and etc. It is a crucial procedure to reach the results of a certain study and then to guarantee the quality and the implicational value of the research project. Therefore, this chapter aims to describe the research methodology, including my research questions, research design, research participants, data collection instruments and the method(s) of analysis.

5.1 Aims and Research Questions

As discussed in previous chapters, PT has been successfully employed in predicting developmental stages in several typologically-different languages, such as English, German, Japanese and Swedish. Kawaguchi (2005a) has claimed that if a PT processing hierarchy is implemented into psychologically and typologically plausible grammars, then the structural outcomes at each stage across languages could be predicted.

Therefore, my research aims to verify the feasibility of the application of PT to Chinese and then explore and expand its current processing stages. Furthermore, with the analyses of textbooks used in PT-based studies, I could therefore assume whether instructions could influence the PT-derived acquisition sequence in Chinese and if so, in what way. Apart from that, what kind of task-based design could be helpful to assist learners' acquisition and production at various stages?

To be specific, my research questions to be answered through the current research design are listed as follows:

Whether the language developmental stages found by Zhang (2001), Gao (2005) and Zhang (2008) can be applied to a different group of Chinese L2 learners? Could the Chinese PT hierarchy be extended further at syntactic level? Will the teaching sequence affect the linguistic production? How the language acquisition and production can be facilitated?

The sub-questions are generated as follows:

Question 1: Does Chinese L2 acquisition follow the processing hierarchy in PT?

Question 2: Does the PT hierarchy as applied to Chinese by Zhang (2001), Gao (2005) and Zhang (2008) also apply to a different group of Chinese learners (with different syllabi)? If yes, to what extent?

Question 3: What is the syntactic extension of PT hierarchy in Chinese?

Question 4: Is the Chinese L2 learners' (who have both formal and natural input) language development influenced by instruction? If yes, how does the instruction affect language development and to what extent?

Question 5: What task-based design could help Chinese L2 learners to elicit required structures at different developmental stages and facilitate their language acquisition in the learning process?

The following Table 4.8 quoted from Chapter 4 presents a summary of the current hypothesized stages for the acquisition of Chinese L2 morphemes and syntaxes. This hypothesis is based on the PT's hierarchy of processing procedures. The second column of the table lists the procedural skills that learners needs to build up at each stage. The third column lists each type of grammatical information exchange at each stage. The last column presents the predicted corresponding Chinese as a second language acquisition sequence, in terms of Chinese morphology and syntax.

	Processing Procedure	Information Exchange	Morpheme	Syntax
5	S-bar procedure	Main and sub-clause	/	<i>ba</i> structure
4	S-procedure	Inter-phrasal information	Relative clause marker <i>de</i>	Topicalization OSV, SOV
3	Phrasal procedure	Phrasal information	Classifier V-Comp marker <i>-de</i>	XP SV(O) / S XP VO: adv-fronting subordinate clause
2	Category procedure	Lexical morphology	Possessive marker <i>-de</i> Adjective marker <i>-de</i> Attributive marker <i>-de</i> Progressive marker <i>zhengzai-</i> Experiential marker <i>-guo</i>	Canonical SV(O): declaratives interrogatives (y/n, wh-, intonation)
1	Word/Lemma	Words	Invariant forms: Single words/constituents	Formulaic expressions

Table 4.8 Account of Updated PT Stages in Chinese (Zhang, 2001 and 2008; Gao, 2005)

5.2 Research Design

A comprehensive research design consists of principles underlying reliable and valid adoption of diverse approaches in the discipline context. This section outlines the research design of my study (which is critical to a successful piece of research) in order to test the hypotheses of the CSL processing hierarchy among a group of Chinese L2 informants.

5.2.1 Research Context

Even though research related to language acquisition often requests learners' language output as data, White (1991) has concerned that production data may not reveal a learner's linguistic competence because he/she may fail to produce certain structures that he/she has already acquired. Obviously, this concern has highlighted the interface between production representations and psycholinguistic knowledge and linguistic input. As no one knows the priori which aspects of linguistic data are attributable for studying grammatical competence, a large number of speech production is requested to represent the underlying linguistic construction (Chomsky 1978; Pienemann, 2005).

From another aspect, Corder (1981) has explained that learning is a process of

interaction between the learners and the given input. Apart from the formal instruction in classes, the overwhelming majority of bilinguals have acquired their L2s in an informal situation, such as through conversations with native speakers (Jansen cited in Di Biase, 2002). Therefore, both formal and informal input received by the research participants is considered in this study.

Essentially, one must examine the way an L2 actually develops, not the way it should develop. In this case, natural speech data will be ideal for the investigation of language processing. Yet, from the methodological point of view, it is a time-consuming process which could be compensated for by the possibility of using a wide range of elicitation techniques.

On the basis of all the above discussion, in order to receive further explanations and accurate experimental results for the application of PT in association with CSL acquisition, the selecting of adequate research methods is no doubt a very important phase. How the decisions were made relating to sample size, choice of research instruments and treatment of data will be explained in the next section.

5.2.2 Research Methods

It is advantageous to a researcher to combine methods to better understand a concept being tested or explored (Creswell, 1994; Rossman and Ralls, 2003). For the combination of methodologies in the study of the same phenomenon, the bias that is inherent in particular data sources and methods would be neutralized; especially when it is applied in a triangulated view. Further, it is the expansion wherein the mixed methods add scope and breadth to a study, since it integrates the paradigms at several phases of the research process (Bailey cited in Nunan, 1987).

Considering my research contexts, longitudinal as well as cross-sectional design could benefit the findings in the research. Theoretically, longitudinal studies in SLA are undertaken for individual learners' or a small team of learners' acquisition through real time at different moments over the chosen period of time to track and investigate the language development; therefore, the research results are even closer to the 'facts'

of acquisition which depict a continuum of a true reflection of the acquisition process (De Bot et al., 2005; Hatch cited in Richards, 1978; Jansen cited in Di Biase, 2002). Pienemann (1998a and 1998c) has tested German L2 learners from such a longitudinal view, which have captured the change in the L2 learners' grammatical progress through regular intervals over time. He (1998a and 1998c) then depicted an explicit picture of the German L2 development process.

However, it is very difficult to find agreeable participants for a study covering a long period (Pica, 1983; Zhang, 2001). Cox (2005) then opted for an alternative - a cross-sectional study in which samples of language data were collected from a range of learners at different levels at one point in time. Nunan (cited in Nunan, 1987) has made the assumption that the cross-sectional study should yield a moving picture of language development, which is similar to data collected from an individual learner over a long period (Di Biase and Kawaguchi, 2005). Such a cross-sectional design will reveal a large data base with less relation to the acquisition process in interlanguage development (Larsen-Freeman and Long, 1991; Nunan cited in Ritchie and Bhatia, 1996).

It is obvious that each research design has its own advantages and drawbacks. To maximize the value of each approach is to merge them. In terms of the study in linguistics, longitudinal research could reveal a specific developmental pattern across languages; while in cross-sectional design, different learners are supposed to represent different trajectories of development at the same point (Braidı, 1999; Ellis, 1994 and 2000; Larsen-Freeman and Long, 1991; Pienemann, 1998a and 1998c).

Zhang (2001, 2004 and 2008) has demonstrated that the developmental predictions on the basis of PT for Chinese L2 speakers are borne out by longitudinal as well as cross-sectional design (Pienemann, 2005) since they are the most suitable methods for documenting the developmental course of certain L2 grammatical items. In particular, cross-sectional design could take the approach of comparing individuals from the same language background at different stages.

In this case, considering a crucial typological plausibility test under the umbrella of

PT, it is beneficial to apply this dual mode research in my study - it allows the changes in a learner's language over a set period to be observed, as well as capturing the characteristics of interlanguage in different learners' output at one point.

5.2.3 Methods Selection in Current Study

According to the research tradition, Grotjahn (1987) provides an insightful argument that the previous distinction of qualitative and quantitative approaches oversimplified the real research methods in applied linguistics. In this regard, an exploratory-qualitative-statistical method (Grotjahn, 1987) is introduced. It is categorized as a mixed form of non-experimental approaches, such as interviews and production tasks. The focus of this method is the statistical analysis of the qualitative data. My research, which aims to statistically analyze a large amount of language production data received from qualitative method, fits in this concept. In this case, Grotjahn's (1987) method was adopted in my study.

In terms of the qualitative scheme, even though observations could provide the purposeful examination of teaching and/or learning events through systematic plans and the process of data collection (Bailey cited in Nunan, 1987; Rossman and Rallis, 2003), I could not take the observational role since I was involved in the data collection process.

Another method in a qualitative inquiry is interviews, which can yield a relatively accurate picture of the learner's current morphosyntactic competence. Mann (1983) and Seliger and Shohamy (1989) pointed out that employing interviews in SLA research enables learners to provide intuitive information on how they learn and function in their L2s. Hughes (cited in Greenfield, 1996), however, has underlined that data collected through interviews may be partly an artifact of the procedure employed (based on the situational contexts and interlocutor effects), so the interviewers should carefully consider the steps in conducting interviews.

In addition, to collect data on phenomena that are not easily observed (such as attitudes, motivation, and self-background), a questionnaire should be employed, as it

is a time-saving method. Seliger and Shohamy (1989) have recommended that before using any questionnaires, it is necessary to try it out in order to obtain information about the clarity of the questions and maintain the quality of data collected. With the necessary revisions of the questionnaire, it could be then sent to the participants.

According to the benefits and issues of each method in terms of targeting morphosyntactic structures in my study, interviews are conducted in a relatively natural context with the supportive information from questionnaires. The questionnaire has been distributed among all the informants to find out their language learning experience and personal backgrounds. This questionnaire was designed based on the suggestions from Rowntree (cited in Greenfield, 1996: 152). The main questions (which are based on a pilot test) have been discussed with my supervisors before the final version was delivered to the participants.

In terms of the interviews, the most 'dangerous' issue in such a study is that the presumed target structures are underrepresented and thus not assessed (Corder, 1981; Chaudron cited in Doughty and Long, 2005). Hence, Mackey (1994) has suggested that the informal interview should be retained with the structured interview in conjunction with eliciting tasks, which could be more pragmatic and guaranteed that learners produce presumed structures. Moreover, concerning my research design, the designed tasks were frequently adjusted for different participants.

In the end, interviews, including designed tasks and free talk, are mainly employed in my research when collecting speech data on the use of Chinese grammatical functions as an IL. Regarding the predetermined topics in tasks, the Chinese L2 learners would make a range of choices based not on a description of Chinese, but on the capacity of their ILs: what they are able to produce in such contexts. Also, these learners are allowed the freedom to digress, namely to probe beyond the answers to their prepared standardized questions.

Besides, the establishment and maintenance of a good rapport is highly important in the interview process (Berg, 2004), so as such, some interesting and updated topics are usually prepared to get the conversation started with the research participants.

An additional interview is conducted with the two language teachers of my research participants at Newcastle University. On the one hand, they have briefly introduced the in-class performance of each participant; on the other hand, the teaching syllabus and extra materials used in classes have been provided for reference.

Interviews are sometimes suggested to be taped, transcribed, and later coded and analyzed for evidence of participants' language development over time (Ellis and Barkhuizen, 2005). Therefore, audio recording is employed to sample naturally occurring language in my study. Even though the presence of a recorder may induce self-consciousness in learners' speeches, participants are likely to ignore it when they are involved in the conversation and behave naturally. Obviously, the quality of recordings is important to maintain the validity of the data, as mechanical failures of recording equipment always cause difficulty in data collection. The difficulty of obtaining clear recordings in a 'noisy' environment is overcome in my study through the use of modern clip-on radio microphones.

In addition, in order to verify the hypothesized PT hierarchy in the context of Chinese, a *Textbook Analysis* is to be conducted. The analysed textbook is the one that all the research participants used for Chinese learning at Newcastle University. In order to clarify the relations between the acquisition stage and the teaching sequence, a further analysis of two textbooks used in Zhang's (2001 and 2008) and Gao's (2005) studies have been carried out simultaneously.

The grammatical items included in the proposed hierarchy are to be marked in the textbook analysis. Then, the trajectory of these structures in the textbooks will be compared with the developmental route of the corresponding structures found in Zhang's and Gao's studies. More importantly, the textbook analysis is integrated together with the teaching plans (only for Newcastle study), since teachers are expected to incorporate and deliver extra knowledge in classes - this could ensure that the first formal occurrence (input) of a certain structure to the participants is accurately documented.

Ideally, if the teaching sequence violates the universal processing hierarchy, put

together with the probability of learners' natural acquisition, I could therefore justify whether the teaching context has some sort of influence on the PT-derived sequence in Chinese. For example, it could be supposed that the Chinese *ba* structure proposed at stage 5 in the PT-derived hierarchy has been delivered to the learners before the introduction of grammar points at stage 4 in the teaching schedule. Under the provided contexts, if *ba* structures are rarely produced in use after the input, in spite of other objective factors being considered, one could say that the teaching input would not alter the L2 learners' natural acquisition route in Chinese. This evidence to some extent supports the keystone of the Processability Theory, in spite of the consideration of instructional functions.

5.3 Research Participants

5.3.1 Sampling Criteria and My Research Participants

Participants' selection is a matter of sampling, which aims to reflect the property profile of the population from which the sample is drawn (Corder, 1981; Lynn cited in Greenfield, 1996). Creswell (1994) have specified the six-step procedure for sample selection: 1) to identify the study population; 2) to identify whether the sampling is single or clustered; 3) to identify the selection process for individuals; 4) to identify whether the study requires particular representative samples; 5) to discuss the procedures for sample selection; and 6) to confirm the number of people in the sample (to consider the accessibility of sampling selection). These steps could benefit the research expense and administration.

In my study, I restricted the sampling to the Chinese L2 learners in Newcastle, UK. Henceforth, the nature of the sample selection seems not completely representative; however, psycholinguistic studies are based on repeated measures that relate to well-understood and hence valid concepts. Therefore, conclusions that are drawn from the analysis would not be very much limited to the nature of sampling in my study (Pienemann, 1998c).

As the goal of my study is to document the acquisition process and production of CSL grammatical morphosyntax, it is important to have a group of learners who are

sophisticated enough to cognitively report their ILs. Consequently, my research sampled learners who shared the same property and show a special interest in my research, following the suggestion from Milroy (1997). All the participants are the captive audiences, who were volunteered from a pool of 36 undergraduate students enrolled in a Chinese language programme at Newcastle University in 2005 and 2006.

As human beings are the subject in my study, there are some other considerations to be taken into account regarding the variables associated with these experimental subjects. For example, intelligence is often discounted as a factor in language acquisition, but it may affect the way subjects understand the test instructions (Corder, 1981). Motivation may also play a role here, as subjects with low motivation may not take the tests seriously and may provide no response (Smith, 1994).

Therefore, according to the questionnaires received from all the volunteered participants, I could easily comprehend their language learning background and individual characteristics. All these participants are capable of communication and considered as the ones who are 'of the best quality that could be achieved, [and] that the response rates are encouragingly high' (Milroy, 1997: 25).

To a large extent, the participants in this study have satisfied the following sampling criteria (Greenfield, 1996; Onwuegbuzie and Leech, 2005; Zhang, 2001), which could help guarantee the quantity and quality of the required production data (the various backgrounds of the participants could also enhance the reliability of the research results):

(a) They are the easily accessible informants who are able to provide required information.

(b) Some of them have various experiences in Chinese language, such as informal Chinese learning or working under Chinese contexts. The rest of them have no contact with the Chinese language before they enrolled in the programme. All participants have zero formal input before entering the university.

(c) They enjoy speaking Chinese and using Chinese for communication.

(d) They either had positive and successful language learning experience in the past

or are bilingual speakers before learning Chinese. All of them were active in learning and had no apparent motivational or attitudinal problems.

My participants are planned to be between 6 and 8 in number and have different L1s and L2 learning experiences. By 2006, eight Chinese L2 learners joined this research from Newcastle University, all aged between 19 and 22. Two of them have already learned Chinese for 1.5 months and the other six students have formally learned Chinese for almost 11 months. Among them, five students have been to China before and three of them stayed in China for around one year. Besides, all informants were proficient speakers of a foreign language other than Chinese and their native languages: Marlene (German L1) spoke English, Spanish and Dutch, Harry: French and German, Francisco and Liam: French and Spanish, and finally Rachel, Joe, Scott, and Catriona: French. They all had extensive exposure to their respective L2s through travelling, studying and working. Therefore, Chinese is actually their 'other' language. All these subjects were at different Chinese competences when they were opted as participants.

These eight learners enrolled in the same Chinese programme but started a beginner's Chinese class at different times. To stimulate Chinese learning and build up necessary learning contexts, the Chinese programme director in the university hosted a number of native Chinese speakers as the regular tandem partners of all undergraduate students. All my informants were encouraged to mingle with them in different occasions. Therefore, in addition to class instruction, input of Chinese also came from the peer Chinese students outside the class.

All my subjects were taught from the same syllabus but by different teachers. The syllabus used in their formal instruction covered all units in the first two volumes of the textbook used for the course, *Integrated Chinese*. Details of the textbook analysis will be explicitly explained in the next chapter. The students' weekly teaching input consisted of grammar drills, regular situation-based activities and the completion of tasks for the key forms in Chinese.

At this point, the general background of each participant in this research would be

illustrated and summarized from their questionnaires and individual interviews.

Harry is 20 years old. He has learnt French as a second language for eight years and German for five years when he was at high school for his GCSEs (General Certificate of Secondary Education). He can also speak some basic Hebrew. Harry is a very active and enthusiastic student who believes that learning Chinese is enjoyable but also frustrating. He was taking his first-year Chinese programme in 2006 after he visited China for three months (88 days exactly) to work as a volunteer English teacher.

Rachel is a 21-year-old female student who studied in the second year Chinese programme. She has also learned French as a second language when she was in high school studying for her GCSEs. She went to China one year before she enrolled in the Chinese programme. In that year, she worked as an English teacher in a local middle school in Wu Lu Mu Qi city, Xin Jiang Province. According to her questionnaire, she has acquired some Chinese expressions in her daily life, but had no instructed Chinese lessons. After she started in the Chinese programme at Newcastle, she gained work as the only native English speaker in a local Chinese restaurant in Newcastle. During her work, she sometimes had to use Chinese to communicate with the chef and some customers who could speak little English.

Catriona is a very active and diligent student who is 21 years old. She is very happy to communicate in Chinese. Like Rachel, she also did one year of English teaching at Tian Shui, Gan Su Province in China. She also had no formal Chinese lessons before she went to Newcastle University. She was (at the data collection starting point) a second year student.

Liam was 20 when I started to collect data. He is a very quiet boy among all the second year students; however he has been recognized as one of the most diligent students by both his language teacher and classmates. Even though he had no experience of Chinese before entering the University, he does have a very good reputation in learning other languages, such as French and Spanish.

Scott is 20 years old and in his second year of study. He has learnt French for six

years and could speak some Spanish and Greek. Scott enjoys learning Chinese since he said that ‘Chinese is a language that from the outside seems so difficult, but once you get the grips of it, it becomes a lot easier’. He also had experience in teaching English in Yun Nan province in southern China for a year. Natural Chinese acquisition (surrounded by Chinese) was inevitable during his one year experience, which enabled him to be confident in communicating with Chinese native speakers. Different from the other subjects, he had learned Chinese by himself before he left for China and he also had a private Chinese teacher who taught him essential Chinese when he was in Yun Nan.

Joe is a 22-year-old student enrolled in his second year Chinese programme. Although he has not yet been to China, he is very happy to learn Chinese, which could boost his career in future. He also learned French as his second language at high school.

Francisco (called as Fran) is a year 2 student on the Chinese and Spanish programme. Both languages she is learning are typologically different. Her father is from an Arabic country and her mother is a native English speaker. She had a successful experience of learning Spanish for nine years and French for six years. She is a very shy girl but keen on learning languages.

Marlene is 21 years old, yet unlike other native English participants, she is from Germany and has been learning English for 10 years. She did spend four years learning English in London when she was a teenager, so her English proficiency is nearly of a native standard. In addition, Marlene has learned Spanish and Dutch, equivalent to GCSE level. Besides, her mum is from the Philippines, so she can say a few Filipino words as well. She is in year 1 of her Chinese study. Marlene once went to China for a week to watch the Tennis Masters Cup in Shanghai but has not been able to experience the real Chinese culture yet. From the questionnaire, Marlene has pointed out one issue, namely that Chinese is completely different to European languages; whereas in French, for example, there are words which are similar to Spanish, English or even German so that she could make sense of what is being said.

5.3.2 Informed Consent

The notion of informed consent has become a cornerstone of ethical practice in research involving human subjects. The nature of consent implies that the potential subject has a voluntary agreement to participate in a study and he or she understands the nature and procedures of the current research and its potential impact (Mackey and Gass, 2005).

To alleviate these concerns, as a research conductor, I am advised to respect the participants and make it clear from the beginning that all research-related information will remain confidential and anonymous wherever possible. The various steps that will be taken to protect the learners' anonymity should also be explained (e.g. using numbers or letters instead of names to refer to participants) (Creswell, 1994; Mackey and Gass, 2005). For instance, the access to the informants' production data will be restricted in my personal computer and no one except me could get through the detailed information without permission (or a password). In addition, the informants' rights, interests and wishes will be considered first when choices are made regarding reporting the data. Even though the results of the current study may be presented in public, their names will be anonymously displayed.

All the participants in my research have clearly understood my study plan and the predicted outcomes. They all volunteered their time and L2 speech data. Besides, they all have signed consent forms to allow me to use the data collected to undertake a study into the Chinese language processing profiling.

5.4 Data Collection Instruments

Any study of language acquisition needs to be based on the comprehension of the acquisition process. The aim of PT is to answer the question: what causes the development of L2 competence to follow a predictable and incremental route (Pienemann, 1998c)? The construction of this question, assumed in PT, is that language processing mechanisms constrain SLA. Accordingly, the speech production data are desired in the sense that specifiable and predictable features in the language samples embody the effects of the processing constraints. Such corpus data should be

collected naturally under low environmental influence in PT examination, through both naturally occurring and elicited conversations (Gao, 2005; Pienemann, 2005; Zhang, 2001).

Therefore, tasks for data elicitation as well as free conversations have been implemented in my research. In this section, I am going to discuss the data collection procedure and the theoretical concerns in my research.

5.4.1 Task-elicited Speech or Natural Speech

In fact, there is always an argument regarding the application of tasks, since the elicited structures are assumed to be restrained by the features of the provided tasks. The data is then presumed to be artificial and hence suspect or even automatically invalid (Smith, 1994). Instead, natural conversation could encourage the language production in an easy and relaxed manner.

However, Smith (1994: 62) has stated that ‘completely spontaneous data rarely figures in the research literature’. The analysis of spontaneous speech has its limitations regarding the availability of contextual cues for successful understanding. Also, using natural speech may generate too rich and somewhat confused spoken data due to lack of restricted guidelines for the output. For instance, if a presumed structure does not emerge in the learner’s IL through natural speech, it may be because of the following three reasons: 1) scarcity of this structure in his/her IL; 2) no need for the use of this structure in his/her language output; or 3) lack of confidence and an avoidance strategy. In other words, learners may avoid the ‘difficult’ expressions in the spontaneous language production or they are likely to be too aware of the atmosphere and therefore feel anxious (Eisenstein, Bailey and Madden, 1982; Smith, 1994).

In contrast, well-designed tasks would increase the quantity of the speech output and the learners’ attention could be turned to focus on delivering information with contextual clues. The task-elicited speech data could also ‘best represent the automatic and online nature of language production’ (Zhang, 2002a: 86) and offer the

immediate presence of learners' IL.

Goldschneider and DeKeyser (2005) cited the Larsen-Freeman's (1975) findings, namely that the study of adult ESL order of acquisition is carried out by investigating the order obtained by using designed tasks. Larsen-Freeman (1975) has found that within proper tasks, the orders were displayed consistently across different language backgrounds. In addition, Doughty and Long (2000) have also employed tasks for the purpose of testing students' acquisition. They exemplified that communicative tasks were used with respect to students' improvement following task performance, but were not specifically focused on the grammatical output.

