



The hierarchy of Chinese grammar:
A cross-sectional study of L2 Chinese within
Processability Theory

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Abstract

Processability Theory (PT) is a well-established theoretical framework within the field of Second Language Acquisition, which describes the development of acquiring language as a process of acquiring procedural skills. The procedural skills are necessary for the learner being able to process different grammatical structures of the target language, and these are obtained by the learner through available input and the given learning device. The acquirement of procedural skills follows a hierarchy of grammatical processing procedures, an implicational pattern where each procedure is a prerequisite to the next.

PT has been applied to many different languages, there among Chinese. Previous PT-studies concerning second language acquisition of Chinese have explored the developmental processes of English L1 speakers, but so far, no studies regarding the developmental processes of Swedish L1 speakers have been done within the framework of PT. Hence, the aim of the present work is to evaluate whether Swedish L1 speakers' developmental process of acquiring certain Chinese grammatical morphemes and structures correspond to the developmental stages found in earlier studies regarding English-speaking learners.

A cross-sectional research design consisting of two elicitation tasks was utilized. A total of 15 Swedish learners of Chinese with different language proficiency in the target language participated in the study. The collected data, consisting of the participants' spontaneous speech production of the target language, was analyzed in the search for the emergence and the accuracy of using specific Chinese grammatical morphemes and structures.

Results indicate that Swedish L1 learners follow the same developmental processes of learning certain Chinese grammar as found in previous studies regarding English L1 learners. However, suggestions of altering the locations of certain grammatical structures in the PT-hierarchies established by previous research are discussed.

Keywords: Processability Theory, PT, Second Language Acquisition, SLA, Chinese, Mandarin, Swedish, grammar

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Abbreviations

PT → Processability Theory

SLA → Second Language Acquisition

L1 → First language

L2 → Second language

S → Subject

V → Verb

O → Object

EXP. → Experiential marker

PROG. → Progressive marker

NP → Noun phrase

ATT. → Attributive marker

N → Noun

ADJ. → Adjective marker

POSS. → Possessive marker

REL. → Relative clause marker

COMPL. → Verb complement marker

CLF. → Classifier

C → Clause

TEMP. → Temporal structure

YIHOU → *Yihou*-structure

YIQIAN → *Yiqian*-structure

BA → *Ba*-marker

BEI → *Bei*-marker

COMP. → Complement

VP → Verb phrase

1. Introduction

The aim of the present study is to test the framework of a well-established theory of SLA (Second Language Acquisition), namely *Processability Theory* (PT) (Pienemann, 1998; 2005). This study concerns the developmental process of Swedish L1 speakers' second language acquisition of Chinese, and notice that the term "Chinese" refers to Modern Standard Chinese (*Putonghua*, 普通话) (Kratochvíl, 1968), also known as *Mandarin* (Li and Thompson, 1981). By employing empirical data, the present study aims to evaluate whether Swedish L1 speakers' developmental process of acquiring certain Chinese grammatical morphemes and structures correspond to the developmental stages found in earlier studies regarding English-speaking learners (Zhang, 2001; 2004; Gao, 2005; Wang, 2011).

To the best of my knowledge, no other work within PT concerning Swedish L1 speakers' second language acquisition of Chinese exists. As a result, this thesis may be considered as a contribution to the expansion and development of the theoretical framework of PT.

1.1 Research Question – developmental stages in Chinese as a second language

The research question of the present study has been divided into 2 questions. The first is the main research question, and the second is to be considered a subordinate research question. They are as follows:

Main research question

Do Swedish learners of Chinese as a second language use the same developmental stages as have been found in earlier studies regarding English-speaking learners (Zhang, 2001; 2004; Gao, 2005; Wang, 2011)?

Subordinate research question

Should the locations of Chinese morphemes and structures within the PT-hierarchies of earlier studies be modified (in terms of removing, relocating or adding more morphemes and structures to the hierarchies) on the basis of grammatical descriptions and the generated findings of the present study?