The aim of the current study is to elicit as many instances of specific grammatical structures as possible in a short time with a diverse range of contexts for the purpose of assessment. Even though the learners' performance is preferred to be in naturalistic situations, it is very time-consuming and ineffective (Mackey, 1994). However, the designed tasks can draw out more data with less concern for observational reliability. Therefore, with the tightly-controlled tasks counteracting avoidance strategies, the likelihood of eliciting optional structures could be raised and the effectiveness of producing spontaneous data could be increased in a much higher density of natural contexts (Creswell, 1994; Jansen cited in Di Biase, 2002; Nunan, 2006). On this basis, the L2 learners' language acquisition could be assessed according to their language production.

From the data collection point of view (apart from the obvious time constraints attached to collecting, transcribing and analyzing naturalistic data), appropriate instruction in completing tasks received by participants could result in the production of massive necessary tokens of grammatical structures to 'satisfy' the emergence criterion in PT (Mackey, 1994). Zhang (2002a: 87) has also added that 'special care was taken to not only include the newly taught items, but also the old ones so that a longitudinal, process-oriented acquisition profile could be compiled for each learner'. Therefore, the coherence of presenting grammatical points in a series of tasks has been significantly considered in my study.

In conclusion, ‘in order to obtain an accurate picture of a learner’s current stage of morphosyntactic development, it is necessary to employ a range of data collection measures’ (Nunan cited in Nunan, 1987: 163). To weigh both natural speech and elicited speech, it was decided that both natural conversation and production tasks should be applied as contribution to the data corpus in my study. In the production tasks, the use of grammatical points was not specifically targeted but was unavoidable. All the unfamiliar vocabularies but not grammatical forms were provided when necessary.

5.4.2 Aspects of Tasks

From the psycholinguistic point of view, task design should be based on the reasons why the task is designed and who it is designed for (Norris, 2002). Generally, tasks are required to have a positive impact on the learners’ language development. Mackey (1999) has addressed the four important aspects of tasks in language acquisition:

- (a) task design;*
- (b) relevance for the learners;*
- (c) the way they are used; and*
- (d) the impact on development.*

For the sake of data elicitation, the first three aspects should be considered in an inter-related way. Firstly, how to design a task and who the task design should be for are the initial concerns. Then the designed tasks should be relevant to the learners/task-takers, which would facilitate the process of completing such tasks. When applying the designed tasks in data elicitation, the method of conducting the completion of the tasks should be carefully considered. For instance, should the task be used as one-way or two-way? In fact, with the evidence received from previous studies (Pienemann, 1998b; Zhang, 2001), when the three aspects are interdependently woven into the process of task design, the outcome of completing a task could then be strengthened and maximized positively.

Definition of a Task

Task-based approaches have been initially discussed with regard to different

interpretations of the term ‘task’ initially. For the purpose of task design, it is also important to quote an adequate definition of a task. The establishment of this definition illuminates the effectiveness of task design, and then allows the teachers to comprehend the various meanings of a task and how to use the designed tasks.

In my opinion, a task is seen as a piece of assigned work. Considering the aspect of language, Willis (2000: 23) has defined tasks as the ‘activities where the target language is used by learners for a communicative purpose (goal) in order to achieve an outcome’. However, as for the elicitation purpose, the working definition of a ‘task’ is a context that allows the target language structures to be used through mobilizing the grammatical knowledge in order to express meaning (Nunan, 2006; Samuda and Bygate, 2008).

In terms of the above informative definitions, an elicitation task should be goal-oriented and should employ a target language to accomplish particular outcomes interactively in the real world. Five crucial points are embraced and highlighted in particular in these definitions: *use of target language, communicative purpose, emphases on meaning, achievement of an outcome and in a context*. Therefore, these five emphases will be appropriately integrated and applied as the focus in my task design for Chinese L2 learners. However, a task is not an activity which occurs purely in real conditions; otherwise, it will not be practical and manageable in assessment. Hence, the criterion for a real context is not absolute, but aims at a relatively real condition.

In this case, a broader definition which indicates almost everything that students are required to do in the classroom to learn a language is defined as such in my study:

a task - a problem or a goal (in real contexts) that the students aim to solve or to reach by exchanging the input they have perceived, according to a set of pre-determined principles.

Variety of Tasks

Crookes and Gass (1993) have claimed that different tasks influence the kind of language which learners produce in various ways, in terms of what learners do with

this language. In other words, each variety of tasks is aimed at particular language and communication skills. The task categorization adapted frequently is defined by Pica, Kanagy and Falodun (1993) from a psycholinguistic typology point of view. The following table is cited from Pica, Kanagy and Falodun (1993: 19).

Task Type	Interaction relationship	Interaction requirement	Outcome options
Jigsaw	Two-way	Required	Closed
Information gap	One-way or two-way	Required	Closed
Problem solving	One-way or two-way	Optional	Closed
Decision making	One-way or two-way	Optional	Open
Opinion exchange	One-way or two-way	Optional	Open

Table 5.1 Task Variety

It can be seen in Table 5.1 that the jigsaw task is a two-way task which indicates that all participants share their specific information to reach a pre-defined objective; therefore, interaction is required in completing jigsaw tasks. All participants exchange their information to find out an appropriate sequence for the pieces of texts or pictures. Different from jigsaw tasks, in information gap tasks, the flow of information is either one-way or two-way. In one-way information gap tasks, one learner has all the information (for instance, one learner describes a picture while the other draws it); while in two-way information gap tasks, both learners have the information to share (Pica, Kanagy and Falodun, 1993; Ellis, 2003).

Problem-solving tasks require students to search for information from appropriate sources in order to solve some existing problems. Participants are required to pool clues for solving a mystery or to organize details into a story. A decision-making task aims to reach a certain agreement among all the participants, while an opinion-exchange task has a rather open outcome, since the participants do not need to have an agreement. Participants in an opinion-exchange task are encouraged to engage in exchanging opinions and to express their ideas as much as possible (Ellis, 2003). It has been recommended that open-ended requests such as ‘why’ could lead learners to modify their response considerably and their language output of the grammatical patterns could be a lot higher (Pica, Kanagy and Falodun, 1993).

As characterized, the task type varies considerably, from information-gap tasks and

problem-solving discussions, to picture description. Despite their variety, these communication tasks all include the following five features (Chaudron cited in Doughty and Long, 2005: 778):

- (a) *meaning is primary;*
- (b) *there is some communication problem to solve;*
- (c) *there is some sort of relationship to comparable real-world activities;*
- (d) *task completion has some priority; and*
- (e) *the assessment of the task is in terms of outcome.*

Compatible with these five given features, Mackey (1994) has further designed six types of tasks in language use with explicit objectives, targeting the purpose and result of tasks. Originally, each task type seeks to elicit different grammatical structures in English. Table 5.2 is quoted from Mackey (1994). Pienemann has adapted Mackey's task types to elicit specific morphosyntactic structures with different values for acquisitional analysis based on PT (Pienemann, 1998c). Pienemann (1998c) demonstrated that native and non-native speakers behaved very similarly in terms of the extent to which they produced particular structures, such as the 3rd person singular present tense in English, in response to task variety.

Task	Structure	Participants
Habitual actions	3SG 'S' -ing	Subject & Researcher
Story completion	Wh- question	Subject & Researcher
Informal interview	General	Subject & Researcher
Picture sequencing	Negs/Cop. Inv./Questions	Subject & Subject & Researcher
Picture differences	Negs/General questions	Subject (&Subject) & Researcher
Meet partner	Questions	Subject & Subject & Researcher

Table 5.2 Overview of Tasks

All the tasks in the table are used for the elicitation of a range of different structures among English L2 learners, which could help test the performance of different grammatical forms included in the PT profile.

Among all the tasks, *habitual actions*, *story completion*, *picture sequencing* and *picture differences* are subject to constrained answers which limit the range and creativeness of the participants' task completion, while employing *informal interview* and *meet partner* tasks is to receive relatively natural and unconstrained language production. In the situation of investigating learners' grammatical processing, only

one task-taker each time is suggested – only under this circumstance could the learners benefit from the designed tasks; therefore, *picture sequencing* and *meet partner* tasks (which require more than one task-taker) are not suggested to use, due to the restriction in the number of participants during examinations.

To be specific, in *picture differences* tasks with an information-gap, the picture was hidden from the view of the participants who were asked to locate the differences. With this task type, it is important to ensure that the pictures are valid and reliable for the participants at specific levels (Ellis and Barkhuizen, 2005; Mackey and Gass, 2005; Smith, 1994). Among all the above task types, the informal interview (such as free conversation) is mostly not used in language production since it is relatively aimless for grammar output.

For the aim of eliciting grammatical structures complying with the processing hierarchy in my study, different task types have been employed to retrieve different structures. For instance, *picture differences* have been used for the output of Chinese question forms while *habitual actions* have been adapted and employed to elicit adv-fronting in Chinese.

Apart from Pienemann (1998c), other researchers have also applied or adapted documented task types among their L2 learners for the purpose of elicitation in various ways. For example, Jin (1994) used silent cartoon films retold to collect Chinese L2 sentences; Polio (1995) employed the Pear Film to elicit grammatical references among Chinese L2 learners. They both adjusted the *story completion* tasks to use in their data collection.

5.4.3 Rationale of Task Design

The theoretical rationale to design tasks is very necessary. Reviewing the task-based research (Ellis, 2003; Nunan, 2006; Willis and Willis, 2007), a seven point rationale is specifically outlined as: scaffolding, task dependency, recycling, active learning, integration, reproduction to creation and reflection - among which, scaffolding and integration would be considered in elicitation task design (Nunan, 2006).

Scaffolding, on the one hand, is tailored to the target group of learners and encourages collaborative and cooperative work. On the other hand, ‘inappropriate’ scaffolding may be taken as the constraint which holds back autonomous language production (Ellis, 2003). In this case, proper scaffolding could interpret the direction or instruction of the task purpose and positively constrain the task design in a required manner.

In addition, integration involves combining all the related functions of language items in the process of task completion (Nunan, 2006). It guarantees that learners could be tested as thoroughly as possible regarding certain language items to the maximum level. In other words, a well-designed task in language use should allow the learners to integrate linguistic forms, communicative function and semantic meanings in the process of completing this piece of work.

These two main principles construct the rationale of task design for elicitation purposes. In spite of them, some other features in designing such tasks should also be considered.

First and foremost, authentic tasks are desirable in that the learners are required to deal with genuine contexts corresponding to the use of the language in the real world, such as how to borrow a book in the school library (Buck, 2001; Leung and Lewkowicz, 2006; Ellis, 2003; Willis cited in Leaver and Willis, 2004). A variety of language skills and grammatical features in spite of language itself could be retrieved in such real-world contexts. The function of these tasks is to allow learners to be conscious of delivering meaning without manipulating the employment of related structures on their own (Jia, 2005). The language could then be extreme in real situations (Hu et al., 2005).

However, interactional authenticity is a relative concept. It is still debatable as to what extent the tasks should be extracted from the real world, but at the very least, tasks should be more related to the contexts occurring in natural life, in order to allow the learners to feel comfortable (Leung and Lewkowicz, 2006; Jia, 2005).

Authenticity does not equal complexity. As an illustration from Guariento and

Morley (2001) shows, simplification should take place in tasks but this needs to be reasonable and correspond to the original task objectives. Otherwise, the complexity of tasks may block the learners' interests and add a barrier to language improvement (Jia, 2005). Moreover, practicality is another feature in real social activity. Learners can then feel the demands of producing adequate grammatical forms in communication.

Besides, Ellis (2003) has underlined that task dimensions also occupy a significant position in task design. The following Table 5.3 which describes and compares the major task dimensions is quoted from Ellis (2003).

Task dimensions	More positive	Less positive
Information exchange	Required (information gap)	Optional (option-gap)
Information gap	Two-way	One-way
Outcome	Closed	Open
Task familiarity	Non-familiar	Familiar
Topic	Human/ethical	Objective/spatial
Discourse domain	Narrative	Description/expository
Cognitive complexity	Context-free; detailed information	Context-dependent; less-detailed information

Table 5.3 Task Dimensions

These dimensions would affect the difficulty and outcome of the task on various levels. For example, an L2 learner is asked to complete a piece of task in the assessment which is very similar to the one used in classroom teaching and practicing. Then, this L2 learner may easily manage the task without comprehending the required linguistic knowledge. Therefore, it seems that the dimension of 'task familiarity' has been ignored in the task design.

Besides, Misley, Steinberg and Almond (2001) have considered that the reliability and validity of the task are also imperative, which could ensure its quality. Most of the reliability issues are to challenge the rating scheme in determining the successful completion of the tasks: what the scoring interpretation is, what the rating relies on and how reliable it is (Misley, Steinberg and Almond, 2001). The validity of tasks pertains to the meaningfulness and appropriateness of the tasks used in the given settings, according to the aspects of the language being targeted (Bachman and Palmer,

1996). To challenge task validity for elicitation purposes, an on-going process should be operated before the test, during the test and after the test (Underhill, 1987). Both reliability and validity issues in task design have been strictly observed in my study.

5.4.4 Relating Forms to Meanings in Tasks

In essence, PT has underlined that the grammatical forms are mainly required in the output while delivering meanings (Pienemann, 1998c). The success of a task is measured by the adequate delivery and a spontaneous exchange of a certain meaning, rather than simply a correct production of the language grammar (Willis and Willis, 2007). Therefore, it probably results in a particular difficulty when attempting to concentrate on what one person is going to say and simultaneously, how they are going to say it.

Task-based elicitation includes the focus on meaning as well as on form. Employing tasks could turn the learners' attention to the communicative functions of the language forms in production – it is assumed that learners could acquire a structure successfully not only because they can process it in their minds, but also because a functional need requires the structure to emerge.

Ideally, according to Mackey (1994 and 1999), all the task types should be based on communicative reality, but they could spontaneously retrieve particular grammatical forms. These communicative tasks build up contexts for the elicitation of grammatical structures. The actual operations of these tasks are of a structural nature, which helps to sustain learners' motivation and make the activity more appropriate to their probable communicative needs. The tasks are relatively interesting and attractive, so students would like to complete them through interaction. In these tasks, language reality has been embedded in a context of social interaction (Mackey, 1994 and 1999).

For this purpose, the designed tasks should enable learners to relate the linguistic forms to communicative functions naturally and intuitively. For example, to retell an accident to a policeman as a witness in English requires the learner to make careful use of the past tense, and creates a communicative environment that supports learning and enables information exchange. The witness should logically describe the accident

he/she observed and then carefully answer the questions from the policeman.

In fact, the meaning would somehow distract the attention away from form, so the learners could focus on communication. However, when learners complete a task, they should correctly interpret information they received. From this perspective, grammatical structures have to be adequately used in order to convey more effective and meaningful information (Littlewood, 1986; Skehan, 1996 and 2003). To be successful in communication, meaning delivery as well as form use of a language are both crucial in the process of task completion. Henceforth, learners' functional language progress could be assessed by setting meaningful tasks that elicit natural language use.

5.4.5 Data Collection Schedule and Venue

The whole schedule of the university for the academic year 2006-2007 is stated as follows: Semester 1: Monday 25th September 2006 to Friday 26th January 2007 (with the Christmas break from Saturday 16th December 2006 to Sunday 7th January 2007); Semester 2: Monday 29th January 2007 to Friday 15th June 2007 (with the Easter break from Saturday 24th March 2007 to Sunday 22nd April 2007). In simple terms, the data collection period consisted of a total of 38 instruction weeks, from 24th October 2006 (Week 5) until 15th June 2007. Among the whole period, week 9 (reading week), weeks 13 to 15 and weeks 27 to 30 were class-free periods.

The semester started on 25th September in the 2006 to 2007 Academic Year at Newcastle University. The first week was induction week and the formal teaching started on the 2nd of October 2006. My data collection is a dynamic process which did not start until the 24th of October 2006 (week 5). In those first few weeks, students were recommended to join my research voluntarily and they had time to either commence the Chinese beginners' unit or resume their studies. For instance, the two beginner students had completed the module of Chinese phonetics (weeks 1-4), and had learned a few formulaic expressions (e.g. greeting and thanking) and basic sentence structures.

In fact, the Chinese language course which all the participants have undertaken was intensive, comprising of 4 hours of lectures and 2 hours of tutorials per week from two instructors for 30 weeks in the whole academic year, excluding holidays and in-term breaks at Newcastle University. Therefore, these participants received approximately 180 hours' formal instruction per academic year.

Before the new academic year started in 2006, I had started to contact the director of the Chinese programme at Newcastle University. After officially receiving the student enrollment information in this programme, I began to contact them and asked for volunteers who would like to join this study. In week 5, the first data session took place. Due to their personal time availability and holiday bookings, eight participants had a slightly different interview time (the difference is usually within a week). Also, the data collection in one period is taken on different days with different participants. For example, within week 5, the participants were all interviewed independently in 3 respective days of that week.

Subsequent sessions took place at regular intervals once every 2 or 3 weeks over the academic year of learning, except during breaks which have been stated in the above schedule. Each session lasted between 20 and 35 minutes in length, with later sessions considerably longer than the earlier ones. The time displayed is the net time spent by each student, excluding explanations of vocabulary, necessary instructions, English communications and personal information elicitation or warm-up chat. Each interview was audio-recorded through a digital Sony Audio Recorder R9 with a high quality built-in microphone, which is professionally designed for oral data collection and transcriptions. In the end, the speech was transcribed by the researcher.

A total of between 24 and 26 data sets were obtained from each informant (the number of the data set varies since some of the participants could not complete a couple of the data collection sessions due to personal difficulties). The data collection took place between the informant and the researcher in a dyadic format. Among the 24/26 data sets, 10 individual oral interviews conducted over 2 semesters have been selected to analyze, since no obvious progress could be identified within very short

intervals. Most of the selected speech data could be used to identify the participants' progress over time (but not all the participants made a large amount of progress as time went by).

Most interviews were done in the Open Access Centre (OAC), a language learning centre for all different language learners. OAC offers a very comfortable environment with most audio and video materials provided for use, along with the talking area, study area and internet access for learners. On some occasions, the interviews were conducted in the outdoors but in a relatively quiet environment. Each session started with a brief exchange in both Chinese and English, which allowed the learners to feel comfortable and relaxed at the beginning. To act as a good interviewer, I gave the informants incentives to speak as explicitly as possible and attempted to talk about topics that may be of interest to the participants.

5.4.6 Data Collection Procedure

Data collection procedures regarding SLA research vary in the diverse aspects of the nature of language production and elicitation (Seliger and Shohamy, 1989). In my study, the output of the grammatical structures is crucial in data collection, so the appropriate procedure of collecting speech data from all participants become very imperative.

At the beginning, an informal meeting was arranged with the eight participants. I illustrated the purpose and objectives of the study they were to participate in and explained their roles and responsibilities as well as their rights as participants. They could withdraw at any time from this study and their personal details would be used anonymously in the presentation of this project and in other publications in the future. In the end, all eight participants signed a consent form to agree with the statement above and allowed their recording data for academic use anonymously.

Each participant was tested by me at the very beginning of this project. The test was primarily designed to evaluate the subjects' level of Chinese as a starting point in the processing hierarchy: where is his/her language proficiency around? This simple

test allowed me to assess the subjects' Chinese and to understand their language capacities in terms of words and sentences. With the comprehension of the informants' language levels, the regular data collection commenced with free talks and different tasks to complete. The tasks are designed based on their learning contexts in the class.

At the beginning of each session, the participants were asked to answer some open questions or to engage in a free conversation, in which they were encouraged to speak Chinese. Afterwards, they were asked to complete a few elicitation tasks according to instructions and their grammatical points acquired from the classes. For example, the informants were asked to complete an information-gap task or to retell an interesting story they would like to share. During this process, I gained a general idea of what level their Chinese is around, and where necessary, I also refined my prepared materials in the collection process. No time limitation was given for the whole process.

During the conversation with the informants, I attempted not to interrupt their speech and gave little indication of their errors produced when talking, nor did I intervene. Simultaneously, I did provide the informants with some unknown words to allow the interactions to be fluent and to backchannel the students to produce more speech data. No grammatical explanations or language information were given at the interviews. On account of the fact that the participants were of a similar age to me, our communication became natural and interactive as my research progressed.

In the end, the recorded speech data was transcribed, resulting in an approximately 285,990 word corpus. A total of roughly 12,112 utterances were obtained, of which 9,773 were usable for my study.

At the same time, all questionnaires (see Appendix F) designed to comprehend the personal backgrounds and language learning experiences of the participants have been collected for analysis. Moreover, an interview has been carried out with the two Chinese tutors at Newcastle University to obtain their teaching schedules at the beginning of the first semester, and I have received the written teaching plans from both teachers which helped me to know exactly what the informants have learnt in

class.

5.5 Data Analysis

The data analysis in this study begins in the middle of the data collection session. On the one hand, the analysis and collection runs concurrently, which enabled me to comprehend the learners' acquisition tendency during the data collection; on the other hand, it can shorten the actual research period. Table 5.4 shows details of the database in my study.

Data info	Rach	Scott	Harry	Fran	Marle	Joe	Catri	Liam	Total
Date set	10+1*	10+1	10+1	10	10+1	10+1	10	10+1	86
Length (min)	235	248	265	206	230	244	239	244	1821
Utterances	1,545	1,578	1,685	1,185	1,449	1,504	1,559	1,607	12,112
Analyzable utterances	1,198	1,266	1,376	1,002	1,178	1,184	1,255	1,314	9,773

* +1 refers to the first test session.

Table 5.4 Data Statistics

Through the table, it is clear that the total data sets are 86, and that 6 out of 8 informants have joined my test session, in total including 1,821 minutes. More than 80% (9,773/12,112) of utterances are valid for analysis. In total, Fran has generated the least valid data for analysis, while Harry produced the most.

5.5.1 Transcription Convention

A transcription convention is required to enable the oral data to be accurately represented in a manuscript. Furthermore, the oral yielded data in research should be properly coded to mark presumed patterns in the principled rules (Mackey and Gass, 2005). The principled rules are then the transcription conventions.

Transcription conventions should match the objectives of the inquiry in the research. Producing an accurate transcription is a very time-consuming and tedious process. Due to the different research purposes in SLA, researchers will only transcribe the part which interests them; as such, transcriptions can be simple speeches or highly detailed linguistic representations with phonetic renderings of utterances (Bailey cited in Nunan, 1987; Mackey and Gass, 2005). In terms of my

study, it does not actually require a phonetic transcription system. However, as suggested, several aspects of the phonetic form were found to be potentially relevant to morpho-syntactic analyses and were then singled out (Pienemann cited in Pienemann and Kessler, 2011; Pienemann, n.d.-a).

In fact, there are no well-recognized conventions utilized in all studies. Instead, researchers usually develop different conventions for diverse studies to facilitate the oral data in a written format and to avoid variations in its use (Creswell, 1994; Mackey and Gass, 2005). Therefore, Pienemann (n.d.-a) has invented the transcription convention regarding the studies in PT, and I have adopted this transcription convention in my data transcription.

It is recommended by Pienemann that no standard punctuation is to be utilized in the utterances, since each language may have its own rules of punctuation which could indicate the pauses, sentence unit and intonations. In a piece of research, punctuation should be determined in the distributional analysis in order to 1) avoid the target language bias, and (2) to identify which parts of speech should be put together for one particular meaning (Pienemann, n.d.-a). However, one issue should be carefully avoided in the data transcription, namely punctuation which might suggest pauses where actually there was no pause in the speaker's intention.

The transcribed text format should be very simple to comprehend and also easy to handle in the computer software. To put this point on a scale, I have transcribed the data in a Chinese *PinYin* form.

Besides, Pienemann (n.d.-a) has suggested that contextual information may be vital for comprehension in the transcription. In the data analysis, contextual information and non-verbal characteristics are represented in double round brackets (()). Utterances which cannot be transcribed are placed inside the single round brackets (). Additionally, if the speech can be partly transcribed, it will be put inside the brackets, but the utterances that cannot be transcribed will be replaced by an X.