2. Background

2.1 Introduction to SLA

Second language acquisition (SLA) has since the middle of the twentieth century emerged to become a field of scientific research. In the late 60's and early 70's, the idea of second language learning being a very similar process to the one of a child learning its first language was introduced. The basic concept of this idea is that the learner of a second language constructs his or her own grammar of the target language, primarily by employing given input of the target language. This phenomenon was introduced as *interlanguage* by Selinker in 1969 (Hyltenstam and Pienemann, 1985). A more thorough introduction of interlanguage follows in section 2.2.

Since the 1970's, the foundation of interlanguage research has mainly been data consisting of spontaneous production of speech gathered through the execution of longitudinal studies. By collecting such data, researchers have attempted to determine the mental grammar of interlanguage of different second language learners (Lakshmanan and Selinker, 2001). In order to determine these mental systematizations and representations of different interlanguages, several ways of analyzing data, including error analysis, variability analysis and discourse analysis, have been employed over the years (Hyltenstam and Pienemann, 1985).

2.2 Interlanguage

In simple terms, *interlanguage* can be explained as a learner's own version of a target language. It is a system that is independent of both the learner's first language and the target language, with its own grammatical systematizations (Lakshmanan and Selinker, 2001). The development of interlanguage is a natural process of language learning, which follows a certain "natural" sequence of development. This implies that "errors" committed by the learner during the process of learning the target language cannot be considered as flawed or invalid linguistic productions. From the perspective of the learner (and not compared to the correct grammar of the target language), these inaccurate linguistic productions are inevitable structures that reflect the systematic knowledge of the learner and the natural process of language development (Corder, 1981).

3. Processability Theory

Levelt's model of language production is the core foundation on which PT is based upon. Section 3.6 is a more detailed introduction to Levelt's model, but a short introduction connecting this model to the framework of PT is required here. The basic concept is: in order to produce overt speech, conceptual structures must be converted to linguistic structures. This is achieved through both *grammatical encoding* and *phonological encoding*, and it is the *grammatical encoding process* that is the main focus of PT (Pienemann, 1998).

What follows is a thorough introduction of the framework of PT.

3.1 Introduction

The fundamental idea of Processability Theory is to identify and specify the developmental process of how a learner progress from an initial state to the target grammar by using available input and the given learning device. The process of acquiring language includes the acquisition of procedural skills, which are necessary for the learner being able to process different grammatical structures of the target language. This implies that a certain grammatical structure of the target language can be produced only if the necessary processing procedures are available to the learner. Furthermore, this also suggests that the sequence in which the target language is acquired stands in relation to, and is determined by, the sequence in which the procedural skills needed to process grammatical components in the target language are developed and obtained. In connection to this, it should be noted that PT only focuses on the developmental problem as an explanatory issue, hence, the purpose is to determine the developmental sequence of procedural skills in the learner. PT does not contribute to questions related to innate or learnt origin of linguistic knowledge or how linguistic input is converted to linguistic knowledge (Pienemann, 1998).

The developmental process of acquiring procedural skills follows a hierarchy of grammatical processing procedures. This hierarchy is arranged in accordance with the sequence of their activation during the developmental process of acquiring the target grammar, and it follows an implicational pattern where each procedure is an essential prerequisite to the following one. The processing procedures are activated in accordance with the hierarchical sequence demonstrated in Table 1 (Pienemann, 1998).

Table 1. Processing procedures of PT

	Processing Procedure
5	Sub.-clause procedure
4	S-procedure
3	Phrasal procedure
2	Category procedure
1	Word/Lemma

In this paragraph, the stages of the PT-hierarchy will be introduced with examples from English. The first stage in the hierarchy (stage 1) is the identification of lexical items. At this initial stage, the learner only uses invariant forms of words or memorized chunks when producing speech, hence, the learner might not always be aware of the word boundaries. At stage 2, the learner can categorize the words in accordance with their syntactic category and functional role, which leads to the ability of inflecting words, e.g. by using lexical morphemes such as the tense suffix in English (“*play-ed*”). Stage 3 is characterized by the learner being able to use agreement between words within both overt noun- and verb phrases (“*many dog-s*”). At stage 4 the learner can unify the noun phrase and the verb phrase by using interphrasal morphemes, which in some languages results in subject-verb agreement (“*she play-s the piano*”, the *-s* is added to the verb due to the presence of a third-person-subject). The final stage (stage 5) involves the unification across clauses, which results in the learner being able to distinguish between main and subordinate clauses (“*I wonder what time it is*”) (Håkansson, 2013).