Also, the rising tone in a declarative may be a marker of a question (Pienemann, n.d.-a and n.d.-b). In this case, the rising tone in the transcription has been marked for

analysis within particular contexts.

As quoted from Pienemann's transcription convention (Pienemann, n.d.), an equals sign '=' indicates an incomplete utterance where simultaneous speech is present or where the speaker's utterance is interrupted by the onset of the speech of another speaker. Furthermore, special emphasis on a syllable or word is marked by underlining. Colons following a letter indicate that the sound was lengthened. One colon represents approximately one second or less, such as ye:s. Square brackets [] indicate simultaneous speech, which is placed outside round brackets, where both are used together (Pienemann, n.d.-a).

Trott et al. (2004) stated that the important distinction in coding is to distinguish the specific occurrence of a structure from a distinguishable category of grammar, which is termed as *token* and *type*. Tokens represent different types. Types are elements in an account of what a set of tokens represent. A widely used measure of lexical richness is the type-token ratio which measures the ratio of the total number of words in a text and the number of different words in spontaneous data (Zhang, 2002a). Zhang (2002a and 2008) has claimed that the type-token ratio will obviously decline, aligned with the length of the interview. However, Pienemann and Kessler (2007: 11) have already explored that 'various methods have been proposed to counteract the length effect. Daller et al. (2003) utilise the index of Giraud, which uses the square root of the tokens in the denominator'.

Besides, an utterance is defined as a unit which is 'potentially complete as a relevant conversational action in its context' (Liddicoat, 2001: 8). Additionally, the analysis excluded single words/phrases, verbatim repetitions, translations of previous utterances, interjections and fillers (ah, mmh).

In my research, over-generalizations are also included in the count if they express the target grammatical property; in this case, all the relatively correct functions are scored although the form may not be expressed as target-like.

After clarifying the transcription convention in the process of data analysis, the next step is to discuss the rationale and principles for data analysis.

5.5.2 Analysis Rationale

Once the research data have been collected with the aid of data collection procedures, the next phase is to analyze the data. In fact, data analysis indicates the process whereby the researcher manages the data so as to draw the appropriate research conclusions (Seliger and Shohamy, 1989). In my research, I have to consider that how much of the data should be selected to represent analyzed utterances, and how much are formulaic utterances based on the acquisition principle which will be discussed in the following section.

Onwuegbuzie and Leech (2005) illustrated seven stages of the mixed-methodological data analysis process, including data reduction, data display, data transformation, data correlation, data consolidation, data comparison, and data integration.

Data reduction aims to reduce the dimensionality and quantity of the data. It transforms the data into a more manageable form. *Data display*, the second stage, involves conveying the idea that data are presented to allow the conclusions to be correctly drawn (Berg, 2004; Miles and Huberman, 1994). Then, *data transformation* identifies which data are to be qualitized. *Data correlation* represented the correlation between the qualitative data and quantitative data. This is followed by *data consolidation* whereby both quantitative and qualitative data are combined to create consolidated data sets. *Data comparison* involves comparing data from the quantitative and qualitative data sources. *Data integration* integrates both qualitative and quantitative data into a coherent whole or separates them as two sets (Onwuegbuzie and Leech, 2005; Pienemann, n.d.-c).

The seven steps are woven into the whole data analysis procedure but basically, the main technique identified in analyzing qualitative/quantitative data is to ‘derive a set of categories for dealing with text segments from the text itself’ (Seliger and Shohamy, 1989: 205). It is to categorize the received data which is descriptive and exploratory in nature, and then the findings would be the discovery of new commonalities or patterns on the basis of the distributive analysis.

With my data, I firstly looked at the context for the expected morphosyntactic features selected to be investigated in this study, and where necessary, the contextual clue is marked for analysis. According to Bodomo and Luke (2003: 3), 'LFG is quite powerful in describing linguistic constructions of Chinese which are of relative sophistication as shown in the Mandarin sentence'. LFG, which helps to receive a whole picture of learners' linguistic profiling (Sun, 1999), is then implemented to illustrate the grammatical features and functions of the collected speech data to comply with the procedural skills.

On this basis, a quantified distributional analysis is carried out to check the presence or absence of the morphosyntactic structures in each data set. This procedure is used to compare with the hypothesized developmental sequence based on PT across languages (Mansouri, 2002; Di Biase, 2002; Pienemann, 1987; Zhang, 2001 and 2008). All the participants' language production is therefore distributed according to the PT framework for outlining the developmental process. In addition, I scored the total number of sentences the individual participant produced with respect to implicational scaling. According to Pienemann and Kessler (2007), the analyzed grammatical patterns are then located into the proposed linguistic profiling stages. Ideally, the universal processing hierarchy should coincide with the sequence found in my studies.

However, in this process, a criterion is required to validate the collected grammatical features that are acquired by the L2 speakers. The criterion to judge whether the specific aspect of language is mastered by the L2 learners is the Emergence Criterion developed by Meisel, Clahsen and Pienemann (1981). Emergence Criterion used in PT can be explained as the fact that acquisition is achieved as a certain appearance of a form in an IL production. Details will be extensively explained in the following section.

5.5.3 Acquisition Criterion

Generally speaking, criteria to determine acquisition play a vital role to guarantee

the accuracy of the research results (Jansen cited in Di Biase, 2002; Trott et al., 2004). To determine when a certain grammatical structure or feature became part of the informants' L2 grammatical system and to check whether the hypothesized structures are acquired in a predicated order (Zhang, 2004), it was necessary to first decide the acquisition criterion - a thorny issue in PT.

In a PT concept, the notion of 'acquisition' indicates that the ability to process the specific structure has been acquired. When can we say that a particular structure is acquired? Which level of development is the learner at? Even though the exact criterion is different in range, its 'underlying goal was to measure the acquisition outcome by comparing the L2 performance against the target language norm' (Zhang, 2004: 449).

Cox (2005) has summarized and explained that the criteria used to measure morpheme acquisition can be categorized and termed as Mastery, Grading and Emergence. A few research projects have been carried out to test the different feasibilities of applying these three criteria for language acquisition.

In the accuracy-based acquisition criterion, a certain accuracy rate was set up to measure the success or failure of learners' acquisition or to assess their acquisition process. Brown, for instance, in his 1973 study on L1 English language acquisition, set a 90% suppliance as the mastery criterion. De Villiers and De Villiers (1973) also employed the mastery criterion which present in 90% of the obligatory contexts in their study. In addition, Meerholz-Hårles (2001) calculated the percentage of accuracy and used the rank of accuracy as the acquisition criterion in his study. However, an issue when using mastery criterion occurred: why not 80% instead of 90%? Does rank of accuracy equate with developmental sequences, and if yes, to what extent? In this case, if 80% is adopted as the accuracy rate, the learner who presents 79% correct forms in a particular structure will be judged as having no acquisition of this structure at all.

Pienemann and Kessler (2007) drew a figure to illustrate that for any learners and structures, suppliance in obligatory contexts may develop in different patterns. The

rate of suppliance of structures a, b and c increases in different ways, as shown in Figure 5.1:

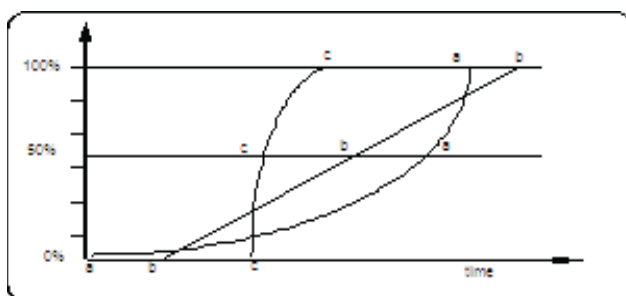


Figure 5.1 Accuracy and Development (Pienemann and Kessler, 2007: 14)

This figure shows that the accuracy rate is an invalid measurement for language development in a linear manner. Obviously, the three lines have a different gradient. In this case, if we use the 50% as the criterion, the order of acquisition is $c > b > a$, yet while using the 100% as the criterion, the order of the acquisition will be altered as $c > a > b$; therefore, the results are very unreliable.

The assumption of a correspondence between accuracy and acquisition order has been challenged by many scholars in SLA. For instance, Pienemann (1998c: 137) pointed out that neither accuracy measures nor the target language norm could be set up as acquisition criterion for the examination of the L2 acquisition process, as ‘accuracy rates develop with highly variable gradients in relation to grammatical items and individual learners’. Pienemann (1998c) has also stated that the accuracy of morpheme insertion will not guarantee that the acquisition increases steadily.

Therefore, another measurement for SLA development has been introduced: a grading criterion. A graded system is used in the International English Language Testing System (IELTS) exams. IELTS exams employ such a points system to note and grade the levels of language production complexity, and the accuracy of using vocabulary and grammar in learners’ speeches. The test-takers language competence has been divided into 9 levels with a descriptive measurement in each level. In this case, nevertheless, subjective views or bias on language production have largely controlled the learners’ test results. However, this grading system could not present the whole picture of the continuous accumulation of grammatical resources to a target

language; thus the speakers' acquisition trajectory with sufficient supporting evidence is hardly obtained from this measurement.

The dynamic description of IL development goes far beyond a mere description of orders of accuracy. On this topic, Larsen-Freeman and Long (1991) have mentioned that the emergence criterion aims to make sure that the starting point of acquisition, which exposes the whole process of language acquisition. Pienemann (1998a and 1998c) and Zhang (2002a) have then adopted this criterion to identify the acquisition route in processability studies, since emergence can be understood as the point of the first emergence of a structure in time, at which certain skills have been attained during speech processing. To expand further, Cox (2005) then compared emergence criterion and mastery criterion, and found that the findings undermined the very usefulness of emergence criterion which is capable of producing a meaningful morpheme acquisition order.

From another perspective, to employ emergence criterion is to avoid the subjects producing morphemes due to a formulaic memorization of a chunk. In the words of Pienemann (1984: 191):

The main purpose is not to describe the point in time during the process of language development when a structure is mastered (in terms of correct use of target norms), because this is only to pinpoint the end of the acquisition of a certain structure. Rather, the [emergence] criterion is intended to define the first systematic use of a structure, so that the point in time can be located when the learner has – in principle – grasped the learner task ...

For these reasons, the acquisition criterion used in PT is 'emergence', which identifies the point and signifies that a certain procedural skill has been operational in a learner's IL system (Kawaguchi, 2005c).

In accordance with the emergence criterion, Pienemann (1998b: 146) categorizes quantitative production of a learner language into four types, namely: '(1) no evidence, i.e. no linguistic contexts; (2) insufficient evidence, i.e. a very small number of contexts; (3) evidence for non-application, i.e. non-application in the presence of contexts for rule x; and (4) evidence of rule application, i.e. (sufficient) examples of rule application in the presence of contexts'.

In a number of research contexts, it has been pointed out that there are different type-token ratio measures based on emergence criterion (Kawaguchi, 2002; Pienemann, 1998c; Zhang, 2003). The data is summarized in terms of quantitative figures and ratios to outline an approximate indication of the learner's dynamic IL system.

Actually, the minimum number of the rule application contexts or tokens to test the productive nature of an IL grammatical feature is not definitely set up in the emergence criterion, as it varies among research studies. Lee (1996) has considered the emergence of a grammatical item as being when it has been used correctly once in the data collection, as long as this instance is not a formula or chunk. Kawaguchi (1996) applied three different emergences of grammatical points as the measurement of acquisition. Pienemann (1998c) and Zhang (2001) set the emergence point as four times, while Clahsen (1984) set the emergence point as five times. In an early study of De Villiers and De Villiers (1973), they scored results only if they were based on at least five obligatory contexts.

Obviously to see, evidence of rule application in one context is not reliable, nor is it in two contexts, in which a 50% rule application indicates only one token (Pienemann, 1998c). Usually between three and five contexts are used to test acquisition hypotheses.

However, if one student has produced three pieces of valid evidence to prove his/her acquisition of a certain structure, he/she is identified as acquired of this structure in a study where three evidences are required, but is signified as not acquired in another study where four obligatory evidences are required. Is it unreliable? The fact speaks. If one student could not operate the structures in the next stage, he/she should be 'bounced' back to the previous one for more study. The opposite is also true - if the students have already acquired the structure but did not present enough required items, further study could help them to reinforce the use of the grammatical items. On this basis, Pienemann (1998a) has suggested and concluded that as long as the learners can present the grammatical structures in a variety of environments, any

emergence points (three times, four times, five time, etc.) could be applicable.

Therefore, to check whether the hypothesized structures are acquired in the predicted order in my study, I should clarify the notion of ‘acquisition’ (which is used for PT) to answer the question: ‘which type of procedural skill has been acquired?’ The present study has employed the ‘emergence criterion’ proposed in Pienemann (1998c) as being four times, which tends to remain constant. The decision was made due to the following two reasons: 1) this emergence point has been applied in other PT studies successfully, and 2) the frequency of data collection is 10 times over a 38-week period. As for the length of the data collection and the sufficient speech data collected, a 4-point emergence criterion seems to be more practical.

In this case, all the utterances in the data set were coded for grammatical features along with their functional and structural contexts. A certain structure in the learners’ data sample sets was viewed as having emerged if a minimum of four tokens had been observed with lexically-varied contexts (to decrease the risk of chunk-learning); otherwise, the frequent emergence may be due to the production of an unanalyzed unit or syntactic pattern.

In simple terms, for example, if the possessive marker *-de* occurred exclusively with the same pronoun, in this case *-de* (POSS) would not be considered as having emerged in spite of the number of the tokens appeared. If *-de* (POSS) occurred with different pronouns in lexically-varied contexts a minimum of four times in a learner’s speech sample set, it was counted as having emerged in the learners’ L2 grammatical system, regardless of the number of tokens in a sample.

In brief, the emergence criterion allows the understanding of the whole processing picture of language acquisition. Significantly, it is crucial to ensure that the developmental stage emerged is systematic and not acquired as a regular block.

5.6 Ethical Considerations

Ethics is one of the issues in research for which philosophers have striven to provide guidance. Rossman and Rallis (2003) have claimed that ethical dilemmas are

not solvable but are reasonable through moral principles. The most serious ethical concern that has received attention during the past two decades is ‘the assurance that subjects are voluntarily involved and informed of all potential risks’ (Berg, 2004: 58).

The current study, to some extent, invades the participants’ lives and requires sensitive information regarding their individual lives; henceforth, as the research conductor, it is my obligation to respect the rights, needs, values and desires of the informants.

Obviously, collecting information on subjects without permission is not ethical, so gaining the informed consent of the participants is crucial for the ethical conduct of my research. In the informed consent, all participants were made aware that their identifying information would not be presented, and they were also informed of the potential risks and benefits and the effect of these risks and benefits. Moreover, the participants in this study had a full understanding of the research purpose and where their data will be potentially employed. Also, it was a voluntary agreement so they could withdraw from the study at any time without prejudice.

In most institutional research, consent is advised to be in written form. As a rule, these consent forms are dated and willingly signed by both the researcher and the potential subject or their designated representative (Berg, 2004; Rossman and Rollis, 2003).

Additionally, it has been claimed that any collected data, either from or about the research participants, should not be made public. Access to such data should also be limited (Creswell, 1994; Seliger and Shohamy, 1989). As a researcher, one should protect the dignity and welfare of the subjects and take every precaution to minimize potential risk to the participants (Rossman and Rollis, 2003; Seliger and Shohamy, 1989). However, sometimes the data has to be presented in a conference or in research-relative occasions. Therefore, all the participants’ information needs to be recorded without identifying statements.

My study is under a multilingual context. As the conductor of this research, I am responsible for guarding against any violation or invasion of my participants’ privacy.

All the personal backgrounds of the participants are kept highly confidential, including their names and other sensitive information. Furthermore, I have received permission (informed consent) from all the participants to anonymously use the data collected from them. All the consent forms were signed willingly, so the ethical issue has been avoided as much as possible in my research.

5.7 Reliability and Validity

Even though retrieving the natural (or relatively natural) verbal speech is valuable for sketching the learners' acquisition profile in my research, this may raise doubts as to whether the received data represents a true reflection of the actual linguistic processes in the speakers' minds (Seliger and Shohamy, 1989). As such, the reliability and validity of the research process (including approaches and results) are usually called into question.

Reliability reflects the extent to which a measurement leads to consistent interpretations about a certain instance. The key concerns of the research reliability are: whether the applied methods are reliable, whether these methods could result in the effective data elicitation and whether these independent methods could interact and then lead to identical research results with the same group of research subjects. Therefore, many researchers now utilize the methods which have been employed and verified numerous times in similar research frames or in studies over many years (Chaudron cited in Doughty and Long, 2005; Norris and Ortega cited in Doughty and Long, 2005).

In general, the data in the current study was presented in the format of implicational scaling, which is suitable for ranking linguistic features into a hierarchy (Pienemann cited in Pienemann and Kessler, 2011). Implicational scaling aims to interpret the variables and quantify the relative frequencies of nonstandard variants of all variables (Hatch and Lazaraton, 1991). In order to measure the reliability of the scale, it is thus necessary to calculate its scalability, which 'can be done by comparing the number of exceptions with the total number of cells contained in the database' (Pienemann cited in Pienemann and Kessler, 2011: 53). Hatch and Lazaraton (1991) have suggested the

coefficient of scalability which is over 90% can be viewed as significant. According to the current study which includes 15 grammatical rules contained in the CSL table, the results have shown an implicational table with 100% scalability in most cases, except one with 99.2% scalability (Joe's case).

Additionally, the researchers are recommended to run a pilot study before the actual study is carried out, which allows the insertion of changes, revision and modification of the research procedure. Otherwise, the researcher is taking the risk that the collected data may not point to a valid and reasonable conclusion in the end. If a pilot study is constrained, it is suggested to the researcher that he/she should concentrate on the process of data collection, adjust the research procedure or remove the items that are causing the problem (Seliger and Shohamy, 1989).

A pilot study has been undertaken when designing particular tasks for the Chinese L2 learners aligned within the procedural skills. These tasks are not simply delivered; instead, they are designed and adopted based on the theoretical literature, early studies in PT and task-takers' language input and output. This pilot study helped me to reconsider the original purpose of each task and then re-evaluate its effectiveness. The revised tasks could better elicit required grammatical structures or necessary speeches among task-takers, which therefore reduced the risks of failure when used for other learners.

Another way to maintain reliability of the study is to extensively train the researchers in order to avoid the mistakes and minimize the problems which can occur in the research procedure. Seliger and Shohamy (1989) have highlighted that training is able to help improve certain skills of the research conductors, such as data recording, question raising and sufficient note-taking. In order to effectively conduct my study, I have taken a series of research methodology courses and training offered by Newcastle University, in which I have been taught different techniques and skills in how to carry out a successful research.

Reliability can ensure the accurate data elicitation, while validity provides information on the extent to which the procedure measures what it is meant to.

Validity is a matter of degree. Even though it cannot really be proved, it is still necessary to obtain evidence through the examination of the consistent data (Seliger and Shohamy, 1989).

Validity is divided into two aspects: the internal and external. The internal validity refers to the control of the method selection procedure, such as the task effectiveness and subject selection fit in one research. As explained previously, the tasks selected in my data collection are not random; they have been constructed through literature analysis and previous research designs. Many PT-based studies have proved the validity of the task types used initially by Pienemann (1998c). Therefore, these task types were adapted and then applied to Chinese L2 learners. Besides, the research subjects are all Chinese L2 learners with a variety of language learning backgrounds, which could also guarantee the internal validity of this research design.

In contrast, external validity refers to the degree of practical application of the current research to other similar situations (Hatch and Farhady, 1982). My research is designed according to Zhang (2001 and 2008) and Gao (2005). Even though it is difficult to measure and test the application of my research to other similar contexts due to limited research resources and time, the external validity of this study has to some extent been maintained through these previous studies. In the insightful perspective, the validity of this study has been examined through the longitudinal data collection and the triangulated research methods, alongside interviews, elicitation tasks and questionnaires; further action is taken in textbook analysis and in the CSL task-based teaching plan.

To summarize, as the operator of my study, I am not always alert that the results are sometimes biased, so there are independent experts – two professors in different linguistic perspectives – to supervise my working results and overcome such issues. In fact, my data analysis stage consisted of two steps: the technical preparation and data reorganization, and the distributional analysis. In the distributional analysis, the grammatical tagging of various items was performed and documented. Details will be explained in the next Chapter.

Chapter 6 Acquisition Route Analysis and Discussion

One of the fundamental points of PT is to clarify the understanding of the rationale of developmental stages. Pienemann (1998c) does so by presenting the universal hierarchy of lexical > phrasal > s-procedure and subordinate clause processing procedures, referred to in Chapter 2, and a set of phrase structure rules for each individual language, introduced in Chapter 3 and Chapter 4 in relation to Chinese.

This research basically aims to test the previous findings in Chinese processing hierarchy and extend the investigation by: (1) examining longitudinal data from a different CSL setting; by (2) including cross-sectional data at different stages among Chinese L2 learners with various language learning experiences; and by (3) testing whether the teaching sequences influence the corresponding hierarchy derived by PT.

This chapter focuses on the description of a CSL grammatical developmental path among my research participants in comparison with the results found in studies by Zhang (2001), Gao (2005) and Zhang (2008). There will be a further comparison between the learners' acquisition sequences and the underlying teaching path in the textbooks, in order to explore the influence of the formal input on the universal processing hierarchy.

In this chapter, firstly, the picture of the acquisition process among target learners will be outlined. The findings of the IL development among all participants are explicitly displayed in relation to the universal processing hierarchy. These will be followed by an analysis regarding the teaching sequences of grammatical items in the textbooks which the research participants used in class. Meanwhile, the teaching syllabus and schedules are also examined in association with the emergence of the grammatical items in the input, in order to compare the results with the observed acquisitional routes. Finally, two more textbooks used in other CSL contexts (Zhang, 2001 and 2008; Gao, 2005) are selected for examination and analysis, which could further explore the relationship between language instruction and natural language acquisition.

6.1 Overview of Acquisition Features in L2 Chinese

Chinese has an important role for testing and developing PT due to its typological characteristics which are different from European languages. Zhang (2001 and 2004) drew a diacritic picture of the development of eight Chinese grammatical morphemes in the L2 learners' IL system, which starts with NP morphemes: *-de* (POSS), *-de* (ATT), *-de* (ADJ), the aspect markers of *zhengzai-* (PROG) and *-guo* (EXP), followed by classifiers (CL) and V-COMP *-de*, and ends with the inter-phrasal relative clause marker *de*. Therefore, a staged sequence has been initially developed under the umbrella of PT.

In 2005, Gao (2005) further tested the NP morpheme *-de* and developed the syntactic aspect of canonical order SVO, adjunct fronting, topicalization and *ba* structure to fit in PT hierarchy. Her results, on the one hand, revealed conformity with Zhang's (2001) findings; on the other hand, show a further development of the topic-construction and *ba* structure in CSL, regardless of the learners' L1 backgrounds and learning contexts. By then, an enriched picture of linguistic profiling in CSL was being built and developed.

Zhang (2008) has therefore developed her previous study to the syntactic level based on the same set of data retrieved in her 2001 study: canonical SVO: declaratives/interrogatives are at level 1; adv-fronting and subordinate clauses occur at level 2 and the topicalization at level 3.

In light of the current study objectives, a further description of the acquisition route of CSL in PT will be explored with a wider range of evidence drawn from my research data. Moving on to the next section, I will focus on the details of IL development among all my participants.

6.2 Interlanguage Development on PT

A constructed hierarchy including the main structures in L2 Chinese was primarily established by the previous studies (Zhang, 2001 and 2008; Gao, 2005) on the basis of typological features and implications for processing requirements.

In terms of my study, to deal with the collected data sets, a distributional analysis has been introduced and implemented. It lays out all the contexts in a set of IL samples (irrespective of its 'correct' and 'incorrect' uses) in which a particular form occurs, thereby it can determine the status of a linguistic developmental course towards the target language and identify the success of the acquisition of the L2 grammatical forms of the informants at each stage (Zhang, 2004).

A brief picture is then drawn from the participants' speech data based on the distributional analysis. All the participants' ILs show a linear and cumulative developmental tendency towards the target language in the period of data collection. However, it could be seen that some of the participants' ILs develop rapidly in an incremental route, while the language development from a few of them 'moves' at a relatively slow speed. One of the participant's (Fran) IL production shows that her Chinese language development has probably 'frozen' at a certain stage.

In this section, the learners' language development of the key morphological and syntactic structures will be traced and displayed along the proposed developmental continuum in a grammatical manner. Generally, the target informants could be divided into 2 groups. One group contains the L2 learners who have experienced Chinese at various levels (formally or informally) before they entered the university. Another group of target informants in my study consists of learners with no Chinese language background prior to commencing their Chinese learning in the university. Therefore, their language input began from formal teaching instruction. Next, I will analyze the IL development picture of this group.

6.2.1 Chinese L2 Learners without a Chinese Background

To start with, I will discuss the first learner, Marlene, who is a German native speaker. Even though she has been to China for a very short time, due to her lack of exposure to the Chinese language during that time, she is then considered as the non-Chinese-background team member (participants who have no or little experience of Chinese before studying at Newcastle University are considered as 'without a

Chinese background’).

At the time of the data collection, she was enrolled in the Chinese programme at Newcastle University in year 1. Table 6.1 below presents her Chinese acquisition profile (the emergence points of certain stages) under procedural skills in PT during the 38-week data collection period. It traces Marlene’s IL development process from an almost non-acquisition state, through the emerging phases, into the state of complete acquisition of particular stages at the end of the research.

Generally speaking, Table 6.1 sketches an incremental tendency of Marlene’s acquisition manner. With the investigation of the contexts for the predicted morphosyntactic features, I scored the total number of these features (within different PT stages that Marlene has produced) to examine the emerging point of the structure at each stage. In the end, a linear language developmental profile could be viewed from this simple illustration.

As depicted in the table below, Wk5, Wk8, etc. indicate the week number in the course of the 38 weeks in total of the informants’ data collection period. Grammatical processing stage numbers are listed in the far left column.

Marlene	Wk5	Wk8	Wk12	Wk17	Wk20	Wk24	Wk26	Wk32	Wk35	Wk38
Stage 5										/
Stage 4							(+)	+	+	+
Stage 3			(+)	(+)	+	+	+	+	+	+
Stage 2	(+)	+	+	+	+	+	+	+	+	+
Stage 1	+	+	+	+	+	+	+	+	+	+

Table 6.1 Marlene’s Acquisition Route

As emergence criterion established and operated as a general guideline for the qualitative aspect of the data analysis, in Table 6.1, the symbol ‘+’ is used to indicate acquisition, namely that Marlene is able to produce the particular structure at one stage in no fewer than four instances including morphological or syntactic variation. Brackets () refer to less than four obligatory contexts, thus the plus sign with brackets (+) marks the occurrence of a particular structure that Marlene produced without alignment with the frequency in different grammatical contexts, which cannot be confirmed as acquisition. In the table, missing data was treated as

non-acquisition, while a slash / indicates the absence of the obligatory contexts for the corresponding rule in the given set of data.

The following Table 6.2 aims at yielding Marlene’s Chinese acquisition in a detailed and numeric way, which pictures the developmental route in an explicit profile. In this table, in order to determine the manner in which a grammatical feature is developed, a frequent count was then performed, yielding two figures for each context: the figure after the slash shows the total raw production of a certain structure (token) in one interview, while the one before the slash represents the valid types of this structure among the total occurrences. The minus sign ‘-’ indicates no context for certain structure production, while the plus sign ‘+’ stands for the standard acquisition of certain procedure skills (when the correct production of a certain structure is over 35, just a ‘+’ is shown).

	Structure	Wk5	Wk8	Wk12	Wk17	Wk20	Wk24	Wk26	Wk32	Wk35	Wk38
5	<i>ba</i> structure										0/2
4	<i>de</i> (RC)							2/3	4/6	4/7	5/7
	Topicalization						0/3	1/2	3/3	4/5	2/2
3	Classifier			2/4	2/5	5/7	9/12	7/9	8/10	15/18	10/14
	V-comp <i>-de</i>			-	2/4	-	4/7	-	3/5	-	-
	Adv-fronting			0/1	-	0/4	2/5	4/6	3/9	-	-
	subordinate clause			0/2	-	5/5	-	3/4	-	-	2/2
2	<i>-de</i> (ATT)			-	4/8	-	7/10	6/6	-	2/4	3/3
	<i>-de</i> (ADJ)			3/5	7/8	8/9	5/5	6/7	5/7	4/5	12/12
	<i>-de</i> (POSS)		4/5	7/12	2/5	2/4	8/10	2/3	-	4/7	10/15
	<i>zhengzai</i> -(PROG)		0/3	0/2	2/2	-	1/3	6/6	-	-	-
	<i>-guo</i> (EXP)		-	-	0/5	-	2/4	-	-	-	-
	SVO	3/9	22/30	15/15	19/21	+	+	+	+	+	+
	SVO(interrogatives)	-	4/8	-	6/7	3/3	-	-	-	-	-
1	Single constituent	+	+	+	+	+	+	+	+	+	+

Table 6.2 Marlene’s Language Production (scalability 100%)

The structures in Table 6.2 have been displayed according to the account of the PT stages in CSL (Gao, 2005; Zhang, 2001 and 2008). To be specific, this analysis was applied to 15 grammatical structures which entail a clear implicational stair-pattern: the acquisition of the lower level is a prerequisite for the functioning of the higher

level.

It has been seen that in Marlene's language production, single words have been correctly and repeatedly presented from the very early stage in the first interview. In the same interview, Marlene has started to produce the Chinese canonical patterns, although her expressions failed to satisfy the emergence criterion, with only three different types exist out of nine contexts (see *Extract 1* in Appendix E). In the following data collection week, the SVO structure is considered as acquired with a 22/30 type-token ratio (TTR).

Meanwhile, the lexical particle *-de* (*POSS*) and the interrogative structure (see *Extract 2* in Appendix E) are also acquired in the same week. Different from the Germanic and Japanese interrogative sentences, where the *wh-* word has been put in the predominant position, Chinese, as a *wh-in-situ* language, only has one requirement or restriction on the *wh-*constituent movement in the interrogatives, namely that the *wh-* word cannot be assigned at the TOPI position other than as the grammatical subject. 'In this case, the Chinese *wh-* structure is clearly at a lower stage on the developmental hierarchy than that in English, according to the processing hierarchy' (Zhang, 2008). This has been proved in Marlene's data in Table 6.2, where the interrogative sentences have been acquired very early at stage 2.

In week 12, no structures in any further stages have been acquired, but the classifier has occurred in Marlene's data with an insufficient quantity. Therefore, non-acquisition of classifiers is marked at that week.

Later in week 17, even though a few *V-de* have started to appear, the type of the occurrence could not satisfy the emergence criterion in quantity, so *V-de* is not seen as acquired in that week. Moreover, although there were five contexts of using classifiers in the interview, only two different types of classifier have been observed (see *Extract 3* in Appendix E). The same classifier *-ge* attached to the same noun had been appearing four times in the interview, which indicated that the classifier may be acquired as a formula. A further investigation of the classifier in week 20 has provided

sufficient data to support its acquisition – five different classifiers (see *Extract 4* in Appendix E) have been correctly used in different contexts.

In the same week, even though there were five contexts for the application of the experience marker *-guo*, it was never produced which in turn is categorized as non-acquisition. In addition, due to the type-token ratio of *-de* (ATT) is just 50% in total in Marlene's speech, it could be important to look into the development of this grammatical item in further data collections to confirm its acquisition stability.

In week 20, the grammatical items at the phrasal procedure have then been clearly achieved in Marlene's data set with proper support from the contexts. Even though in week 24, no more grammatical development to the next stage has been observed along the PT profile, it can be found that the TTR of the particular structure is increasing. For instance, the TTR of *-de* (ATT) has been improved to 70%, which could then prove Marlene's stable acquisition of this grammatical item (the data in the following weeks have also shown a consistent use of *-de* (ATT)).

The inter-phrasal particle *de* (RC) has been located in week 26 but the production is not sufficient to prove whether Marlene has in fact comprehended the structure based on only 2 different presences. However, the data in weeks 32 and 35 has provided enough production types of the *de* (RC) and also the type-token ratio tended to be stable. In the end, Marlene was supposed to have two outputs of the *ba* structure; unfortunately (see *Extract 5* in Appendix E), no *ba* sentences have been found with the supportive contexts, which probably indicated that she could not produce the required structure at that point.

In the analysis of Marlene's data, the findings are consistent with the generated predictions in the area of Chinese IL morphology and syntax. The observed developmental course as shown in Marlene's sample above is aligned with the theory-motivated processing hierarchy. In brief, no 'jump' in the hypothesized stages was observed in Marlene's data. Marlene's language production shows a four-tier progression in the overall acquisition profile, since there is not enough evidence to support her acquisition at stage 5 of the processing hierarchy. Therefore, her final

acquisition stage by the end of this study is stage 4, yet a few issues should be stated at this point.

First and foremost, each processing stage in PT defines a specific limited range of structural options that are available to the learners, which give rise to learner variation. However, the structures presented in Marlene's data set did not cover all the specific grammatical features in each stage, and the structures in the same stage do not share the same typological features. Therefore, there is no absolute guarantee nor logical argument that processable structures at a given stage must be all acquired before the learner is able to process structures from the next developmental stage. Instead, as long as one feature within a stage of the acquisition profile has been acquired in the language production data, this L2 learner is confirmed to be at that particular stage.

In addition, no definite statement could be drawn to conclude the non-acquisition of structures in Marlene's speeches at stage 5, because the situation could be interpreted in different ways. It may be the case that 1) not enough contexts have been offered for the output of the *ba* structure; 2) there was not sufficient data collection time; or 3) not enough speech data has been examined in the data analysis process.

One interesting point to raise is that German is a verb-second language which has typological distance from Chinese canonical order. However, Marlene (as a German native speaker) could acquire the SVO order in Chinese at an early stage, compatible with PT-driven sequences. This fact supports the statement implied in PT, namely that the processing hierarchy is universal, whatever the learner's L1 background is.

Marlene's data shows that her acquisition did not override the psycholinguistic constraints during the acquisition course of L2 Chinese. However, an exception has appeared in Joe's data set. The acquisition order of structures at stage 3 and stage 4 violated the processing hierarchy in Chinese. In other words, the analyzed data shows that the inter-phrasal procedure skill (topicalization at week 17) emerged before the phrasal procedure skill (the classifiers at week 20) in his speech data. The details have been presented below:

	Structure	Wk5	Wk8	Wk12	Wk17	Wk20	Wk24	Wk26	Wk32	Wk35	Wk38
5	<i>ba</i> structure										0/4
4	<i>de</i> (RC)			0/1		3/5					3/3
	Topicalization			-	4/6		4/6		2/8		-
3	Classifier		2/2	3/3	2/4	12/16	3/5	11/13	7/9	8/11	13/15
	V-comp <i>-de</i>		-	0/1	0/3	-	2/5	-	4/5	-	2/3
	Adv-fronting		1/2	-	-	-	4/5	2/4	-	-	5/6
	subordinate clause		2/3	0/2	2/3	3/4	-	-	5/6	-	3/4
2	<i>-de</i> (ATT)	8/8	3/3	-	-	6/8	3/5	7/8	-	5/7	7/7
	<i>-de</i> (ADJ)	2/2	7/9	8/9	6/8	2/3	4/7	3/3	-	7/9	6/7
	<i>-de</i> (POSS)	9/10	8/11	3/5	8/11	2/2	3/3	5/9	3/4	6/7	-
	<i>zhengzai</i> -(PROG)	-	-	7/9	2/5	7/7	-	-	2/6	4/7	2/3
	<i>-guo</i> (EXP)	-	-	-	2/4	6/7	-	4/4	-	-	-
	SVO	10/14	+	+	13/14	+	+	+	+	+	+
	SVO (interrogatives)	11/13	+	2/2	4/5	-	-	-	-	-	-
1	Single constituent	8/8	+	+	+	+	+	+	+	+	22/24

Table 6.3 Joe's Language Production (scalability 99.2%)

This observed violation to the predicted developmental sequence is crucial for the validity of the processing hierarchy. Basically, it has revealed an inconsistency with the PT claim, which a universal implicational sequence is based on. However, Mansouri (cited in Di Biase, 2002) has announced that instances of violations to the developmental sequences predicted by PT definitely exist. When seen this violation isolating, it could be considered as a case which challenges the processing profile and its theoretical basis.

However, it could also be explained as an additional exception which is probably affected by the unpredictable external and internal factors: it may be somehow influenced by the learners' individual learning strategy; in particular, in the studies where data is predominantly naturalistic.

Cox (2005) has also stated that the possible answer to explain the inconsistencies in the findings of L2 morphosyntax studies could be deemed as a methodology issue, which requires further adjustments to confidently expand the current claims to all areas of IL development. From the methodological perspective, there is a five-week gap before Joe's acquisition of the topicalization, so the classifiers may have already

been acquired week(s) ago.

When retrieving the data collection procedure and Joe's personal background, it is assumed that firstly, Joe has received both formal and informal Chinese input at Newcastle University. He spent at least two hours with his tandem partner each week to practice Chinese, so he may have already learned certain structures (e.g. topicalization) from informal input. Secondly, the data collection approach may not allow for his presentation of the required structures in the first instance – the provided contexts and/or tasks employed allow the avoidance of the classifiers or the alternative use of other structures at that point in Joe's case. It can be seen that although the classifiers have not been sufficiently presented, the sentence structures and meanings are not affected (see *Extract 6* in Appendix E).

Also, this violation case could be related to the tendency of learners' personal language production behaviours (Mansouri cited in Di Biase, 2002). It could be clearly seen from the data display that the classifier at stage 3 has been consistently produced (the type-token ratio is 100% at week 8 and week 12), regardless of the number of productions which have not satisfied the emergence criterion. Furthermore, the output type-token ratio of the classifiers has suddenly increased to 12/16 (75%) from 50% at week 20; this is a big jump which may indicate the earlier acquisition of this item in Joe's IL.

In addition, a similar exceptional case has also occurred in Zhang's study (2001), as her informant Dave seemed to also violate the acquisition route in the PT-based hierarchy. Nevertheless, she discovered that this exception was a typical case which may be influenced by at least two contributing factors: (1) the syllabus (the structure at an earlier stage did not exist in the teaching syllabus) and (2) the linguistic realization of aspects (Dave tends not to use certain grammatical structures in the language production) (Zhang, 2001; Zhang cited in Pienemann, 2005).

Another special case observed from the data is as follows. In the non-Chinese-background group, Fran (who was the second year student in the Chinese programme) made little progress after she reached stage 3. As seen from

Tables 6.4 and 6.5 below, there is no obvious progress in Fran’s data output after week 12. In the rest of the data collection period, even though some structures at stage 4 have appeared in her language production, the occurrence of the grammatical features did not satisfy the emergence criterion with the supporting contexts. In this case, her language is considered to be temporarily fossilized at stage 3 by the end of the data collection period.

Fran	Wk5	Wk8	Wk12	Wk17	Wk20	Wk24	Wk26	Wk32	Wk35	Wk38
Stage 5										/
Stage 4								(+)	(+)	(+)
Stage 3		(+)	+	+	+	+	+	+	+	+
Stage 2	+	+	+	+	+	+	+	+	+	+
Stage 1	+	+	+	+	+	+	+	+	+	+

Table 6.4 Fran’s Acquisition Route

However, it does not suggest that no progress or change can be made in the future, since the data collection period may not be long enough for the generation of further structures. Therefore, research at the next stage is highly required regarding her case. By looking into the details of Fran’s language production over the 38 weeks (see Table 6.5), it is found that the production of the grammatical structures is heavily focused upon the first 3 stages; while the output at stage 4 is rarely discovered and no structures at stage 5 have been located in her data.

	Structure	Wk5	Wk8	Wk12	Wk17	Wk20	Wk24	Wk26	Wk32	Wk35	Wk38
5	<i>ba</i> structure										-
4	<i>de</i> (RC)									1/2	2/4
	Topicalization								1/3	0/3	-
3	Classifier		2/6	4/8	5/7	4/5	5/6	4/4	2/2	5/7	6/8
	V-comp <i>-de</i>		0/1	-	1/4	1/3	0/2	-	-	-	2/4
	Adv-fronting		-	0/3	-	0/2	-	2/4	2/3	-	-
	subordinate clause		1/3	2/6	-	3/5	2/3	1/3	3/5	-	5/6
2	<i>-de</i> (ATT)		4/9	-	4/5	4/6	-	2/3	-	-	1/1
	<i>-de</i> (ADJ)	4/6	7/8	6/7	7/8	7/8	10/13	4/5	6/8	3/5	3/4
	<i>-de</i> (POSS)	7/9	4/9	4/6	4/5	-	2/4	4/5	2/3	4/6	2/2
	<i>zhengzai</i> -(PROG)	-	1/1	0/1	-	5/7	-	5/6	-	-	-
	<i>-guo</i> (EXP)	0/4	0/2	2/4	4/6	-	4/5	-	-	-	4/5
	SVO	7/10	+	+	+	+	+	+	+	+	+

	SVO (interrogatives)	5/8	7/9	-	-	-	-	-	-	2/3	-
1	Single constituent	+	+	+	+	+	+	+	+	+	+

Table 6.5 Fran’s Language Production (scalability 100%)

In general, the data to date has generated strong empirical evidence in support of the developmental hierarchy and its implicational sequences formulated within PT. Most of my participants who have no Chinese-related background before entering the university were able to produce Chinese interlanguage in the predicted sequence in subsequent interviews. Nevertheless, the existence of the exception may, on the one hand, be a result of the research design and concerns regarding the research methods; yet on the other hand, it is valuable for contributing to the challenge in PT. Therefore, further investigation from different perspectives should be undertaken in future.

6.2.2 Chinese L2 Learners with a Chinese Background

In this section, the analyzed speech data from a group of Chinese L2 learners (who have Chinese input at various levels under Chinese contexts before entering the University) will be compared and discussed. It should be noted that all participants received no ‘formal’ instructions until then.

Table 6.6 illustrates a general developmental path of a year 1 student (Harry) who has been to Shanghai, China for 88 days which allowed him to experience natural Chinese input on a daily basis. From the starting point of my data collection, apparently, Harry has well-acquired structures at stage 2, regardless of the vocabulary constraints. His language then moved to stage 3 straightaway (at or before week 8 but after week 5).

As seen from the distributional illustration of both Harry and Marlene’s data (see Table 6.6 and Table 6.1), it is believed that Harry’s acquisition speed is far quicker than Marlene’s, and is even better than some of the year 2 students such as Fran who is categorized in the non-Chinese background group (see Table 6.4). Put simply, Harry’s language production is very rich and his progress is very ‘healthy’.

Harry	Wk5	Wk8	Wk12	Wk17	Wk20	Wk24	Wk26	Wk32	Wk35	Wk38
Stage 5										(+)
Stage 4	(+)	(+)	(+)	(+)	(+)	+	+	+	+	+
Stage 3	(+)	+	+	+	+	+	+	+	+	+
Stage 2	+	+	+	+	+	+	+	+	+	+
Stage 1	+	+	+	+	+	+	+	+	+	+

Table 6.6 Harry's Acquisition Route

	Structure	Wk5	Wk8	Wk12	Wk17	Wk20	Wk24	Wk26	Wk32	Wk35	Wk38
5	<i>ba</i> structure										2/5
4	<i>de</i> (RC)	0/2						2/4	4/9	5/11	1/2
	Topicalization	1/2	0/1			1/3	4/8	5/7	-	-	4/6
3	Classifier	2/2	4/6	5/6	7/7	7/8	5/6	7/9	10/11	3/4	6/8
	V-comp <i>-de</i>	2/3	0/3	-	-	1/2	3/4	1/2	-	-	1/1
	Adv-fronting	0/2	1/3	3/4	-	-	4/7	3/4	1/2	3/4	5/5
	subordinate clause	-	2/3	2/2	-	5/6	7/7	3/4	9/11	6/6	4/5
2	<i>-de</i> (ATT)	-	3/4	4/6	2/2	-	-	-	3/4	4/8	2/2
	<i>-de</i> (ADJ)	8/9	11/13	10/12	6/8	9/11	6/7	5/8	8/9	6/7	9/10
	<i>-de</i> (POSS)	7/9	4/5	2/2	5/7	7/8	-	5/5	3/3	2/4	4/5
	<i>zhengzai</i> -(PROG)	7/11	-	-	4/4	5/7	3/4	-	3/3	-	-
	<i>-guo</i> (EXP)	-	-	-	-	-	5/7	-	-	4/6	5/6
	SVO	19/21	+	+	+	+	+	+	+	+	+
	SVO (interrogatives)	3/5	4/6	3/5	-	-	-	2/2	5/6	-	-
1	Single constituent	6/6	+	+	+	+	+	+	+	+	+

Table 6.7 Harry's Language Production (scalability 100%)

As seen from Table 6.6 and Table 6.7, at week 5, Harry had already attained the grammatical features at stage 2: in spite of the single Chinese words, he produced the SVO canonical order around 19 times with different uses of verbs. In addition, a frequent use of 'zhengzai-' in different situations has been observed to reinforce his successful acquisition at stage 2. In this interview, a couple of classifier uses at stage 3 were also observed but with insufficient occurrence types and tokens. The classifier at this point is therefore judged as a non-acquisition, yet finally the classifier has successfully emerged at week 8 and was consistently produced throughout the rest of the data collection period.

In Harry's data set, the sentence structure at stage 4 appeared at week 5 together with the grammatical items at stage 3. The simultaneous emergence of processing procedures at two different stages is not accommodated in PT, which may be assumed as the case that violates the processing hierarchy, since the processing procedures are inter-dependent and the acquisition of the lower level is a prerequisite for the functioning of the higher level. In fact, this case does not disobey the linear language progress at all.

Firstly, emergence does not equal acquisition, so Harry did not acquire the stage 3 and stage 4 together at week 5; instead, the move of the actual acquisition from stage 3 to stage 4 took quite a long time (it was across 16 weeks) referring to the teaching syllabus. It is assumed that the presence of the topicalization at week 5 may be due to Harry's informal input out of class. But, by then, Harry could not manage to acquire it without the acquisition of the previous stages; thus, in the following data collections, topicalization is not presented until it has been introduced and the prerequisite structures have been built up in Harry's ILs.

From the previous discussion, a question has been generated – why does this year 1 student acquire L2 Chinese forms quicker than another year 1 student, and even quicker than a year 2 student? Does it violate the processing hierarchy and its underlying theory? The answer is no. Instead, this case should be explained using a full examination.

Horizontally, Harry and Marlene are both year 1 students and are taught by the same teacher using an identical syllabus. However, Harry outperformed Marlene in most syntactic tokens in most interviews - Harry's acquisition is much faster than Marlene's in terms of the production accuracy and frequency of grammatical features.

Vertically, Harry and Fran are from the same programme but Harry is in year 1 while Fran is in the second year. Obviously, year 2 students are supposed to receive more formal Chinese instruction than year 1 students in total, and it is then predicted that the language use and production of year 2 students should be more advanced than the year 1 students. Nevertheless, the findings do not reflect this, as Fran as a year 2

student is at a lower language hierarchy compared with Harry.

To explain this case within the framework of PT, it is assumed that L2 learners would follow a certain predicted route in acquiring an L2, but there is no reference to the acquisition speed. In other words, PT explains the way in which an L2 is acquired but not at what speed. The speed of acquisition is another issue which is likely to be influenced by other factors, such as the quantity of the exposure to the L2, the quality of the learners' language production, or the attitudes in employing Chinese language in one's daily life (it needs further study and massive data to support). Although Zhang (2002a: 108) has implicitly addressed in her study that 'the teaching syllabus did not seem to play a crucial role in the speed of the development', there should be other factors which influence the speed of learners' L2 progress.