In Table 2, the processing procedures of the PT-hierarchy is matched with the information exchange and the examples described in the previous paragraph.

Table 2. Processing procedures and information exchange

	Processing Procedure	Information Exchange	Examples in English
5	Sub.-clause procedure	Main and sub-clause	<i>I wonder what time it is</i>
4	S-procedure	Inter-phrasal information	<i>she play-s the piano</i>
3	Phrasal procedure	Phrasal information	<i>many dog-s</i>
2	Category procedure	Lexical morphology	<i>play-ed</i>
1	Word/Lemma	Words/Chunks	<i>dog, play</i>

This hierarchy makes it possible to assume that the procedural skills are accessible to the learner in accordance with this implicational order of processing procedures, from smaller units of lexicon to complete sentences. It is therefore implied that the learner initially will be able to process and produce words with local markings, then begin to unify grammatical features both within and across phrases, to finally being able to unify features across clauses (Håkansson, 2013). To further explain the nature of this hierarchical developmental process, one can exemplify it as follows: Words must be included in the new lexicon of the target language before grammatical categories can be assigned, and it is not until grammatical categories have been assigned that any phrasal procedures can be appointed. Not until after the phrasal procedures have been appointed can the function of the phrase be concluded (e.g. it being a subject or an object), and only when the function is determined can it be attached to the S-node in order to express sentential information (Pienemann, 1998).

In connection to this presentation of the hierarchical stages of the PT-hierarchy, the notion *intra-stages* must be introduced. In short, this notion constitutes the idea that hierarchical linguistic structures can be found within the same stage in the PT-hierarchy. However, it is crucial to note that it is not a mandatory requirement that the learner must have acquired all structural options within one stage before moving on to the next in the hierarchy (Mansouri and Håkansson, 2007).

The hierarchy of language processing procedures is universal, and can therefore be applied to any language. By interpreting the relations between this hierarchy and the grammatical structures of any specific language, the developmental process of language acquisition can be predicted for any individual target language (Pienemann, 1998). PT has been applied to a large number of typologically different languages including Swedish (Pienemann and

Håkansson, 1999), Italian, Japanese (Di Biase and Kawaguchi, 2002) and Arabic (Håkansson, Salameh and Nettelbladt, 2003). The hierarchy is also independent of what language the learner speaks as mother tongue (Håkansson, Pienemann and Sayehli, 2002).

In relation to the main research question of the present study: On the basis of the previous paragraph, it is possible to hypothesize that Swedish L2 learners of Chinese should indeed follow the same developmental stages as have been found in earlier studies regarding English-speaking learners when acquiring Chinese grammar.

It is also relevant to address that most languages researched within the theoretical framework of PT have rich morphology. Conducting studies examining languages with comparably less abundant morphology, such as Chinese, will hence provide a wider and more accurate picture of to what extent PT can be applied to languages with different morphology.

3.2 PT and interlanguage

At every stage in the hierarchy of processing procedures there are a range of grammatical structures that a learner can process. Different grammar of the same stage are representations of different variations of interlanguage. The variations are explained as individual learners using different structural options that are available at a particular stage in the hierarchy when cultivating their own interlanguage. It has also been observed that early structural options have an influence on the range of later ones, which indicates that early structural choices are determining factors for later development, called “*generative entrenchment*”. In that way PT defines to what extent variations of interlanguage can occur, but does not define what the conditions for individual variation might be (Pienemann, 1998).

3.3 PT and Teachability hypothesis

The developmental process of acquiring processing skills follows an implicational hierarchical structure of language processing procedures, where each stage in the hierarchy is a prerequisite for the next. The implicational structure is consistent throughout the whole developmental process, which indicates that stages cannot be skipped, e.g. by moving from stage 1 directly to stage 3 without activating the processing procedures of stage 2. If such an attempt was to be made, certain processing procedures necessary for reaching the higher stage would be absent. Since these processing procedures are prerequisite for the ones on the higher

stage, the absence of these would make it impracticable to reach the higher stage in the hierarchy (Pienemann, 1998).