For instance, among all the speech data retrieved from the participants in this group, Rachel and Harry were the most responsive ones, while Fran was the least. This has suggested that Rachel and Harry have generated more utterances than the ones received from Fran. This could also be one of the reasons which affect the 'picture' of the learners' language profile. Further details will be provided later in this chapter.

In terms of the data received from Scott and Catriona (see Table 6.8 and Table 6.9), a few similarities have been found; firstly, they were enrolled in the same programme and taught by an identical teacher. Both of them have taught English in China for approximately a year in different areas, and their Chinese acquisition during the data collection period took a very fast and consistent path. The difference in their Chinese learning background is that Scott has had a private Chinese tutor for some time to offer him 'surviving Chinese' lessons, while Catriona did not.

When viewing the two distributional analyses below, one should remember that the number seen before the slash signifies the frequency count of valid instance (type), while the number after the slash indicates the total occurrence of the given structure. It is obvious that their starting point in Chinese is dramatically more advanced compared to those with very little Chinese experience before commencing Chinese in the university.

	Structure	Wk5	Wk8	Wk12	Wk17	Wk20	Wk24	Wk26	Wk32	Wk35	Wk38
5	<i>ba</i> structure						2/3	5/7	-	2/4	-
	<i>bei</i>									4/9	
4	<i>de</i> (RC)						0/1	0/3	-	2/6	3/4
	Topicalization					3/4	5/9	-	3/6	-	2/3
3	Classifier	4/6	-	8/10	5/9	7/8	2/3	8/10	9/9	-	6/9
	V-comp <i>-de</i>	1/3	4/6	1/2	-	5/7	-	3/4	-	2/2	-
	Adv-fronting	1/1	-	4/5	5/6	-	5/7	-	3/3	6/6	3/5
	subordinate clause	2/3	3/5	-	4/4	2/3	-	7/9	5/6	2/3	5/6
2	<i>-de</i> (ATT)	2/3	3/4	4/4	3/5	-	3/3	6/7	4/5	4/4	-
	<i>-de</i> (ADJ)	9/12	5/7	4/7	9/11	8/9	10/12	5/6	10/11	8/8	6/6
	<i>-de</i> (POSS)	3/4	1/1	2/3	-	3/4	3/5	4/4	-	2/3	6/7
	<i>zhengzai</i> -(PROG)	2/4	-	-	2/3	-	-	4/5	-	-	3/3
	<i>-guo</i> (EXP)	-	2/3	1/2	-	-	6/7	-	-	-	4/6
	SVO	8/9	+	+	+	+	+	+	+	+	+
	SVO (interrogatives)	7/10	2/6	-	9/10	-	5/6	-	-	-	-
1	Single constituent	9/9	+	+	+	+	+	+	+	+	+

Table 6.8 Scott's Language Production (scalability 100%)

	Structure	Wk5	Wk8	Wk12	Wk17	Wk20	Wk24	Wk26	Wk32	Wk35	Wk38
5	<i>ba</i> structure							5/8	6/8	-	4/6
4	<i>de</i> (RC)							-	2/4	3/4	-
	Topicalization			1/4			0/1	4/9	3/4	4/6	5/9
3	Classifier	2/3		4/7	2/3	7/9	6/9	8/10	-	6/9	2/2
	V-comp <i>-de</i>	0/1	0/2	2/3	4/7	5/5	-	2/3	-	5/7	-
	Adv-fronting	1/2	-	4/7	5/6	4/4	4/5	5/6	-	2/2	8/9
	subordinate clause	-	-	-	3/4	6/10	9/10	7/9	3/5	5/6	-
2	<i>-de</i> (ATT)	-	3/3	4/7	5/6	8/9	6/7	2/3	5/6	-	4/6
	<i>-de</i> (ADJ)	3/4	4/4	6/8	11/14	5/6	8/8	4/4	11/12	4/7	7/11
	<i>-de</i> (POSS)	4/5	3/5	2/3	4/7	-	5/8	7/8	6/7	4/6	3/3
	<i>zhengzai</i> -(PROG)	-	-	9/11	-	2/3	4/5	-	5/6	-	8/9
	<i>-guo</i> (EXP)	2/4	12/14	-	1/2	-	-	2/3	-	3/5	5/8
	SVO	7/8	12/12	+	+	+	+	+	+	+	+
	SVO (interrogatives)	12/15	-	-	3/4	-	-	3/4	2/3	-	-
1	Single constituent	5/5	19/19	+	+	+	+	+	+	+	+

Table 6.9 Catriona's Language Production (scalability 100%)

Obviously, the two learners' general acquisition route is very similar, but the production point of certain grammatical items is different. No totally identical acquisition route is observed in these two cases, therefore it could somehow prove that the similar acquisition input and background could not determine the identical learners' acquisition path.

One of the most interesting findings is located in Catriona's data sets. Adverbial subordinate clause tends to appear at the phrasal level, since it only requires adding certain adverbs at the beginning of the main clause and subordinate clause to indicate their relationship. The following example Ex6.1 is the adverbial clause of cause, extracted from Catriona's database. Two adverbial phrases indicating cause and effect ('yinwei' and 'suoyi') have been inserted at the beginning of each clause in order to form an adverbial clause of cause.

Ex 6.1 yinwei xia yu le, suoyi wo chidao le.
 because down rain EXP, so I late EXP.
because of the rain, I am late.

Zhang (2008) has claimed that Chinese subordinate clause would occur at stage 3 of the processing hierarchy, but no explicit explanations have been provided. From my database, it can be seen that the adverbial subordinate clause, which requires the information exchange within the phrasal level, is acquired by the L2 learners at stage 3. At the same stage, the Chinese coordinate clause (a coordinate phrase is required in between the two parallel clauses) is also successfully produced by Catriona.

Another issue to address from Catriona's production data is the successful acquisition of the adjunct-fronting word order in Chinese, which is rather flexible compared to it is in English. It is said by Yuan (2001) that the adjunct-fronting in Chinese prohibits the adjunct from appearing in the sentence-final position, which seems to be difficult for English native speakers. However, Catriona can produce the adjunct-fronting word order consistently and stably at an early stage. An example is taken out of Catriona's speech data below.

Ex 6.2 (Manman de), wo (manman de) chi (*manman de) fan (*manman de).
 (slow DE), I (slow DE) eat (*slow DE) rice (*slow DE).
I eat slowly.

In Ex6.2, the adverb ('manman de', as *slowly*) in the linear order of the constituents is optional in nature. The adverb can appear either before or after the NP in Chinese but not in other positions, e.g. within or after the VP (Di Biase and Kawaguchi, 2002). The phrase with '*' highlights the incorrect or unacceptable placement of the adverbs. In Catriona's utterance data, the adjuncts are usually fronted or correctly placed straight after the subjects. It shows that the linguistic features at stage 3 are successfully comprehended under the constraint of the emergence criterion.

In addition, there is actually a case of delayed occurrence of the taught structure *V-de* (at stage 3) in Catriona's data. According to the teaching plan, this grammatical point had been introduced for about six weeks before it occurred in Catriona's speech production. I have attempted to use elicitation tasks to retrieve this structure straight after it was taught, but I failed. Although the cause of her delayed emergence needs to be investigated, the phenomenon itself does not violate the central idea of PT, since this structure finally emerged before she moved to stage 4.

Besides, the *ba* structure was not introduced formally in the class but appears as part of the skit at year 1. However, this structure has not been produced during the data collection set until it was formally introduced in year 2 texts. Scott first produced this structure once in week 24, which is roughly one year after the first appearance of this structure in class. Based on the emergence criterion, this structure has been finally acquired in week 26 by Scott. Catriona, in contrast, did not produce this structure in the same interview as Scott did, but she successfully presented it in the following interviews. In this case, to reinforce the fact: although the Chinese L2 learners have very similar Chinese acquisition backgrounds, such as Scott and Catriona, their acquisition speed and the linguistic profile are still different.

In contrary, the other informants (for instance, Fran) who have been taught explicitly regarding *ba* structure never produced it with the given contexts. It is also observed that even though the *ba* structure at stage 5 does appear in the participants' data (such as with Harry, Catriona and Scott) the frequency of its occurrence with the individual learner was very low compared to the use of other structures.

The last extraordinary case was found in Scott's data - it is the presence of the Chinese passive *bei* structure in week 35. Scott has produced four different types of *bei* structure out of nine contexts (see *Extract 7* in Appendix E). Even though the occurrence of *bei* structure 'satisfies' the emergence criterion in quantity, it is seen that the TTR of *bei* structure is lower than 50%, which indicates its unstable status. Therefore, a further investigation of this structure should be conducted to ensure its consistency in use.

Compared with the English passive structure, the Chinese *bei* construction exhibits some unique behaviours which are of great theoretical significance (discussed in Chapter 4). In this passive voice, the actual SUBJ in the original SVO structure is moved as the *bei*-object, as the Chinese passive is based on a non-linear relationship between a-structure and f-structure, and this construction then requires the sub-clause procedural skill (to exchange information between the *bei*-object and the predicate complement) at stage 5.

During the free conversation with Scott, it is discovered that this passive *bei* construction had been mentioned in the lesson a couple of weeks ago and he has already known it when he was in China. At this point, he wanted to check whether he could manage to use it.

Moreover, in Scott's case, Chinese *bei* structure does occur after the prerequisites along the processing hierarchy have been built up in his IL. Therefore, the position in which 'bei' is lying in the CSL processing hierarchy can be seen in Table 6.10 below.

	Processing Procedure	Information Exchange	Morpheme	Syntax
5	S-bar procedure	Main and sub-clause	/	<u><i>bei</i> structure</u> <i>ba</i> structure
4	S-procedure	Inter-phrasal information	Relative clause marker <i>de</i>	Topicalization OSV
3	Phrasal procedure	Phrasal information	Classifier V-Comp marker <i>-de</i>	XP SV(O)/S XP VO: adv-fronting subordinate clause: adverbial clause coordinate clause

2	Category procedure	Lexical morphology	Possessive marker <i>-de</i> Adjective marker <i>-de</i> Attributive marker <i>-de</i> Progressive marker <i>zhengzai-</i> Experiential marker <i>-guo</i>	Canonical SV(O): declaratives interrogatives (y/n, wh-, intonation)
1	Word /Lemma	Words	Invariant forms: Single words/constituents	Formulaic expressions

Table 6.10 Updated PT Stages in CSL 2(Zhang, 2001 and 2008; Gao, 2005, current study)

In the next section, a picture generated from all the participants at one particular point will be given to verify the developmental sequence proposed in accordance with the PT-driven hierarchy.

6.2.3 Topic Hypothesis and Examination of PT Stages

As for the examination of the PT stages, in addition to the newly developed *bei* construction, another one is also worthy of attention: topicalization in Chinese. Following the Topic Hypothesis (Pienemann, Di Biase and Kawaguchi, 2005), the L2 learners could not differentiate the functions between subject and topic in a discourse. In Chinese, any important element could be assigned at the sentence-initial position to be the focus, even though the subject is no doubt the default topic in line with the Topic Hypothesis.

As discussed in Chapter 3, the Topic Hypothesis states that the difference between a subject and a topic is triggered from non-arguments and successively to core arguments (Pienemann and Kessler, 2007). In other words, the Topic Hypothesis predicts three overall stages in the mapping of a functional structure onto a constituent structure:

- (a) *TOPI and SUBJ are not differentiated.*
- (b) *The initial constituent is an ADJUNCT or a question-word. TOPI is differentiated from SUBJ.*
- (c) *The TOPI function is assigned to a core argument other than SUBJ (Pienemann, 2008a).*

Among the eight informants, Harry and Rachel have produced quite a lot of topicalized sentences following the above Topic Hypothesis.

Basically, the TOPI(=SUBJ)V(O) emerged frequently with unmarked alignment at the very beginning among all types of topicalized structures, utilizing a canonical mapping procedure with no information exchange. In this pattern, the subject and topic functions were assigned to the same constituent at the sentence initial position as predicted by the Topic Hypothesis. Therefore, this structure type can be processed at the lexical interface as canonical SVO (Zhang, 2008).

Next, the TOPI+SV(O) has been traced. Learners repeatedly placed the adjunct at the topic position, such as ‘where’ and ‘when’. For instance, Scott (in his third data collection) has produced the following sentence:

Ex 6.3 Jintian, wo dasuan qu mai dong xi.
Today I plan go buy something.
Today, I plan to go shopping.

In this case, the topic position has been occupied by an element other than the subject in the canonical string. The adjunct ‘jintian’ (as *today*) has been assigned at the topic position without changing the canonical string in the discourse. It has functioned as the topic in TOPI+SV(O), which does not relate to the arguments listed in the lexical entries of verbs. Obviously, this insertion results in the separation of the topic and the subject with regards to the function.

Though in Germanic languages, the rest of the sentence structure should be modified and adjusted radically, consequently disrupting the canonical string, such as the German verb-second structure. However, this case does not apply to Chinese, which favors the SVO tradition. In relation to Chinese syntax, there is no movement due to the XP occupying the topic position, even though the sentence processing of the canonical order has been changed. To put it another way, the movement occurs at the phrasal level at stage 3 of the processing hierarchy.

Simultaneously, the Object Topicalization has been found in Catriona’s production during the same data collection.

Ex 6.4 ma, wo xi huan .
horse, I like
I like horses.

‘ma (horse)’ here has two functions: object and topic. The topic element bears the grammatical function of the object and the patient argument of the verb. Just as Pienemann (2008a) has claimed, ‘when the learner is able to add a constituent before the subject position, in this case, the topic has been applied to the core-argument object in Object Topicalization, which suggests the object occupies the sentence-initial position and introduces the new information to the discourse’. In this operation, the constituents in a non-canonical order structure lie in the successful mapping of the c-structure to the f-structure at the sentence level in a non-linear manner (Zhang, 2007 and 2008). Therefore, this process requires the S-procedure in order to carry out the mapping of the object at the topic position at the inter-phrasal level of stage 4, based on PT.

Meanwhile, the Object Topicalization could be extended in a different form as T(=O)SV(Comp), a post-verb compliment, has been assigned. This feature has occurred once in Harry’s data in week 24. According to the hypothesized processing hierarchy in Chinese, the *V-de* stays at the third stage while in the current discussion, the Object Topicalization is at stage 4. Henceforth, this form of topicalization is proposed to stay at stage 4. Another type of topicalization sentence T(=O)(S)V(Comp) has also been discovered in Harry’s data in week 24. In this case, the subject is in fact optional, as long as the subject could be recoverable from the context:

Ex 6.5 Na ben shu jie zou le.
 That CL book borrow away LE.
That book is borrowed.

In Chinese, the ellipsis of the subject is a common feature, which would not account for further procedural skills to process it. Therefore, T(=O)(S)V(Comp) is also hypothesized at the fourth stage.

As a very sophisticated structure in Chinese grammar, topicalization has been analyzed in different ways according to the processing procedures derived in PT. Summarizing the above discussion of topicalization among my Chinese L2 participants, the account of the processing hierarchy in Chinese could then be

extended, updated and displayed in Table 6.11 below. However, there is an indication that the approach in this data analysis may require further adjustments and verification to confidently expand the current claims to all areas of IL development in CSL.

	Processing Procedure	Information Exchange	Morpheme	Syntax
5	S-bar procedure	Main and sub-clause	/	<i>bei</i> structure <i>ba</i> structure
4	S-procedure	Inter-phrasal information	Relative clause marker <i>de</i>	Topicalization <i>T(=O)SV(Comp)</i> <i>T(=O)(S)V(Comp)</i>
3	Phrasal procedure	Phrasal information	Classifier V-Comp marker <i>-de</i>	Topicalization <i>T(=Adjunt)SV(O)</i> subordinate clause: adverbial clause coordinate clause
2	Category procedure	Lexical morphology	Possessive marker <i>-de</i> Adjective marker <i>-de</i> Attributive marker <i>-de</i> Progressive marker <i>zhengzai-</i> Experiential marker <i>-guo</i>	Canonical SV(O): declaratives interrogatives (y/n, wh-, intonation) Topicalization <i>T(=S)VO</i>
1	Word /Lemma	Words	Invariant forms: Single words/constituents	Formulaic expressions

Table 6.11 Further Updated PT Stages in CSL

In contrast with a previous study (Zhang, 2008), no SOV topicalization has been observed from any of my participants' data set. This may be a result of the language input, the violation of Zhang's (2008) findings or the limitation of the learners' language production. Most often, the SOV structure in Chinese is presented in the form of *ba* structure which has been categorized at stage 5 in my study. The difference between my research and Zhang's (2008) study may account for the different interpretation of the function of *ba* – a verb or a direct object marker? At this stage, no further conclusion could be provided.

Apart from the above discussion, in order to compare the eight participants' Chinese acquisition status at one particular point, a cross-sectional analysis was conducted. The following table shows the presence of all informants' acquisition at various stages in week 12.

The reason that week 12 is selected for the comparison is because of two reasons: firstly, it is at the 1/3 phase of my data collection period which allows the learners to present different acquisition status at this point; and secondly, the students have all received new language input prior to this week, according to the different teaching schedules in year 1 and year 2. Therefore, all the participants are supposed to produce the newly learned grammatical features in this week.

	Processing Procedure	Marl	Joe	Fran	Harry	Scott	Catriona	Liam	Rachel
5	S-bar procedure								
4	S-procedure						(+)	(+)	+
3	Phrasal procedure			+	+	+	+	+	+
2	Category procedure	+	+	+	+	+	+	+	+
1	Word/Lemma	+	+	+	+	+	+	+	+

Table 6.12 All Participants' Acquisition Statuses of CSL on Wk12 (scalability 100%)

Table 6.12 has illustrated an implicational analysis of a cross-sectional CSL data set collected from the eight informants at week 12. At the identical data elicitation point, all the informants' acquisition levels tend to form an incremental picture.

At week 12, Marlene has the lowest procedural skills among the eight informants, while Rachel's output is at the highest stage by then. Catriona and Liam, who are on the same programme but have different backgrounds, stay at the same level (where the structures at stage 4 have commenced to emerge in their ILs). Catriona has strong Chinese experience, while Liam is the most diligent student among all the participants, which has been proved by the module leader and his classmates. In this case, even though we have discussed that the acquisition speed is affected positively by the adequate and comprehensive input, obviously, the learners' subjective attitudes towards the target language could somehow benefit the acquisition speed as well.

By viewing Table 6.12, although Fran, Harry and Scott stayed at the same point in week 12, their speech production has varied distinctly. Concerning the amount of sentences in the data production, Fran is the one who has produced the least structures and varieties at stage 3, while Scott generated the most valid sentence structures. In this case, though the informants stay at the same stage of the processability profile,

their ILs and comprehension of the grammatical items could be at diverse levels.

It can be concluded from the above tables that the promotion to the next stage should rely on the accumulation and acquisition of the structures at the previous stages. The analysis by now supports the inclusion of grammatical discourse functions in the PT-derived developmental stages. Certain principles of the overall picture for IL morphosyntax are relevant to the basic claims of PT that may account for the data-generated developmental sequence. The analysis results have indicated the possibility of underlying factors that affect (to some extent) language acquisition speed but not the proposed sequences. These will be presented in the following section.

6.2.4 Potential Influential Factor(s)

As seen from the above analysis among all the participants, it could be concluded that their language acquisition could be somehow influenced by a variety of external and internal factors, which are of value for discussion.

Summarized from my participants' cases, the followings are accounted for as being the external environmental factors: frequency of contacting native speakers, age of acquisition, motivation and context of using the target language, group membership and cultural identity, learning environment, relative status of L1 and target language, and exposure to the target language (in the contexts where the target language is the main language in use). For instance, Sha (2009) has pointed out that the frequent contact with L1 speakers could encourage and boost the L2 learners' language competence. This is positive for all the eight informants, who all have regular contact with native Chinese speakers to build up a relatively native context.

In addition, the internal factors are also important since learners are in a position to manipulate what they produce by means of avoidance strategies. These internal factors could then be drawn from my informants:

- a) *Experience of learning other language(s) except the mother tongue.*
- b) *Attitudes towards the target language (positive or negative).*
- c) *Efforts contributed to the target language.*

Browsing all of the informants in my study, most of them are very open and active in using Chinese in their daily conversation and communication. They have all had successful language learning experience before learning Chinese, and most of them are very positive and diligent in their Chinese study (according to the comments from their Chinese tutors). Liam is a very good example, as he has been identified as the most diligent student in Chinese across all the year 2 students. Even though he has had no experience of Chinese language before commencing his undergraduate study, his positive attitudes as well as his great efforts in learning have narrowed the gap between him and the students who have had a wide range of Chinese experience, such as Rachel and Scott. From the perspective of performance, under some circumstances (such as when he is familiar with or extremely interested in the topic), he could perform better than any other students.

Even though Fran had a very impressive language learning background, her study of Chinese was still quite slow. According to the questionnaire, she has claimed that Chinese was typologically distant from other languages she used to learn, which resulted in huge pressures on her study. Luckily, she was still quite positive and continued with her ambition.

In fact, Sha (2009) has already claimed that the learners' personal characteristics could either hold back their language acquisition, or build up positive internal language learning and development settings. These influential factors consist of the purpose and attitudes of learners towards the target language, as well as their communication skills in society. However, further research is highly required to explicitly explore the underlying facts of these influential factors and then prove their reliability in language acquisition.

With the consideration of all these factors, the learners' acquisition profile could then be investigated systematically and completely as a whole. Among all of these influential factors, the formal instruction received in class is a very significant aspect which could be altered and adjusted so as to maximize its effect on Chinese acquisition.

6.3 Relationship between Instructions and PT Profile

Formal instruction does sometimes help to produce the desired or immediate outcome in all the learners. From the results received from this current study, quite a few of grammatical structures or aspects emerged after teaching. It could be seen from certain perspectives that the instruction and teaching contents could influence the learners' acquisition sequences.

In fact, a few research studies have already proved the statement that the instruction is to 'stimulate' the learning process and ensure good results and performance for students (Willis and Willis, 1996; Zhang, 2001). Would that be the reason that an L2 learner starts out with a structure that is typologically distant from his/her L1? If yes, how far could the instruction have an effect on acquisition?

The underlying questions in the context of the present study consist of the following aspects (1) whether formal instruction is effective, and in what way; and (2) whether the instruction overrides the psycholinguistic constraints in the form of PT-based processing procedures on the L2 learning process of the Chinese grammatical items.

In order to explore the relationship between the learners' acquisition sequence and the order of the teaching input, extensive textbook analysis has been carried out as well as an investigation of the teaching plans before each data collection session. This analysis is significantly crucial since it allows me to conduct the research with a comprehension of the teaching points in each session. Thereafter I could explore the importance and demands of preparing appropriate elicitation tasks to induce the language production.

Table 6.13 summarizes the point of introduction of each grammatical structure through teaching plan and textbook analysis. The textbook analyzed in this table is the one used in Zhang's (2001 and 2008) studies at Canberra University of Australia, entitled *New Practical Chinese Reader 1 (Book 1)*. In the table, the first column presents the processing stages, while the second lists the hypothesized CSL developmental structures. In the first row, L1 stands for Lesson 1 in the textbook. The '+' 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. Moreover, the ‘/’ indicates the fact that the particular structures were not included in the textbook or have not been instructed by the teacher in the class during the lesson.

	Structure	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14
5	<i>ba</i> structure														
4	<i>de</i> (RC)														
	Topicalization														
3	Classifier							/	+	+	+	+	/	+	+
	V-comp <i>-de</i>							/	/	/	/	/	/	/	/
	Adv-fronting							+	/	+	+	+	/	+	/
	subordinate clause							/	/	/	/	/	/	/	/
2	<i>-de</i> (ATT)	/	/	+	+	/	+	+	+	/	+	+	/	+	+
	<i>-de</i> (ADJ)	/	/	/	/	/	/	/	/	+	+	/	/	+	+
	<i>-de</i> (POSS)	/	+	+	+	/	/	+	+	+	+	+	+	+	+
	<i>zhengzai</i> -(PROG)	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	<i>-guo</i> (EXP)	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	SVO	+	+		+	+	+	+	+	+	+	+	+	+	+
	SVO(interrogatives)	/	/	+	+	+	+	/	+	+	+	+	+	+	+
1	Single constituent	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Table 6.13 CSL Textbook in Canberra University (New Practical Chinese Reader 1)

In Zhang’s studies (2001 and 2008), the three informants were all instructed by Zhang using the above textbook. From the tendency of the structures in the textbook (outlined in red in the above table), it is obvious that the sequence of structure introduction presented in the New Practical Chinese Reader 1 almost matches the PT-driven developmental order. Therefore, even though the investigation results showed that Zhang’s (2001 and 2008) informants followed the identical processing route aligned with PT procedural skills, to some extent, it could be assumed that these processing patterns that the three Chinese L2 learners produced follow the formal classroom instructions and the textbook content arrangement, rather than the universal procedural skills. In other words, it could be concluded that either the formal instruction path directs the learners’ language output or the universal hierarchy functions and constrains the language development.

Therefore, to test whether the processing hierarchy is affected by the instructions and/or in what way it affects the language acquisition, my research is carried out on another group of informants at Newcastle University, UK, who have been instructed by different Chinese teachers using a completely different textbook. At Newcastle University, a different textbook called *Integrated Chinese* was mainly used in class for Chinese L2 learners. The textbook analysis has been displayed in Table 6.14 as follows.

	Structure	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13
5	<i>ba</i> structure										(+)			+
	<i>bei</i> structure										/	+		/
4	<i>de</i> (RC)										/	/		/
	Topicalization										/	(+)		/
3	Classifier		+	/	/	(+)	(+)	/	(+)	(+)	(+)	(+)		/
	V-comp <i>-de</i>		/	/	/	/	/	(+)	(+)	/	+	+		/
	Adv-fronting		/	(+)	(+)	(+)	(+)	(+)	(+)	/	/	+		/
	subordinate clause		/	/	+	/	+	+	(+)	(+)	(+)	(+)		/
2	<i>-de</i> (ATT)		(+)	/	+	/	/	+	(+)	(+)	(+)	(+)		/
	<i>-de</i> (ADJ)		(+)	/	/	/	/	/	+	+	/	+		/
	<i>-de</i> (POSS)		+	(+)	/	(+)	(+)	(+)	(+)	(+)	(+)	(+)		/
	<i>zhengzai</i> -(PROG)		/	/	(+)	/	/	/	/	/	/	/		/
	<i>-guo</i> (EXP)		/	/	(+)	/	/	/	/	/	/	/		/
	SVO	+	+	+	+	+	+	+	+	+	+	+	+	+
	SVO (interrogatives)	+	+	+	+	+	+	+	+	+	+	+	/	/
1	Single constituent	+	+	+	+	+	+	+	+	+	+	+	+	+

Table 6.14 CSL Textbook in Newcastle University (*Integrated Chinese 1*)

It is described in Table 6.14 that the introduction points of the grammatical structures in *Integrated Chinese 1* are dramatically different from the ones in the textbook used at Canberra University.

First and foremost, it seems that the structures are covered across stages in one lesson in *Integrated Chinese 1*. For example, in lesson 2, grammatical items have been covered from stage 1 to stage 3 in the proposed processing sequence, which is prior to the first data collection. However, the classifier structure is not identified in the year 1 student - Marlene's first observation session held in week 5, straight after the item was introduced in the lesson. Similarly, in Harry's first data session in week 5,

only two types of classifiers were found, which were categorized as non-acquisition based on the emergence criterion.

Logically and theoretically, the learner's delayed response to teaching, together with the unpredictable acquisition schedule, indicated that the imminent emergence of an L2 form could happen at any time after it was taught (Zhang, 2002a and 2005). In reality, this is simply not the case. The issue of delayed effect on instruction has been already reported in language acquisition studies which focused on the developmental process/sequences of English in informal settings during the last decade (Ellis, 1984; Felix, 1981; Pienemann, 1984, 1988, 1989, and 1998c). Various explanations have been proposed to account for the phenomenon, such as the features of classroom discourse (Ellis, 1984), the psycholinguistic constraints (Pienemann, 1984 and 1998) and the difference between input and intake (Krashen, 1981).

Following Pienemann's (1984 and 1998) perception, learners could not proceed to stage 3 without the acquisition of the structures at stage 2. In this case, the delayed response could be considered on the basis of the absence of the prerequisites. According to PT, when a particular processing procedure is developed, the structural form requiring the procedure can, in principle, emerge. However, there is no guarantee that 'the learner will indeed produce a linguistic rule as soon as one is able to do so' (Pienemann, 1998c: 247). Developmental gaps or trailers are more than possible, as substantiated by the findings of many studies. Therefore, it is assumed that even though the structure has been formally taught in the class, unless the students are well-prepared to acquire this structure, it could not be observed in their language output.

At this point, formal instruction is required to help fill in the gap. Long (1993 and 2001) has already addressed that formal instruction following the acquisition nature has a positive effect on the rate of learning and the speed of acquisition. Hence, the ultimate level of L2 attainment could be moved forward and improved through a teaching curriculum within the processability constraints.

From a different perspective, the temporal gap existing between instruction and

emergence were of a more accidental nature. For instance, the temporal gaps between each interview were 3 to 6 weeks in my study, in which case, the actual point of the emergence of certain grammatical items may have been missed. Unfortunately, it is not possible to collect more data at present to (dis) confirm this hypothesis.

In addition, a clear structure tendency could be identified from the *New Practical Chinese Reader 1 (book 1)* but no similar tendency could be seen from the *Integrated Chinese 1*. Compared with the proposed PT stages on the left hand side in Table 6.14, the distribution of the grammar points in *Integrated Chinese 1* seems to be very rambling following the proposed sequence.

To display the teaching path used for my informants together with the description of a PT-staged morpheme and syntax, Table 6.14 has shown that the structures have been taught in a rather unpredictable sequence which is against the PT proposed route.

In order to illustrate it simply and clearly, Table 6.15 has been generated as below:

	Processing Procedure	Information Exchange	Morpheme	Syntax
5	S-bar procedure	Sub-clause	/	<i>ba</i> structure Lesson 13 <i>bei</i> structure Lesson 11
4	S-procedure	Inter-phrasal information	Relative clause marker <i>de</i>	Topicalization T(=O)SV(Comp) T(=O)(S)V(Comp)
3	Phrasal procedure	Phrasal information	Classifier Lesson 2 V-compl. marker <i>-de</i> Lesson 10	Topicalization T(=ADJUNT)SV(O) Lesson 11 subordinate clause Lesson 4
2	Category procedure	Lexical morphology	Possessive marker <i>-de</i> Lesson 2 Adjective marker <i>-de</i> Lesson 12 Attributive marker <i>-de</i> Lesson 2 Progressive marker <i>zhengzai-</i> Experiential marker <i>-guo</i>	Canonical SV(O): declaratives interrogatives (y/n, wh-, intonation) Topicalization T(=S)VO Lesson 1
1	Word /Lemma	Words	Invariant forms: Single words/constituents Lesson 1	Formulaic expressions Lesson 1

Table 6.15 Comparison between Teaching Route and Acquisition Profile

Integrated Chinese 1 is actually a content-based textbook, so grammatical features within the hypothesized processing hierarchy are not the focus in this book. It can be seen that the two lexical markers at the same stage 2 were introduced in Lesson 12 *-de* (ADJ) and Lesson 2 *-de* (POSS) respectively – it is actually in reverse to the hypothesized acquisition profile. Fortunately, even though the learners’ language progression requires the preparation of the linguistic knowledge in the previous stages under PT, there is no implication for the requirement of acquiring all the structures in the early stages before moving to the next. Hence, the students taught by *Integrated Chinese 1* could still move to stage 3, with the acquisition of *-de* (POSS) at stage 2.

To carry out a further comparison of the textbooks, Table 6.16 analyzes another textbook which is called *Han Yu Jiao Cheng*, translated as *Chinese Teaching Textbook*. It is used for Chinese L2 learners in most of the language universities in China. It is also the textbook used for the group of students who studied under a Chinese context in Gao (2005). The introduction of the grammatical items in this textbook does, to some extent, align with the PT-driven procedural skills when compared to the *Integrated Chinese 1*. Furthermore, there is no override of the structures against the processing hierarchy.

	Structure	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15
5	<i>ba</i> structure															
4	<i>de</i> (RC)															
	Topicalization															
3	Classifier															
	V-comp <i>-de</i>															
	Adv-fronting															
	subordinate clause															
2	<i>-de</i> (ATT)		/	/	/	+	/	+	/	/	/	/	/	+	/	/
	<i>-de</i> (ADJ)		/	/	/	/	/	/	/	/	/	/	/	/	/	+
	<i>-de</i> (POSS)		/	+	/	+	/	/	/	/	/	+	/	/	+	+
	<i>zhengzai</i> -(PROG)		/	/	/	/	/	/	/	/	/	/	/	/	/	/
	<i>-guo</i> (EXP)		/	/	/	/	/	/	/	/	/	/	/	/	/	/
	SVO		/	/	+	+	+	+	+	+	+	+	+	+	+	+
	SVO (interrogatives)		+	+	+	+	+	+	+	+	+	+	+	+	+	+
1	Single constituent	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Table 6.16 CSL Textbook (Han Yu Jiao Cheng) [Chinese Teaching Textbook]

This textbook analysis, from another angle, has proved that the informants grouped under Chinese contexts in Gao (2005) have somehow been taught in a relevant similar way of PT-based sequence. In this case, even though the analyzed acquisition route of this group of students showed an identical path on the processing sequence, it is hard to conclude whether the students follow this universal hierarchy or the teaching sequence.

However, there is a limitation in allocating the input for the Chinese L2 learners based on these textbook analyses. Even though some structures have not been marked in the analysis at a certain time in the book, the students may still have had exposure to them from their frequent contact with their Chinese-native tandem partners, personal tutors or other instances. This could hardly be traced and avoided in the current study.

Regarding the facts of the textbook design, Li (2004) has mentioned that many CSL textbook designers in the last 20 years mainly considered the learners' backgrounds, learning objectives, learning conditions and diversity, cultural concerns, and the grammatical features of Chinese. The important impersonal aspects in designing textbooks – the natural acquisitional sequence of language profiling – have been ignored. Among all the analyzed Chinese textbooks, the textbook used in Canberra University is seen as an ideal textbook, which follows the PT-driven sequence incrementally and therefore could possibly stimulate learners' acquisition in a positive way.

An important issue that emerged from this study relates to the delayed emergence of certain structures which, nevertheless, did not amount to a violation of the implicational hierarchy articulated in PT. Overall, even if the three analyzed textbooks have shown various linguistic paths compared with the hypothesized processing hierarchy, nearly all the informants from different studies present a very similar route in their language output over the course of time. Pienemann's Teachability Hypothesis has further confirmed that no developmental stage can be skipped by the learners and 'instruction can only promote language acquisition if the IL is close to the point when

the structure to be taught is acquired in the natural setting' (Pienemann, 1988: 60). Details are given below.

6.4 Applying the Teachability Hypothesis to Syllabus Design

Pienemann (1998c) has suggested that foreign language teaching has to conform to the constraints of learnability and teachability. If the designed materials do not allow the learners to acquire or learn, these materials are unsuccessful and would even hold back the learning progress. Under this circumstance, designing positively learnable syllabus could contribute to improving language acquisition. However, many syllabi designed for CSL acquisition concentrated on the assessment instead of the processability of learners' natural acquisition (Long, 1993; Pienemann, 1995). At the present time, whatever principles are guiding the sequencing of CSL teaching materials, they were probably not derived from any studies in the psycholinguistic domain of SLA (Pienemann, 1995; Zhang, 2008).

Syllabus, as a guide of learning and teaching, is usually a window into the soul of many classrooms, showing at least what the intentions and outcomes of the teaching may be and providing the main framework for the lesson in many (if not almost all) classrooms (Cook, 2009).

Theoretically, what should be the initial stage for acquisition and how could help Chinese L2 learners to improve their language competence? These questions need to be answered using strong supporting evidence before the syllabus is designed. The Teachability Hypothesis, following the nature of developmental stages, defines the notions that are teachable, and then sets up the constraints in instruction.

An important phase in syllabus design is to decide what should be included in the syllabus, since there is a vast amount of material to disseminate (Long and Russell, 1999). From the teachability point of view, materials which focus on the learning process and developmental stages should be put into the syllabus to benefit L2 learners. However, directly writing the grammatical features at each stage into the syllabus is not effective, because the practical syllabus should be developmentally moderated according to the teaching objectives and learners' acquisition capacity

(whether it is learnable for the particular students).

In this case, the principles to apply to the selection, organization and sequencing of the materials for learning in a structured teaching situation should be set up, on the basis of the Teachability Hypothesis and Processability Theory. On the one hand, it can ensure that the teaching objectives will be learnable. On the other hand, it can help avoid scheduling unlearnable contents. A trial of the designed syllabus is considerably required before it applies to a wider range of Chinese L2 learners.

In addition, the power of PT could be extended into the practical operation for both learners and teachers. Language teachers can utilize the notion of processing sequences in at least three areas in order to make their pedagogy more effective and thus help L2 learner's progress: 'first, in syllabus design by ordering the structural material following a natural developmental pathway to the L2; second, by using the PT hierarchy as an instruction to measure the developmental readiness of the learner both in order to place the learner at the appropriate level and to design specific interventions, and third, to give appropriate, developmentally moderated feedback to learners' (Kawaguchi, 2005a).

The Teachability Hypothesis follows logically from the nature of developmental sequences. So far, the proposed developmental sequences have not been incorporated into the syllabus design for teaching Chinese. Therefore, according to the updated processing hierarchy in Chinese, there is plenty of leeway for developing this theory-practice interface: between L2 development and syllabus design, task design and language assessment; in short, the pedagogy of CSL. This combination could lead to more effective CSL teaching and learning.

6.5 Natural Acquisition or Formal Instruction?

Natural acquisition or formal instruction? As stated above, the formal instruction seems to be quite powerful following the developmental procedural skills. However, it has been shown from the analysis and the previous discussion that the acquisition speed of Harry is obviously faster than his classmate Marlene's, and was even faster than the second year student Fran's during the acquisitional process. Since Harry had

been to China for nearly three months immediately prior to commencing Chinese learning at Newcastle University, the natural input he received probably had an unpredictable influence on his language development, which therefore resulted in him having both better comprehension and performance than Marlene. This fact proves that the natural acquisition with proper contexts could somehow positively promote the language learning. Will this also demonstrate that natural acquisition could benefit students' L2 acquisition over formal instruction?

According to the data analyzed in my study, although some structures may not occur as a teaching objective, some of my subjects may still have exposure to them due to their frequent contact with native speakers of Chinese in and out of university, or from their personal Chinese-related backgrounds. Obviously, the learners who have a lot of exposure to the target language show overwhelming benefits compared to the ones without natural input, especially in Rachel's case.

Rachel had one year of teaching experience in China before she enrolled on the Chinese programme at Newcastle University, plus she worked in a Chinese restaurant when she studied in Newcastle. Meanwhile, she has made many Chinese friends who she always contacted in her spare time to practise her Chinese. In this circumstance, she has a very strong natural input in the Chinese language which contributed to her gaining the top Chinese competence among my research participants. Compared with the other students, her Chinese vocabulary knowledge, expression skills and her grammatical structure comprehension are all outstanding.

In fact, a previous investigation has already revealed the benefits of natural input and formal teaching. Pienemann quoted Pica's research undertaken in 1982. Pica established an implicational scale for three groups of students from a naturalistic setting, a mixed setting (naturalistic and instructive) and a formal instructive setting. The results of the experiment showed that the learners in different groups acquired the proposed structures in the same order and that the implicational scale is consistent in different linguistic contexts (Pienemann cited in Hyltenstam and Pienemann, 1985). However, the acquisition speed varied among the three groups. Learners from an

instructed environment progressed a little more quickly than those learners in the other two settings. Obviously, this study was conducted over 20 years ago and the formal teaching methods were not clearly stated in the research, so the findings should be analyzed from a broader perspective.

Moreover, Long (1993), in a review of 11 studies comparing naturalistic, classroom or mixed exposure to L2s, noticed that six of them proved that the students' language development was faster with instruction compared to the ones in other groups. According to Long's (1993) research and subsequent studies, Ellis (1990: 133) concluded that 'it seems reasonable to assume that formal instruction is of value in promoting rapid and higher levels of acquisition'.

Pienemann (cited in Hyltenstam and Pienemann, 1985) has also declared that the external factors might have a certain influence on the learning process, but it is still determined and constrained by the set of principles in a PT-derived L2 development in both natural and instructed settings.

All in all, in natural settings, SLA has been determined by the necessary prerequisites for processing the items to be learnt within the environmental contexts – the learning process may take more time. While in the formal contexts, the instructed contents underlying the teaching curriculum could somehow boost or obstruct the learning outcomes, even though the learners may make varying amounts of progress under the natural contexts. Consequently, previous studies have suggested the unique employment of formal teaching to help learners' language acquisition, but I still recommend that it is suitable to use a combination of natural input and formal instruction based on PT procedural skills, since the L2 learners with different personal backgrounds and linguistic competence could benefit from this approach.

6.6 Summary

Taking into consideration of the syllabus, the PT-based predictions and the acquisition profile of the informants in previous CSL studies, it is reasonable to suggest that the processing constraints had played quite an important role in SLA.

The data to date has demonstrated that the acquisition of Chinese grammatical forms, defined by the emergence criterion, preceded in an orderly sequence as predicted in PT. Most of my participants followed the proposed PT stages in their L2 development. Even though these participants are from complex backgrounds, they still presented identical and consistent development, based on the hypothesized processing order. In other words, the observed developmental course shown in my research is compatible with the PT-motivated processing hierarchy.

A further proposal of the grammatical structures in Chinese following the processing hierarchy has been made, which could enrich the grammatical presence in each stage. *bei* structure and the other forms of topicalization in Chinese have been revealed according to my data sets and then added to the current developmental stages.

However, exceptions did exist due to unexpected drawbacks in research methods and influential factors discussed in this chapter. From another angle, these ‘mysterious’ exceptional cases may be seen as the evidence which is to challenge PT. Further work is definitely required in this case. Moreover, one issue addressed is that the CSL acquisition sequence was not violated by delayed emergence of certain structures or cases, nor was it invalidated by indistinguishable stages found in the data.

The current findings also revealed that one does not always learn what one is taught. The syllabus facilitates learning unless there is an identical order between the syllabus and the developmental course of the given grammatical items in L2 Chinese. The learners’ language progress could be evidently stimulated under both PT-driven instructions and natural input. All these statements have been proved through the data collected from my research participants.

Pienemann (1998b:11) has emphasized that obviously, ‘there is no a priori way of knowing how closely related L1 and L2 are. Learners therefore have to be equipped to bridge maximal typological gaps in their L2 acquisition’. As such, some practical strategies should be employed to facilitate the teaching and acquisition process

which could thereafter narrow the gaps. Details will be discussed in the next Chapter.

Chapter 7 Task-based Material Design

Comparing L1 and L2 acquisition, L1 develops following UG while L2 development is restricted under processing procedures (Pienemann, 1998c). Pienemann (1998c) suggested that instruction could be beneficial to ‘release’ the procedural constraints and improve L2 learners’ language acquisition following a predictable order. However, it is only effective if it comes at a point when the learner is ready to benefit (Pienemann, 1984).

There are some approaches which could help learners to sequentially acquire language at a faster speed. A task-based approach is such a way, which combines the initiative language learning and natural acquisition (Pienemann, 2005). The designed task-based materials could be used as assessment materials as well as teaching resources.

This chapter therefore aims to design tasks to help elicit Chinese L2 learners’ grammatical structures along the processing hierarchy, and to test whether these learners could acquire certain structures leveled at the processing profile. Ideally, the designed tasks may be revised to use for teaching purposes in the future. In the first place, the framework of the task-based application would be highlighted. The task cycle and task phases will be illustrated. Additionally, the tasks used in previous studies would be briefly reviewed. Subsequently, tasks regarding particular Chinese features following the PT profile will be designed and revised with the support from a pilot study. In the end, a task-based teaching syllabus would be discussed based on the designed tasks.

7.1 Framework of Task Design

The aim of the task in language use is to create a real and natural context to stimulate learners’ language production and then develop their language skills (Willis, 2000). In this case, well-structured tasks could regain more language output.

By and large, the essential framework when designing a task follows a circle: pre-task, task cycle (task-planning-report), and language focus (analysis and practice)

(Willis, 2000). In a simple way, this circle is seen as three steps: pre-task, during-task and post-task or follow-up task. In terms of tasks for elicitation, the post-task stage is not required, while the pre-tasks are sometimes required to ensure the task-takers have no obstacles in vocabulary or relevant background issues.

In general, the pre-task phase could ease the task completion process, and allow learners to interpret tasks in an easy way. It orients the learners to the task, draws on their interests and then reminds learners of the language skills required to complete the task (Nunan, 2006). At this stage, learners are provided with a model of how to perform the task. This serves as the introduction of new linguistic knowledge for learners to use while performing the tasks and mobilizing existing linguistic resources. Researchers have discovered that one minute of pre-task resulted in valuable and improved performance in most aspects of learners' language production (Elder, Iwashita, and McNamara, 2002).

In the during-task phase, learners are asked to participate in an activity or to complete certain tasks. These activities or tasks are fundamentally concerned with language display and are practice-oriented or conformity-oriented; as well as engaging cognitive processes such as evaluating information. In this process, the learners' language skills are to be assessed upon their performance (Willis, 2000). To some extent, in a task-based approach, task completion is a crucial priority.

In the post-task phase, it is recommended by Ellis (2003) that a reflection on the performance of the task should be done. In this case, the learners are allowed to perform the task again, summarize the outcome of the task, discuss the communication problems occurred in the process of task completion and explore for the possible solutions. At this stage, some further activities could be provided to turn the learners' attention from meaning to language forms (Ellis, 2003).

In brief, this three-step framework could construct the foundation for the task design and task completion. However, in terms of the elicitation purpose, only the pre-task and during-task phases are probably required in designing tasks.

7.2 Tasks in Previous Studies

A variety of tasks have been used in PT studies to provide functional contexts in which the target structures could naturally occur (Di Biase and Kawaguchi, 2002; Håkansson, Pienemann and Sayehli, 2002; Gao, 2005; Zhang, 2001). Both less controlled tasks, such as story-telling, and more controlled tasks, such as structural exercises, have been widely employed.

Several studies within the PT framework includes research on which tasks are suitable for eliciting grammatical structures, such as Pienemann and Mackey (1993), Mackey (1994) and Pienemann (1998c). Accordingly, ‘a number of tasks have been designed and tested to elicit a corpus with a high data density of the structures needed for the profiling procedure’ (Pienemann, 1998c: 280).

Among all the tasks, Di Biase and Kawaguchi (2002) have used some less controlled tasks, such as *habitual action tasks*, for object clitics in L2 Italian, as well as *free conversation* for the elicitation of Japanese L2 data. Håkansson, Pienemann and Sayehli (2002) have applied *picture story-telling tasks* to 20 German L2 learners to test the FT/FA hypothesis. Furthermore, Zhang (2001) has employed several task types for the elicitation of grammatical structures in Chinese, such as *picture description tasks* and *picture guided composition* for common forms. More importantly, she used *imitation tasks* to elicit relative clauses (which are a highly optional structure in Chinese).

According to Gao (2005), a combination of *free conversation*, *topic-guided storytelling*, *picture description tasks* and *role play* has been included in interviews for her data collection. It is assumed that the combination could allow the exercise of differing degrees of control, resulting in less manipulated data but more spontaneous speech. These tasks could direct the learners to express whatever ideas they had freely within instructed topics.