The notion “stages cannot be skipped” leads to the “Teachability hypothesis”, a subset of PT. The fundamental idea of this hypothesis is that stages within the implicational hierarchy of processing procedures cannot be skipped through formal teaching (Pienemann, 1998). Formal teaching can in simple terms be explained as contexts of form based teaching that focuses on grammatical rules and structures in the target language, which most typically can be seen in “classroom-contexts”. From the perspective of the learner, this is a conscious learning process that leads to explicit knowledge of monitoring the individual linguistic production in the target language (controlling and correcting own speech production), which is different from spontaneous production. As a side note, informal learning can be characterized as learning contexts outside the classroom, such as the learner staying in an environment where the target language is used *naturally*, e.g. the country where the target language is the official language or is the major language used for communication. Even though formal and informal teaching have been proven to have no or very little influence on the developmental process of language acquisition, both forms of teaching can still have positive effects on the acquisition process, such as acquisition speed and final language proficiency (Abrahamsson, 2009). The Teachability hypothesis hence promotes the idea of instructions provided to the learner that focuses on “the next stage” within the hierarchy will result in having positive effects on the learner’s language acquisition, but will not make it possible to skip any stages in the hierarchy (Pienemann, 1998).

Within the framework of PT, language acquisition is considered being a cognitive process separated from social aspects that supposedly could influence language learning. Although these two factors (cognitive and social) interact with each other at some level, the internal logic of cognitive processes cannot be altered by social factors, e.g. by social interaction or learning environments. A “low-level learner” cannot instantly become a “high-level learner” simply because of being provided with new learning environments or new interactional situations. Cognitive processes always occur within the architecture of a cognitive system, but social factors can possibly play a minor part in a learner’s language processing, resulting in a higher proficiency in the target language (Pienemann, 1998).

3.4 PT and transfer

The *developmentally moderated transfer hypothesis* of PT predicts that the learner is required to have linguistic competence in the target language in order for transfer to occur (Pienemann and Håkansson, 2007). The main principle of PT is that one can only produce a certain structure in the target language if the necessary processing prerequisites have been acquired. This constitutes the idea that only the linguistic structures that the learner can process may be transferred, regardless of prior linguistic knowledge (Håkansson, Pienemann and Sayehli, 2002). Not until the learner is able to process a certain structure can it be transferred to the target language (Pienemann and Håkansson, 2007). In other words, the developmental process of acquiring the target language is predicted to follow the hierarchical structure of PT, irrespectively of what other languages the learner might already be familiar with. Therefore, transfer of grammatical structures from other languages cannot take precedence of the hierarchy of processing procedures. One cannot transfer what cannot be processed. This notion indicates that certain competence in the target language is required in order for transfer to occur, and that the lower stages in the processing hierarchy can be transferred earlier than the higher ones. This explains why advanced learners with higher proficiency in the target language show more tendencies of transfer than learners at beginner level (Håkansson, 2013).

3.5 Levelt's Model

Levelt's model describes language production as a process from intention to articulation. This section is not an extensive description of the complete model, but should rather be considered as a short overview of the parts most relevant for the present study.

Speaking involves (among other features) selecting and organizing relevant information that one wants to express, and keeping track of what has already been said, e.g. in a conversation between two individuals. These activities are executed within the so-called *Conceptualizer*, which in turn creates *preverbal messages* that are conceptual structures functioning as input to the *Formulator*. The *Formulator* receives a *preverbal message* and responds by encoding the message both grammatically and phonologically, all following certain procedures. The final result of the encoding procedures is not overt speech, but rather an internal plan for what the speaker intends to say, so called *internal speech*. This product created by the *Formulator* will hence, later on in the speaking process, result in overt speech (Levelt, 1989). Thus, the main function of the *Formulator* is to convert conceptual structures to linguistic structures in order

to produce overt speech, and this is achieved through both *grammatical encoding* and *phonological encoding* (Pienemann, 1998).