However, based on the previous PT studies, no explicit explanation and guidance regarding task design and task use for language production has been discussed. Even though Gao (2005) has illustrated the task types she used in a subsequent data

collection process, it is hard to determine which one to use at which stage and for what structures. The application of tasks in PT-based studies is a very significant procedure to guarantee the required data, which should not be avoided or replaced by an alternative structure.

7.3 Elicitation Task Design for Chinese L2 Learners

7.3.1 Aim of Task Design

According to my data collection, Chinese L2 learners rarely produce the structures they have learned, acquired or processed out of contexts. It has been observed that the low production of a certain structure does not necessarily indicate that the learners had not acquired this structure or were unable to use it freely; it may be due to a lack of contexts in which to produce these structures. Some structures are optional in natural conversations, such as the relative clauses in Chinese; therefore, the production of these structures is very low. Learners sometimes avoid using some complex structures in speech, yet these are quite important in the language developmental profile. Therefore, unexpected difficulties may occur when directing learners to apply these complex structures in their natural language production (Mackey, 1994).

Therefore, Mackey (1994) has claimed that when learners have a set of structures available, the tasks could help to retrieve them. Using proper tasks could also allow the learners to pay systematic attention to functional as well as structural aspects of a language in a communicative way. With this in mind, the purpose of using tasks in PT studies is then to provide opportunities and contexts to use an acquired structure relatively frequently.

To date, task design for the elicitation of grammatical structures in each hypothesized stage (within PT) in Chinese has been rarely explored. Therefore, it is considerably required to design a number of tasks for Chinese L2 learners, who need to use the target structures and elaborate on their thoughts to complete these tasks.

One principle to remember is that the occurrence of language development has no

relation to the employment of different elicitation tasks. Also, the non-occurrence of certain structures in task completion should not simply lead to the conclusion that such items are not processable at that stage. In other words, the language output could be adjusted by the design of the tasks, but the learners' language competence could not be altered by the use of different tasks (Loschky and Bley-Vroman cited in Crookes and Gass, 1993; Seliger and Shohamy, 1989; Samuda and Bygate, 2008).

From another point of view, the designed tasks could be revised and used for the purpose of language teaching in accordance with the task-based approach. These tasks aim to facilitate the learners' acquisition process of certain structures. In this case, the task designers should have a more in-depth knowledge of the learners' language level in order to design the most appropriate tasks.

7.3.2 Pilot Study

Whether a certain task can be carried out and how attractive it is to the learners are usually crucial issues in task design. Tasks designed under such considerations will involve the procedure of a pilot study which could ensure the smoothness and practicality when carrying out the real tasks (Loschky and Bley-Vroman cited in Crookes and Gass, 1993).

In this case, in order to test and trial the validity and feasibility of the proposed tasks, a pilot study has been conducted among two groups of Chinese speakers: four native Chinese speakers and three Chinese L2 students. The native Chinese speakers consisted of three males and one female who are all considered as a native-speaker control group. The Chinese L2 students consisted of one advanced learner and two beginner students (all male) who have studied Chinese academically for at least a year. The interviews were carried out in the same manner for both groups. To carry out the task properly, these students were paired with a native speaker interlocutor (the interviewer) who could provide a 'real' context for the students to participate in and could also spontaneously control the process and pace of the task completion.

The two groups of volunteered informants were interviewed independently. They

were required to start by having a short and casual conversation with the interviewer. Then, instructions for completing particular tasks were offered in Chinese. Afterwards, the informants started to complete the required tasks. The whole process was recorded with permission. Based on the results, necessary revisions and adjustments for each designed task were made at the end of the pilot study.

In total, the volunteers were assigned four separate tasks each. The tasks are designed for four typical structures from the proposed CSL processing stages, which represent the grammatical feature at each stage. Then the collected speech data is transcribed and analyzed in terms of the frequency of using the target structures (on the basis of emergence criterion).

According to the analysis, a few issues have been addressed regarding task design. For instance, the first *picture differences* task (see Appendix A) aims to elicit the *interrogative* structures in Chinese, which simply requires students to complete an information gap task. The task-takers need to explore the differences between the pictures held by themselves and by the interviewer. The results are then illustrated as below. In the table, NS stands for native speaker while NNS indicates the non-native speaker, so NS1 stands for the native speaker No. 1. In the table, each participant shows the valid presence of the required structure according to the emergence criterion.

Structure in Chinese	NS1	NS2	NS3	NS4	NNS1	NNS2	NNS3
<i>interrogative</i> structure	15	12	15	9	4	7	5

Table 7.1 Distributional Analysis of Picture Differences Task (Task 1)

From the distributional analysis of the application of Task 1 in Table 7.1, the results manifested in an insufficient elicitation of the expected structures among the NNSs. The production of the required speech data from the NNSs were dramatically less than the NSs in most cases, which therefore demonstrated an invalid task design.

To reflect on the data collection procedure (considered with the task-takers' feedback) and task materials, the issues are then interpreted as being the following:

- (a) *the differences between the pictures (thus the information gaps) cannot be clearly discovered and identified;*
- (b) *the pictures selected were not very attractive to the learners;*

(c) the vocabulary of the NNSs is not sufficient to handle the description of the pictures and the objects included. They felt stuck and frustrated when they could not think of or did not know the appropriate Chinese words to use;

(d) the instructions in Chinese are hard for the NNSs to follow, which made them nervous and embarrassed;

(e) no comforting words from the interviewer made them feel slightly anxious about the presence of the recorder.

Based on these results, the task materials and instructions were then revised. Meanwhile, more pictures were made available if learners did not have much to say on the topics given. In addition, a pre-task stage has been inserted (containing necessary words and expressions) for the purpose of removing barriers for the task-takers. All participants would be informed that if certain words were unknown to them, they could either ask the interviewer in English for the Chinese expressions, or use English words instead.

Obviously, the pilot study has brought to my attention the importance of creating a relaxing, and non-threatening environment for the interviewees. Besides, a friendly self-introduction and amiable interview manners were added for establishing mutual trust and for conducting more productive interviews. The recorder was usually hidden from view to reduce any negative effects its visibility may have on performance. Although the interviewees were slightly intimidated by the presence of the recorder at the beginning, they felt more relaxed during the task completion process.

The revised Task 1 has successfully avoided the discussed drawbacks above and yielded a sufficient number of the target structures (under emergence criterion) under the given contexts for both NSs and NNSs. I could, therefore, acknowledge the feasibility of using this task for the purpose of eliciting Chinese *interrogative* structures.

In addition, Table 7.2 below shows the results of using the adjunct-fronting structure to complete the designed *habitual actions* task (see Appendix B). It can be seen that most of the participants performed similarly and generated identical numbers of valid structures in the completion of this task.

Structure in Chinese	NS1	NS2	NS3	NS4	NNS1	NNS2	NNS3
adjunct-fronting	11	12	8	8	5	7	8

Table 7.2 Distributional Analysis of Habitual Actions Task (Task 2)

As can be seen in the above analysis, the adjunct-fronting structure is frequently used by most NSs in their language production, which is different to the group of L2 task-takers. The NNSs produced a few adjunct-fronting sentences, sometimes with the support of hints from the interviewer (e.g. the task-takers are told to use adjunct-fronting structures). For instance, the interviewer attempted to inform the interviewees that the application of adjunct-fronting would be tested through this task.

In order to benefit the Chinese L2 learners, the tasks have been revised to facilitate the adjunct-fronting structure production. Observing the speech production received from the L2 group, it was found that the adjunct-fronting sentences are allocated when they attempted to illustrate a series of pictures in sequence, such as the description of one's schedule or timetable. Alternatively, when the learners attempted to describe the status of particular actions in process, the adverbs would be sometimes placed at the front for emphasis. On this basis, the current task was revised and extra material was then included.

Task 3 (structured interview) (see Appendix C) aims to produce Chinese topicalization (OSV) structures. From Wen's previous study (1997), it can be seen that when the Chinese L2 speakers are placed in a set situation to describe a place or to introduce a situation, it is most likely that they would focus on the topic and use topicalized sentences relatively frequently. Table 7.3 explains the data received from the pilot study.

Structure in Chinese	NS1	NS2	NS3	NS4	NNS1	NNS2	NNS3
topicalization (OSV)	3	4	5	4	1	3	2

Table 7.3 Distributional Analysis of Structured Interview (Task 3)

As can be seen from Table 7.3, however, the proposed task in the pilot study is not effective in boosting the output of topicalization among all volunteers. According to the personal reflection from these participants, it seems that NS3 recognized the purpose of the Task 3 so he tried to produce the topicalized structures in the output. In fact, topicalization is an optional feature in Chinese, so it is very hard to elicit topicalized sentences in Chinese as they could easily be replaced by alternative

expressions.

Therefore, a big revision of this task was conducted to include more instructions and restrictions on the use of structure within contexts. For instance, the task-takers would be instructed to use as many topicalized structures as possible if they could. Possibly, the production of this structure will not be significantly natural, yet, as long as students are able to produce the topicalized sentences following the designed task, it is assumed that they should have acquired this OSV structure.

In fact, the designed tasks are kept as content-focused as possible, resorting to real-world communicative situations or pragmatic contexts where it would be natural to produce the targeted structures. In this case, as for the typical *ba* structure in Chinese, it is frequently observed to be used in native speakers' conversations when they introduce the process of completing an assignment or discuss the steps/approaches for completing a task. Among the NNS group in this pilot study, the designed task for *ba* structure is also very effective and helpful in eliciting a reasonable amount of *ba* sentences. Table 7.4 displays the number of valid *ba* sentences that the participants have produced in the pilot study.

Structure in Chinese	NS1	NS2	NS3	NS4	NNS1	NNS2	NNS3
<i>ba</i> structure	16	15	15	17	10	12	10

Table 7.4 Distributional Analysis of Task 4

From this data distribution, it is obvious that the required structure has been generated sufficiently under the emergence criterion, through the assistance of the tasks. In order to restrict learners to focus on the production of *ba* instead of using alternative structures, the following instruction has been supplied: the learners are asked to present complete sentence structures. The explicit design of each revised task will be discussed in the following section.

7.3.3 Revised Tasks

In this section, the finalized elicitation tasks designed for Chinese L2 learners will be described in three parts: *structure explanation*, *rationale of the design* and *the task per se*. Among the proposed five stages in Chinese processing hierarchy, stage 1

consists of formulaic expressions and words which are easily retrieved and produced without implementing tasks. Therefore, the task design commenced with the structures at stage 2.

Task 1: Interrogative structure (stage2)

1. Structure Explanation

Example: Interrogative structure (SVO?)

English	Do you like sports?			
Chinese	<i>Ni</i>	<i>xihuan</i>	<i>yundong</i>	<i>ma?</i>
	S(subject)	V(erb)	O(bject)	Question Marker?
Chinese order	You	like	sports	Question Marker?

Similar to the declarative statements, interrogative sentences in Chinese also stay in the Chinese canonical order SVO with a question marker ‘ma’ at the end. It is as simple as putting the modal particle ‘ma’ at the end of a declarative sentence. Theoretically, stage 2 in the PT hierarchy indicates the category procedure within lexical movement and canonical order.

According to the universal hierarchy, the Chinese interrogative structures could fit into the explanation of the category procedure within the lexical movement ‘ma’. This is because a particle should only be leveled at the lexical surface, which can be seen as a modal particle attached at the end of a SVO sentence lexically. Therefore, the interrogative sentences (SVO?) are at stage 2 of the proposed hierarchy in Chinese. Also, since this interrogative structure does not exist in all L2 learners’ L1s, it is then very valuable to see whether this structure could still occur at the second stage without the influence from their L1s.

2. Rationale of the Design

In essence, from the results among the group of volunteered Chinese speakers, it is shown that the interrogative structure is frequently used in information gap tasks. These tasks have provided more opportunities for the learners to generate interrogative sentences in comparison to other task types. In my designed task, 17 pictures (in order to cover a variety of differences) are given to the task-takers and the

interviewer holds two pictures which are also included in the 17 pictures. The task-takers and the interviewer collaboratively exchange information and the task-takers have to identify the pictures held by the interviewer by asking questions.

In fact, the picture selection in this task is not random; instead, it abides by several principles: (1) a reasonable amount of pictures – to identify two pictures out of 17 in total, none of these pictures are identical or very similar in description; (2) a variety of images – the human images in the photos wear different accessories, and are of different genders, ages and skin/hair colours; (3) the differences among the pictures are recognizable and describable. It is unlikely that the task-takers would identify the right picture held by the interviewer directly by just asking a few simple questions. Hence, the amount of sentence structures produced by the task-takers can be guaranteed.

3. Task

At the first stage, relevant and necessary vocabulary and phrases to use in the picture description, such as moustache and round eyes, are introduced in English and Chinese by the interviewer according to the learners' linguistic capacity.

Afterwards, the task-takers could start to spot the differences among the series of pictures: 17 human faces (see Appendix A). The interviewer holds two of these pictures, and in order to identify the two held by the interviewer, the L2 learners should exclude the other pictures by asking questions in Chinese. For instance, according to the example below, if the answer to the question is yes, the other pictures with young faces could then be eliminated by the task-takers.

Example: na ge ren shi lao ren ma?
that CL person be old person Q-marker?
Is the person a senior?

Task 2: Adjunct-fronting structure (stage 3)

1. Structure Explanation

Example: adjunct-fronting

English	Slowly,	he types. /He types slowly.
Chinese	<i>manman -de,</i>	<i>ta dazi.</i>
	adjunct-fronting	
Chinese order	Slowly	he type

Adjunct-fronting structure is not a unique feature in Chinese syntax, in contrast with the interrogative structure. In adjunct-fronting sentences, the adjunct word is topicalized for emphasis. In the above example, ‘manman -de’ (as *slowly*) is an adverb describing the action of ‘dazi’ (as *type*), which is moved to the front of the sentence instead of being placed next to the verb or at the end of the sentence as usual.

In this adjunct-fronting example, the basic canonical SVO remains the same, in spite of the movement of a certain adverb. Obviously, there is no exchange of the grammatical information within a lexical level or across phrases, but there is within the phrases. In this case, this structure fits in stage 3 of the PT hierarchy, which states the phrasal information exchange.

However, during the data collection period, it was found that fewer adjunct-fronting sentences have been generated without given contexts or targets. In fact, neither are they used frequently in native speakers’ speech data shown in my pilot study. Thus, it would not be easy to justify if learners had or had not acquired this structure based on a few occurrences without contexts. Therefore, appropriate tasks with special instructions could then assist learners to elicit this structure.

2. Rationale of the Task

According to the speech observed from native Chinese speakers, the adjunct-fronting structure is used relatively frequently when they aim to tell a story or emphasize the specific status of a certain topic. A chronologically-presented story could be a beneficial choice for learners to use the time adverbs topicalized. However, in order to prevent using alternative structures instead of adjunct-fronting sentences to complete the tasks, there should be a restriction whereby the description of the pictures should focus on the chronological order.

In addition, a ‘live’ story-telling task is sometimes useful for the output of other

adjuncts. For example, learners are shown a short movie clip and then they are asked to describe it with emphasis on the status of actions or emotions.

Results in the pilot study have shown that the native speakers (as well as the Chinese L2 learners with high competence) indeed generated at least 7 adjunct-fronting sentences in various contexts within this designed task.

3. Task

At the warm-up stage (pre-task), any related words that may be useful for the task-takers would be introduced in a comfortable setting. A series of pictures is prepared (see Appendix B), and the task-takers are told about a particular time that applies to each picture - for example, picture 1 is to describe what happened at 8 o'clock in the morning. Basically, the students are asked to talk about a day in Mr Li's life in a chronological sequence using the indicated time. If necessary, the participants are suggested to use adjunct-fronting expressions.

At the following-up stage, a completely different type of task is designed after the 'warm-up'. A Charlie Chaplin movie clip is presented to the learners, and they are required to retell the sequence of the events after watching the movie, especially concentrating on the description of actions and emotions. It is suggested to them to topicalize the adverbial words and emphasize the status of actions in the description.

Task 3: Topicalization (stage 4)

1. Introduction of Structure

Example: topicalization (OSV)

English	That book is mine.
Chinese	na ben(CL) shu, ta shi wo de.
	topicalization
Chinese order	That book, it is mine.

'Topic', as a syntactic notion, describes the grammatical function of the constituent that occurs at a pre-verbal and pre-subject position; in other words, the placement of the topic is at the beginning of a sentence. A topicalized sentence, based on the non-canonical mapping, is normally to guide the listeners' attention and allow the

speakers to emphasize the topics to the listeners. Kawaguchi (2005b) has claimed that L2 learners could not differentiate between the function of the subject and topic in most cases.

As discussed in the previous section, the topicalized structures contain a large variety, including six different types. Therefore, this type of task targets particularly the production of OSV object-topicalized structures at stage 4 along the processing hierarchy. Among all the topicalization structures discussed in Chapter 4, OSV TOPI, is the most frequently used which could be observed from the data collection.

2. Rationale of the Task

Topicalization is optional in Chinese grammar, so the decision regarding when to use it relies hugely on contexts. Therefore, the designed tasks should allow the learners to produce more OSV TOPI structures automatically in the provided contexts in a systematic way, since there is no sufficient number of sentences to prove the acquisition of topicalization by the Chinese L2 learners in a natural context (according to my research data).

The topicalization structure can be quite easily observed from the native speakers' oral data, but not from the L2 learners' speeches. Therefore, in the designed tasks, the given instruction should somehow encourage the learners to use the required structures as naturally as possible. The interviewer is asked to tell the students that the purpose of such a task is to check their acquisition of topicalization, which may result in the students being alerted to the process of task completion.

3. Task

At this stage, useful words and phrases are provided, since a test of vocabulary is not the target of this task. Thereafter, the learners are required to describe the pictures presented in Appendix C. To describe the two pictures, the task-takers are advised to emphasize the actual objects that the person is looking at.

To move to the task itself, learners will be put in a proposed situation as below

(instructions and answers are all in Chinese). They will be told to use OSV TOPI structures and to answer these questions by emphasizing the objects (the answer itself). Complete sentences should be presented with no acceptance of phrases and abbreviated sentences. Obviously, the questions are not fixed; they could be changed under the consideration of different contexts and backgrounds.

You are invited to take an interview. Please answer the following questions in complete expressions.

1. Which is your favourite colour? (colour cards provided: black, red and blue)
2. What is your lucky number? (card 1 to 10)
3. Which activity do you like best? (swimming, running, and sleeping)
4. Who is your favourite film star? (choose five photos of the film stars)
5. What kind of food do you like? (sour, spicy, salty or mild)
6. Do you have any other favourites? If yes, what are they?

Task 4: *ba* structure (stage 5)

1. Structure Explanation

Example: *ba* structure

English	He ate the rice.
Chinese	<i>ta ba fan chi le.</i>
Chinese order	He (BA) rice eat PERF.

The *ba* structure which presents as S (ba) O + V + other elements (Order/Command) is unique in Chinese. Semantically, the structure expresses the disposal of or the effect of an action on the *ba*-object (Li and Thompson, 1981). The *ba* in this case is treated as a verb and a *ba*-object as the topic of the *ba*-complement (Bender, 2000: 126-129). Therefore, in the example, with the insertion of *ba*, the actual predicate ‘chi le’ (as *ate*) becomes the complement of the object ‘fan’ (as *rice*), while the *ba*-object ‘fan’ is the topic of the *ba*-complement ‘chi le’. The *ba* structure therefore relies on the s-bar procedure information exchange.

2. Rationale of the Task

It is necessary to comprehend whether the learners have acquired the *ba* structure and to what extent, since this structure marks a significant step in Chinese language progression. For this purpose, the designed tasks should facilitate the employment of a

ba structure into their spoken language and ease the difficulties in using it.

It was found in the pilot study that the choice of using the *ba* structure relies immensely on contexts. When learners are asked to state the procedure of completing a certain task, the *ba* structure is used regularly. According to Li and Thompson (1981: 487), ‘the structure is highly likely or obligatorily used when the speaker intends to express what has happened to a known entity’. The tasks designed for *ba* structure should base on this principle. For instance, the task should require learners to describe how to borrow a book from the library or how to purchase an everyday item in the supermarket.

3. Task

Learners are required to illustrate the procedure of applying for a job in a company. Alternatively, they could discuss the procedure for conducting an event that they feel more confident in describing, such as cooking a simple dish or making paper crafts. The selection of situations should be adjusted according to the task-takers’ individual interests.

7.4 Task-based Language Teaching Syllabus

The debate regarding the effectiveness of instructed SLA has taken places for dozens of years (Pienemann, 1989; Doughty, 2005). According to Pienemann’s (1989, 1998a, 1998c), the stages of acquisition in one language are not skipped, and the route itself cannot be altered. Therefore, the rate of instructed SLA following the proposed acquisition sequence seems faster than that of naturalistic SLA. Pienemann’s (Pienemann, 1985) Teachability Hypothesis was generated based on a similar proposal. It was widely proved that proper instruction could make a difference to L2 learning (Doughty, 2005; Pienemann, 2008a). Doughty (2005) has further emphasized that the instruction could help improve the acquisition with certain condition – what can be acquired by the point of input.

In terms of instruction in SLA, it is potentially effective, provided it is relevant to learners’ needs and language capacity (Doughty, 2005). Task-based language teaching

(TBLT) is one of the concepts which have been discussed to facilitate L2 learners' acquisition and offers students materials to work with. TBLT seeks to develop the students' IL from a prescribed developmental sequence by using languages to solve a problem (Willis and Willis, 1996). In this regard, the students could actively engage in the process of completing a task or achieving a goal, which allows the reconstruction of their ILs in a relatively unconscious way.

Task-based instruction woven into teachability could mollify the difficulties which occur for L2 learners in the process of acquiring certain grammatical structures. Thus, the individual tasks designed according to what is teachable could be very purposeful with specific grammatical needs in different entries to the learner's lexicon and therefore learners could largely benefit from such tasks.

The tasks designed in the previous section of this chapter aimed to test the students' acquisition of a particular structure. Theoretically, the tasks for teaching and testing are on two different tracks which could not be simply exchanged. It is obvious that the tasks in TBLT consist of a complete cycle for language teaching and provide the students with support in acquiring a certain structure; however, the rationale of the designed tasks for one particular structure (for either teaching or assessment) is very similar. Therefore, the tasks used for teaching could be adopted and then revised to use for the purpose of testing, and vice versa.

A teaching syllabus has been designed in order to set up an example for implementing TBLT in Chinese L2 acquisition under PT. The designed syllabus could set a good example to facilitate future teaching of L2 learners of Chinese in a logical and efficient way. To further examine and prove the possibility of revising the tasks for use in both teaching and assessment, an example of teaching one particular structure (*ba* structure at stage 5 of the proposed hierarchy) in the proposed Chinese hierarchy has been provided (see Appendix D). This example could show how the tasks should be designed under the framework of TBLT and how it could be linked and revised to use in both teaching and assessment.

7.5 Summary

Ellis (2003: 27) has claimed that ‘communicative tasks that have been designed to induce processing of some specific linguistic feature in production’ positively elaborate the possibility of retrieving speech data through tasks. Therefore, this chapter presents the task design for the Chinese L2 learners, for the sake of facilitating the output of particular Chinese structures aligned with the proposed processing hierarchy. The basic framework of task design was illustrated, as well as the discussion of task design in previous PT-based studies. Regarding the four selected structures standing for different stages of Chinese L2 procedural skills, different tasks were designed and revised on the basis of the results from a pilot study.

Ideally, the designed tasks would benefit learners in different aspects. On the one hand, they could allow the teachers to assess the learners’ language capacity. In this case, further actions could be taken by the teachers to either reinforce the instruction in these grammatical points, or to move to the structures in the next stage. On the other hand, the designed tasks may be used for the teaching purpose with necessary changes. Additional research is required in this aspect.

Chapter 8 Study Summary and Conclusion

Practice does not necessarily make perfect in language learning as neither teaching nor practice can beat the natural order of acquisition. Adequate exposure to input is necessary for SLA.