3.6 Automatization

Language acquisition involves the process of automatization of linguistic operations. The fact is that real-time language production can only be accounted for when the production of language (i.e. the retrieval of words and production of linguistic structures) is very fast and without attention to form. Since the location of the attentive processes is in the short-term memory or immediate memory, its capacity is limited to fewer operations than are required for producing very simple utterances, and therefore the mechanisms for language production have to be automatized (Pienemann, 1998). The automatic linguistic operations can be described as processes being executed in a “reflex-like” manner, in other words, very rapidly and without conscious awareness or intention. Due to these processes being automatic, they are highly efficient and do not require attentional resources, which means that a speaker does not have to deliberate on how to express certain information when producing speech (Levelt, 1989). For language learners, these processes do not evolve spontaneously by themselves (unlike in the case of native speakers), and therefore must be developed step-by-step (Håkansson, 2013).

The automatization of linguistic operations makes it possible for a learner to produce “natural” or “spontaneous” speech of the target language. However, it can be problematic determining whether a learner’s production of speech is in fact spontaneous, especially when conducting studies concerning specific grammatical structures of the target language. By identifying *systematic occurrences* of a certain structure (meaning that the structure is used at several occasions in a varying manner), one can eliminate the possibility of the structure in question being a memorized chunk or formula, and simultaneously confirm that the learner indeed can process the structure. For example, if a learner can use both the singular and plural form for the word “*car*” (“*car*” and “*cars*”), this can be considered as evidence for the learner being able to process and make a distinction between singular and plural. However, if the term “*cars*” is used in all contexts, one cannot regard this as plural morphology (Håkansson, 2013).

What must be noticed is that even if a systematic occurrence of a specific structure is present in a learner’s speech production, it is not certain that this structure will be used correctly in all cases. This is exemplified by looking at singular and plural morphology in English. If a

structure is being incorrectly used, but a functional distinction between the two categories can be identified, it is still evident that the learner has the ability to distinguish between singular and plural. Hence the learner can be considered being able to process these structures of grammar. For instance, the supposed overgeneralization of using “*plural –s*” to inflect the word “*child*” (which would result in the incorrect form of “*childs*”) would still prove the learner’s ability to distinguish between singular and plural, as long as functional distinctions between singular and plural can be observed (e.g. “*child*” for singular and “*childs*” for plural). Overgeneralizations of this kind are reliable indicators of “processability” (the learner’s ability to process grammar) due to the fact that the learner is not simply repeating what is being heard, but is indeed actively producing individual versions of the target language (Håkansson, 2013).

3.7 Methodology in PT: Emergence, accuracy and implicational scaling

This section is a brief introduction concerning three methodological principles customarily employed in studies within the field of SLA and the theoretical framework of PT, namely *emergence*, *accuracy* and *implication*.

3.7.1 Emergence and accuracy

Studies within PT aim to examine the *emergence* of linguistic structures within the target language. When the processing prerequisites of a certain stage have been acquired, the linguistic structures of that stage will emerge in the learner’s linguistic production. This provides evidence of the learner’s ability to process the structures of that particular stage, i.e. evidence of the learner’s “processability”. Thus, within PT, one does not look at the final state of to what degree the learner has mastered the target language (e.g. by calculating the percentage of correctness), but instead focuses on how the individual learner proceeds from one stage to another (Håkansson, 2013).

From a PT-perspective, the principle of *emergence* hence describes the end of an acquisition process as the point in time when a certain linguistic skill has been attained or a linguistic operation can be executed (Pienemann, 1998). To determine whether a grammatical structure has emerged in a learner’s interlanguage, one should aim to identify the learner’s “first clear use” (in speech) of the property in question. However, the “first clear use”-criterion might be a more appropriate method for determining the emergence of certain grammatical properties than for others (Lakshmanan and Selinker, 2001). Glahn et al. (2001) argues that the criterion

of “first clear use” is somewhat problematic and does not generate strong scalability values, which in turn makes it hard to establish reliable *implicational scales* (see description of *implicational scales* in section 3.7.2). However, when applying criteria of how *accurately* a learner uses a grammatical entity in spontaneous speech, by measuring how frequently the entity is used in relation to the number of obligatory contexts, more robust and reliable implicational patterns of acquisition development may be revealed. For instance, in the case of Glahn et al. (2001), three criteria of accuracy were applied; “one occurrence” of a grammatical entity, 50% accurate usage, and 80% accurate usage of the grammatical structure in question, where the two latter criteria generated high scalability values. In other words, according to Glahn et al. (2001), the higher rate of *accuracy* that can be found in the collected data, the more reliable and valid implicational patterns of *emergence* may be extracted from the findings.

However, the issue of integrating the two notions of *emergence* and *accuracy* is that *acquisition* much easily becomes equated to *mastery*, which would be a “comparative fallacy”. To what degree the interlanguage of a learner is accurate in accordance with the target language norm is not an indicator for interlanguage development. Thus, the integration of *emergence* and *accuracy* must be done with precaution. Primary focus must be on *emergence* since this notion describes the process of acquisition, and one must also carefully consider which *emergence criterion* one should employ. As previously mentioned, one can employ the “first clear use”-criterion for identifying emerged structures in interlanguage, but a crucial issue is that this criterion does not demonstrate any systematic usage of the structure in question, nor excludes the possibility of random and unsystematic use. This is simply because one single occurrence cannot show systematic patterns. Hence, in order to identify systematic use, a number of indications of selective and specific usage of a grammatical structure in obligatory contexts must be collected, and the greater the number and lexical variations, the more reliable conclusions of systematic usage can be derived (Pallotti, 2007). Although there does not seem to exist any standardized minimum number of systematic usage, most researchers argue that the minimal required number varies between three (Dulay and Burt, 1974), four (Meisel et al., 1981; Zhang, 2004) or five occasions (Andersen, 1978; Pienemann, 1998).

The standpoint of the present study concerning emergence criterion is as follows: One occurrence of a certain grammatical morpheme or structure in an obligatory context is treated

as an indicator of it having emerged and is present in the learner's interlanguage, and thus can be processed by the learner. However, the possibility of one occurrence being a case of unsystematic usage should not be excluded. Thus, the greater number of occasions where the grammar in question is used in obligatory contexts with various lexical components, the more plausible it is to conclude that the grammar is used systematically in accordance with the interlanguage rules of the learner.

Thus, in order to successfully apply the emergence criterion in scientific research, a large set of empirical data with great linguistic variability must be utilized. Only a data set containing linguistic forms that have been used with various lexical components can allow the identification of emergence points, and allow the exclusion of possible chunk-like productions as well (Zhang, 2001). In other words, the design of methodology in research must include and ensure a provision of linguistic contexts that require the sought structure to be produced. If no context is provided, the sought structure is not obligatory and thus not required to be produced (Håkansson, 2013). Therefore, only a sufficient data set can permit the application of the emergence criterion (Zhang, 2001).

3.7.2 Implicational scaling

Implication is an important notion within PT and interlanguage studies. As stated in section 2.4, the hierarchy of processing procedures within PT follows an implicational pattern where each procedure is a prerequisite to the next. By constructing so called *implicational scales*, one has the opportunity to examine and analyze speech production data in the search for such implicational patterns in learners' interlanguage. Table 3 is an example of an idealized implicational scale from Hyltenstam (1977).

Table 3. Idealized implicational scale

	A	B	C	D	E
1	-	-	-	-	-
2	+	-	-	-	-
3	+	+	-	-	-
4	+	+	+	-	-
5	+	+	+	+	-
6	+	+	+	+	+

The scale above can be described as follows: The letters A-E represent the linguistic contexts that are being analyzed, and the numbers 1-6 represent the participants in a study. A plus (+)

indicates that a linguistic context has been used in accordance with the target language norm, and a minus (-) indicates the opposite. If all the pluses are located to the left of the minuses, an implicational pattern can be derived (Hyltenstam, 1977). Hence, by constructing implicational scales, it is possible to derive on which stage in the PT-hierarchy specific linguistic properties ought to be located.

This chapter introduces the fundamental and most relevant aspects of the theoretical framework of PT, and the methodology most commonly utilized in PT-studies.

4. Chinese grammar

As a prelude to introducing previous research and methodology, parts of the Chinese grammar relevant for the present study is described.