In this chapter, I will summarise the findings of my research, and draw together the limitations, insights and implications that emerged in the research process.

Initial stages of this study examined a personal desire to conduct research which could positively facilitate the L2 acquisition process, particularly for students who take Chinese as their second or other language. Simply put, this study aims to better understand language acquisition, while making contributions to new practices as well as new theory.

In addition, the foundation for this work and how the study was conducted among the group of participants in the English context has been critically demonstrated. Furthermore, I have examined the values and methodologies behind undertaking this research to test the validity of its claims. Finally, conclusions were generated through analysis of results from research participants and other practical evidence. A further task design was carried out for eliciting grammatical structures and facilitating learning process.

8.1 Key Findings

The Processability Theory (PT), developed by Professor Manfred Pienemann in the 1980s, was originally formalised within Lexical Functional Grammar. The theory suggests that, universally, L2 forms are processable within the procedural skills at certain developmental stage. Due to lack of contribution from the perspective of Chinese as a second language in relation to PT, the current research has been designed to test the feasibility of PT and the application of its model in a group of Chinese L2 learners at Newcastle University. The group presents a diverse range of learners in terms of L1 backgrounds, and Chinese as well as non-Chinese language learning experiences, in both formal and informal settings.

Results indicate that the universal hierarchy under the PT umbrella could be applied among the group; in other words, that the PT hierarchy could be applied to Chinese language, which is typologically different from the European languages the PT's original design relied on. However, due to the multifarious backgrounds of the participants, it is concluded that a variety of internal and external factors could, in fact, affect acquisition speed to different extents.

For instance, one of my research subjects, Scott, had received regular but unsystematic Chinese language input before he commenced formal study in Newcastle. Evidence shows this informal instruction boosted his interests and the speed of Chinese language acquisition, but did not change the acquisition sequence driven by PT.

Similarly, Rachel is a very active and enthusiastic Chinese L2 learner who had frequent use of Chinese when she started her studies at Newcastle University. She was working in a Chinese restaurant and also had regular contact with her partner to practise Chinese out of class. These informal applications of Chinese language have enhanced her Chinese language skills in comparison with her classmates. Evidence can be found in the data analysis and she was positioned at the highest level of the processing hierarchy at week 12.

Liam's case verifies his diligence and positive attitude towards Chinese people and culture has enabled him to become one of the best students, acquiring the language at a rapid rate relative to other second year students.

Furthermore, a couple of grammatical items, such as the 'bei' structure and topicalisation, have been generated according to the data to enrich the processing hierarchy in Chinese. Additional studies to prove their existence should be carried out in future.

Although Zhang's (2001 and 2008) and Gao's (2005) studies have already concentrated on PT application to Chinese, their research designs have drawbacks of different degrees. For example, when Zhang (2001 and 2008) taught her research subjects along the lines of the PT-driven sequence, it was found that no definite

conclusion could be drawn to explain whether the learners' acquisition trajectory followed the universal processing hierarchy or it was guided by the teaching route.

On this basis, the analysis of textbooks used by research participants in all PT-related Chinese studies, as well as the teaching plans, was carried out. According to results drawn from this analysis, participants are shown to have been taught along a considerably different route compared with the PT-driven processing sequence. Consequently, a further conclusion is made that the universal processing hierarchy can be applied to the processing of L2 Chinese, regardless of the route of instruction.

The process of data collection has unearthed another significant issue, that the elicitation of a certain structure is ineffective with respect to natural speech. Originally, the research design aimed to allow learners to use and present the required structures in a relatively natural setting. However, the process became time-consuming and "hopeless". Therefore, the demand to use designed tasks increased, in order to ease and facilitate the process of data collection, and even language learning later.

Under these circumstances, structures from four different stages of ranking on the Chinese processing hierarchy were selected as these structures are valuable in presenting learners' acquisition levels. To design tasks for these four structures, the essential requirements were gained through data collection at the first stage. Therefore, four drafted tasks were produced. To verify the validity of these tasks, a pilot study was carried out among both Chinese native speakers and Chinese L2 learners. According to the results, the tasks were revised and adjusted to easily apply to practical situations. Ideally, these finalised tasks could be used for structure elicitation in language assessments, or as teaching resources in the task-based classroom.

8.2 Limitations

A sensible objective in any study is to minimise the expected magnitude of errors and limitations. However, a design can never guarantee an error-free or no-limitation estimate unless it is unbiased and has zero variance (Lynn cited in Greenfield, 1996). In this section, a number of limitations in this study will be listed and acknowledged

for the benefit of both current and future research.

One of the most obvious limitations was the task issue. Firstly, as the study is designed to collect natural speech in the first place, the tasks used in data elicitation were not widely tested before delivered to research participants. This seriously affects the reliability and validity of these tasks and therefore constrained participants' language production. Secondly, there are also drawbacks regarding the tasks designed for task-based teaching and assessment in the second part of the research. Only four types of task have been designed, which is far less than the number of grammatical items presented in Chinese processing hierarchy. In this case, more tasks targeting various grammatical features in Chinese are required.

Another limitation was the time constraint imposed on the research. Longitudinal research should be conducted within a long time frame. But due to the consideration of research time frame, financial issues, and the possibility of participant dropout, the length of the current study had to be restricted to one academic year.

The longer research is conducted, the more data is generated; thus, researchers have a job on their hands to sort and analyse the wealth of information. By contrast, if data density is far less than desired, a scientific challenge will appear: "Will the data be reliable?"

Data density in the current study is not as ample as it is in other similar studies which have been conducted over several years. Some grammatical features or patterns alongside the processing hierarchy may not be successfully produced by participants. Thus, collected data cannot fully support further development of the language processing sequence in Chinese.

Sample selection is an important factor in any scientific research, and is often where problems arise (Lynn cited in Greenfield, 1996). If a sample design is unbiased, then the average value of a sample statistic across a large number of repetitions of the study will equal the corresponding population parameter. In this research, the sample selection procedure is relatively constrained by the regional issue. Participants are volunteers from Newcastle University Chinese programme for undergraduates. No

subjective influence on their participation was exerted. However, among all eight participants, only one is a non-English native speaker, which seriously affects the diversity value of the sample.

Another limitation arises from the research conductors themselves, who may not have good attention and observation skills. At the beginning of the research, I failed to establish a rapport with some participants, so some withdrew from the study. There were 10 participants at the beginning, but two dropped out before first group data collection. Accordingly, I undertook research training courses run by the Humanities and Social Sciences Faculty of Newcastle University to learn more comprehensive techniques in carrying out longitudinal research. However, the time I spent attempting to resolve the issue could not be made up.

In short, it is well-known that the results from a single research should be frequently tested and verified to prove its validity and universality. Therefore, further research and contributions to CSL under the PT umbrella are required.

8.3 Implications

From the students' point of view, the hypothesised processing hierarchy in Chinese language can be applied to language acquisition on the basis of students' learnability. With the proposed hierarchy, students could learn what is learnable at the right time and then acquire the grammatical structures in Chinese in an incremental trajectory.

From another aspect, students usually bring a certain amount of unpredictable factors in language learning and acquisition. In this case, teachers should inspire the students with these influential factors and explore the appropriate teaching methods, such as to implement tasks and in-class activities. The basic reason to develop a processing hierarchy for Chinese L2 learners, in origin, is to facilitate teaching and learning. Simply to say, it is to assist the learners to acquire language in a relatively easy and fluent manner.

The purpose of language teaching is to deliver the knowledge to learners and help them to enhance their language skills in a practical way. However, sometimes, students' learning difficulties could not be conquered which instead fossilize their

achievement of language competence at a certain stage. In this case, it is so important to examine appropriate teaching approaches and/or theories to support and direct the learners' language acquisition process. These theories could make suggestions for broadening the teaching perspectives and accommodate a wider range of learners' individual characteristics. Processability Theory (and its extended account) is such a theory that allows the linguistic knowledge to interface with processing mechanism, and develops a more flexible and empowered approach to view learners' language processing path in a more systematic and realistic way.

From another angle, Processability Theory formulates an acquisition sequence to allow the teachers to arrange their teaching materials to benefit learners' acquisition. In this case, the application of PT in Chinese could provide theoretical basis for syllabus design.

Apart from the discussion above, the improvements in my own practice could be outlined as follows. Generally, the current living theory provides the conceptual framework for my research. The whole research is an account of my learning within the area of language acquisition and profiling. This study, to some extent, reflects my own capacity in conducting an educational practice prior to my engagement in critical reflection on my practice, develops and transforms my ways of critical thinking through the process of engaging in cycles of self-reflection and enables me to turn the theories into practice.

8.4 Conclusion

This study has tested the legitimacy and universality of the Processability Theory and its embraced universal acquisition hierarchy. It also contributes to the CSL processing sequence from a different perspective among a variety of Chinese L2 learners.

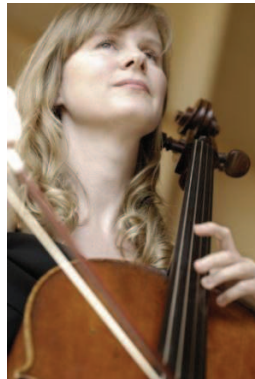
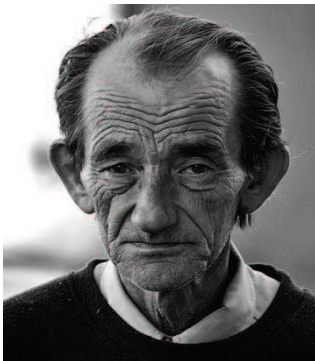
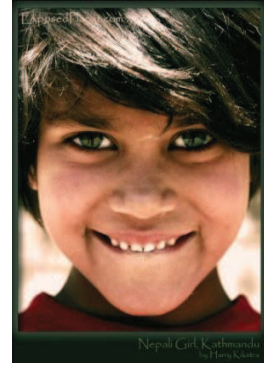
In my research design, the limitations notwithstanding, the study has provided valuable support for the PT hierarchy and has showed the relatively identical grammatical patterns in Chinese compared with the previous PT-based studies. Additional structures comply with the procedural skills in PT have also been

discovered in this study, such as the ‘bei’ structure and other types of topicalization. In addition to this, the study also found that even though the influential factors may, at different degree, affect the acquisition speed of the Chinese L2 learners, the CSL acquisition sequence driven by PT cannot be violated. Considering the existing limitations in my study, further investigations from different perspectives are required.

Processability Theory, as an innovative theory, requires more studies and experimental evidence to support its spirit. Likewise, more critiques should be addressed and explored for the healthy development and the extension of PT. In addition, PT’s approach to variation needs to be further investigated with the concern of the internal and external factors. Only by pursuing all the required matters, PT could be clarified more than a metaphor of stages but the regularities in the flux of production data.

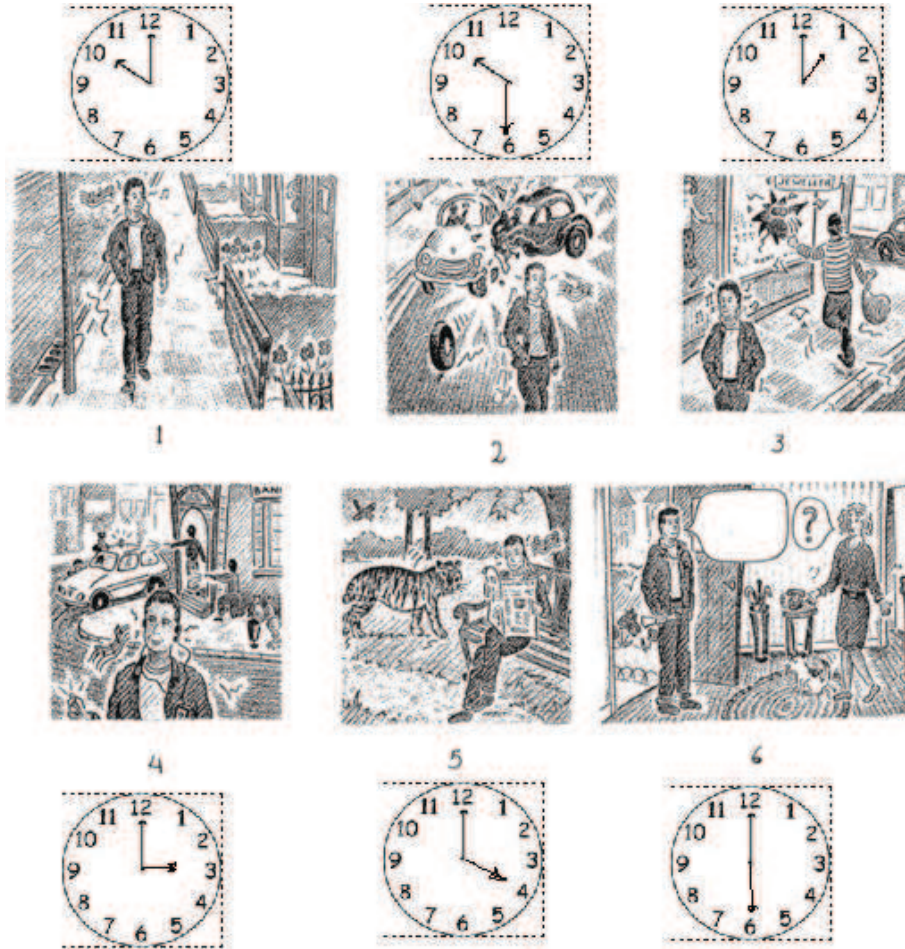
Appendices

Appendix A: Data Collection Task 1 - Picture Differences





Appendix B: Data Collection Task 2 - Habitual Actions



(revised from Tavakoli and Foster, 2008: 472)

Appendix C: Data Collection Task 3 – Structured Interview



Picture 1



Picture 2

Appendix D: Teaching Syllabus

Course Description

This course is designed for Chinese L2 learners (beginner to lower intermediate) who aim at acquiring Chinese grammar and comprehending speaking skills. Students enrolled in this course will be given extensive opportunities to practice speaking and expand their Chinese grammatical knowledge through a series of task completion. This course will also create opportunities for the development of critical thinking on the basis of different topics in tasks.

Course Objectives

At the end of this course, students will be able to acquire a variety of Chinese grammatical structures at different levels and enhance their speaking skills through the process of task completion.

Course Materials

The textbook for this course is listed below. Most the teaching materials used in class would be designed tasks according to the different structure focus in each lesson (the designed tasks should refer to Chapter 7).

Liu X. (2002) *New Practical Chinese Reader Textbook 1*. Beijing: Beijing Foreign Languages Printing House.

Teaching Schedule

The teaching schedule would mainly follow the proposed hierarchy shown below, which is generated based on the Processability Theory. The students would be taught from stage 1 of the basic words and formulaic expressions to stage 5 of *ba* and *bei* constructions with the implementation of different tasks. Students would be evaluated after each stage to examine whether they are ready to promote to the next stage.

	Processing Procedure	Information Exchange	Morpheme	Syntax
5	S-bar procedure	Main and sub-clause	/	<i>bei</i> structure <i>ba</i> structure
4	S-procedure	Inter-phrasal information	Relative clause marker <i>de</i>	Topicalization <i>T(=O)SV(Comp)</i> <i>T(=O)(S)V(Comp)</i>
3	Phrasal procedure	Phrasal information	Classifier V-Comp marker <i>-de</i>	Topicalization <i>T(=Adjunt)SV(O)</i> subordinate clause: adverbial clause coordinate clause
2	Category procedure	Lexical morphology	Possessive marker <i>-de</i> Adjective marker <i>-de</i> Attributive marker <i>-de</i> Progressive marker <i>zhengzai-</i> Experiential marker <i>-guo</i>	Canonical SV(O): declaratives interrogatives (y/n, wh-, intonation) Topicalization <i>T(=S)VO</i>
1	Word /Lemma	Words	Invariant forms: Single words/constituents	Formulaic expressions

Updated PT Stages in CSL (Zhang, 2001 and 2008; Gao, 2005, current study)

Assessment

The students would be evaluated by designed tasks in terms of the structures at various stages of the proposed Chinese hierarchy.

An example of task-based language teaching material of *ba* structure would be given as well as its assessment. The TBLT material design in the following table consists of pre-task, during-task, and post task. In the end, a piece of work is designed for assessment.

Example of teaching *ba* structure:

Stages	Procedure	Expectation	Notes
Pre-task	<p>To introduce to the students a variety of vegetables.</p> <p>To emphasize the names of regular ingredients in cooking.</p> <p>To review verbs used in cooking.</p> <p>To ask the students to tell how to cook something that they may know.</p>	<p>Without introducing <i>ba</i> structure, the students could still tell the procedure of cooking one dish, such as ‘<i>ni fang yan</i>’ as <i>you put salts in</i>. However, it is not the usual way of introducing procedures at work in Chinese.</p>	<p>To bilingually explain the procedure of the activities (with necessary body language)</p>
Task-cycle	<p>a) The students would watch a TV show – <i>Everyday Cooking</i>. They are asked to identify the way the host is demonstrating the procedure of cooking at each step. Then the use of <i>ba</i> is introduced to students with grammatical description.</p> <p>b) The students would be paired and then assigned to teach each other the way to cook what they mentioned in the pre-task stage with the use of <i>ba</i>.</p> <p>c) The other student in the pair would present his/her understanding of the partner’s elaboration.</p>	<p>The students could identify the implementation of <i>ba</i> in the given circumstance.</p> <p>After the introduction of how to use <i>ba</i> and when to use it in Chinese, the students are expected to start to use it into talks when necessary.</p> <p>One student should present meaningful constructions with <i>ba</i> to ensure the partner could understand it for further repetition.</p>	<p>The explanation of the structure could be done in English.</p>
Post-task/ Language focus	<p>a) The misuse of <i>ba</i> structure in students’ talks could be analyzed as well as the circumstance in which <i>ba</i> is not suitable to be presented.</p> <p>b) A further practice would be given, such as sentence translation or asking the students to explore the proper occasions of using <i>ba</i> structure.</p>	<p>The students are encouraged for self-reflection.</p> <p>The use of <i>ba</i> structure could be reinforced with grammatical emphasis.</p>	<p>Critical thinking and reflection is encouraged.</p>
Assessment	<p>Scenario:</p> <p><i>You are a second year student in the university who is going to give a brief introduction of how to use the library facility to the freshmen.</i></p> <p>To make sure you clearly explain the procedures of using library facility, such as how to borrow books or search journals step by step.</p>	<p>The students could be assessed by this piece of work and teacher could easily find out whether they have already comprehended of using <i>ba</i> structure properly. Only under this basis, the teacher could make the decision to move to the new stage or stay for further practice.</p>	<p>Instruction and necessary word explanation can be provided in English</p>

Appendix E: Sample Extracts from Participants

Extract 1:

Marlene: wo xihuan jiaozi. wo xihuan suanlatang. wo bu xihuan jia chang doufu.

Interviewer (Int): ni jintian chi le shenme?

Marlene: jintian?

Int: today.

Marlene: OH, wo chi mianbao. wo chi CHOCOLATE. CHOCOLATE shi hao chi.

....

Marlene: ping guo, wo xihuan ping guo. he wo xihuan ORANGE.

Int: ni xihuan chi shui guo?

Marlene: dui.

Int: ni yihuier zuo shenme?

Marlene: yihuier?

Int: LATER.

Marlene: wo chifan.

Extract 2:

Int: ni you xiong di jie mei ma? BROTHERS AND SISTERS?

Marlene: OH, wo you didi. ni you BROTHERS AND SISTERS ma?

Int: wo you yi ge gege.

Marlene: gege? OH BROTHER. ni xihuan gege ma?

Int: xihuan. ta mai hao chi de gei wo.

....

Marlene: xiao nanhai you maozi...ma?

Int: you.

Marlene: ta de maozi shi bai se?

Int: shi.

Marlene: ni you xiaoniao ma?

Int: you.

Marlene: niao, xiaoniao shi hong se...ma?

Int: shi.

Marlene: AH. EN... xiaoniao chi WORM ma?

Int: chongzi. shi de. xiaoniao zai chi chongzi.

....

Marlene: ni xihuan bai se?

Int: bu, wo xihuan hong se.

Extract 3:

Marlene: wo you yi ge pengyou. ta de mama shi yi ge laoshi. ta de baba shi yi ge LAWYER.

Int: ni de baba he mama shi zuo shenme de?

Marlene: wo de mama shi WRITER. ta xie hen duo shu, ben shu, **hen duo ben shu**.
baba shi yi ge BUSINESSMAN.

Extract 4:

Marlene: RACHEL de mao hen piaoliang, he ta xihuan wan yi ge qiu. Ni xihuan mao ma?

Int: wo bu xihuan. Ni zuotian qu chaoshi mai le shenme?

Marlene: mai le shenme?

Int: to buy [what]

Marlene: EN, wo qu chaoshi mai shui wo de shiyou, women mai le **yi xiang shui, san dai pingguo**, he **yi bao CHIPS**, CHIPS?

Int: shupian.

Marlene: dui, shupian he **yi ping GIN**. hao he.

Int: ni mai cai le ma?

Marlene: cai? AH, wo mai yi da baicai. keshi wo shiyou bu xihuan baicai. women you mai le **liang ge huluobo**.

Extract 5:

Marlene: wo zhidao sunwukong. qu nian, wo baba mai le yi ben xi you ji.

Int: ta ba shu fang zai ta de fangjian?

Marlene: mei you, **shu fang zhuo zi shang**.

Int: ni yinggai ba shu shou qi lai, fang hao.

Marlene: **wo fang shu zai shu jia**. baba bu xihuan. ta mai le wu ben shu, dou zai zhuo zi shang.

Extract 6:

Int: ni zhi dao wo de shou li you ji zhi bi ma?

Joe: san zhi?

Int: bu shi.

Joe: **si zhi bi**, ni you.

Int: dui le. ni de shubao pingshi dou fang shenme?

Joe: wo xihuan fang hen duo shu he HANDOUT. youshihou, wo fang **yi ping shui**.

Extract 7:

Int: ni shuo zuotian kaoshi chengji chulai le, ni mei kaohao?

Scott: dui. wo zhongwen kaoshi zhi 50. **wo bei laoshi CALLED.**

Int: laoshi shuo shenme?

Scott: laoshi shuo wo yinggai kao 60 fen yi shang de. ke shi wo mei you. Rachel ye bei laoshi CALL le.

Int: kaoshi timu hen nan ma?

Scott: bu. danshi, wo de tongxue shuo xingqi si kaoshi, ke shi women xingqi yi jiu kaoshi le. **wo bei ta pian le.**

Int: ah? zhen dao mei.

Scott: shi de. hen duo tongxue bei pian le.

....

Int: ni zai FACEBOOK shuo ni de qianbao mei you le?

Scott: dui. **wo de qianbao bei tou le.** haiyou shouji ye bei tou le. wo gaosu le jingcha.

Int: zai na li bei tou de?

Scott: zai ELDON SQUARE. ranhou shouji he qianbao bei tou le.

Int: ni yao xiaoxin yi dian.

Scott: wo zhidao.

....

Scott: wo qu tushuguan. ke shi **wo yao de shu bei jie zou le.**

Int: bie danxin. ni keyi zhao tongxue jie kan yixia.

Scott: tongxue de shu ye bei jie zou le.

Appendix F

Questionnaire



Name: _____

Gender: _____

D.O.B.: _____

Ethnic group: _____

Which year are you in: _____

First language (Native language): _____

Second language: _____

How long did you learn it? _____

Are you still learning it? _____

Third language: _____

How long did you learn it? _____

Are you still learning it? _____

Other language learning experience: _____

1 Do you like learning Chinese? Why? If yes, how does this language attract you?

2 Have you been to China? If yes, why did you go there? How long have you stayed there for? Can you tell me your experience in China? E.g. where did you go and what did you do there?

3 Did you receive any formal Chinese instruction before you go to University? If yes, please provide the details.

4 Have you informally learned Chinese or had other Chinese-related experience? If yes, please provide the details.

5 Is Chinese difficult to you? If yes, in what way?

6 Do you have any other things to share related to Chinese language?



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