Chinese belongs to the Sino-Tibetan language family, and has hardly any morphology (with a few exceptions, such as the suffixes *-le* and *-zhe*). This generally means that words are created by using single morphemes, and grammatical functions and relations (e.g. singular/plural or tense) are not expressed morphologically, but instead expressed by combining separate words or through word order (SVO) (Pereltsvaig, 2012).

The following paragraphs are descriptions of the relevant Chinese grammar in the present study. Definitions concerning the **smallest** number of grammatical entities for a sentence being grammatically acceptable are included for each morpheme, and are depicted as “*sentence structures*”. Examples considering the practical usage of all morphemes are provided.

4.1 Aspect markers

The following sections introduce two aspect markers: the experiential marker *-guo* and the progressive marker *zhengzai-*.

4.1.1 Experiential marker *-guo*

Guo (过) is an experiential marker (EXP.) which is placed after a verb, and expresses that the action of the verb has been executed in the past and has come to a completion (Fang, 1992). It also emphasizes that the action of the verb has been *experienced* by referring to a certain point in time. If a certain time frame is not specified through context, then *-guo* indicates that the action of the verb has been *experienced at least once* in the indefinite past (1) (Li and Thompson, 1981).

Sentence structure: V + EXP.

(1) 我学过英语 (Ragvald, 2006, p. 49)

wǒ xuéguo Yīngyǔ

I study-EXP. English

I have studied English

4.1.2 Progressive marker *zhengzai-*

Zhengzai (正在) is a progressive marker (PROG.) placed in front of the verb, which expresses that the progression of an action is taking place in the very moment of speaking (2) (Zhang, 2001).

Sentence structure: PROG. + V

(2) 我正在看小说 (Ragvald, 2006, p. 201)

wǒ zhèngzài kàn xiǎoshuō

I PROG.-read novel

I am reading a novel (at this very moment of speaking)

Durative aspect can also be expressed by using the marker *zai* (在) (Li and Thompson, 1981).

The two markers *zai* and *zhengzai-* are used in the same way syntactically, but the semantic meaning differs slightly, where *zhengzai-* expresses a marginally more precise meaning of the point in time when the action of the verb is executed (Ragvald, 2006).

4.2 Associative phrases: the marker *-de* (的)

Associative phrase is the term used for describing a certain kind of modification in the Chinese language. It consists of two noun phrases that are linked together using the marker *-de* (的). The first phrase and the marker *-de* is the associative phrase, and together they modify the second noun phrase that is the head of the entire phrase. This phrase structure indicates that two noun phrases are connected in one way or another, but depending on the semantic meanings of the noun phrases involved, the meaning of the whole phrase may differ (Li and Thompson, 1981). See the sentence structure below:

Sentence structure: NP + *-de* + NP

The next sections will describe four different associative phrases relevant for the present study.

4.2.1 Attributive marker *-de*

De (的) can be used as an attributive marker (ATT.) together with a noun (N1) in order to modify another noun (N2). In this case, *-de* takes the function as an attributive suffix, marking the previous noun (N1) as a modifier to the second noun (N2), which is placed after *-de* (3). Notice that this type of grammatical construction does not involve the meaning of “possession”, unlike in the case of the possessive marker *-de* (described in section 4.2.3) (Zhang, 2001).

Sentence structure: N1 + ATT. + N2

(3) 木头的房子 (Zhang, 2001, p. 73)

mùtóu-de fángzi

wood-ATT. house

a wooden house

4.2.2 Adjective marker *-de*

De (的) can also be used as an adjective marker (ADJ.) when it is combined with an adjective, which makes it possible to modify a noun within a noun phrase (Li and Thompson, 1981). Depending on the number of syllables in the modifying adjective, the presence of *-de* can either be optional or obligatory. This can be exemplified with the monosyllabic adjective *xiǎo* (小, small) and disyllabic adjective *hǎokàn* (好看, pretty). When the modifier is a monosyllabic adjective, the employment of the adjective marker *-de* is optional (4), but it is obligatory if the adjective is di- or polysyllabic (5) (Zhang, 2001). Hence, if another adverb, such as *hě*n (很, very), modifies a monosyllabic adjective, the modifying adjective becomes disyllabic, and the adjective marker *-de* becomes obligatory (6) (Zhang, 2004).

Sentence structure: Adjective + ADJ. + N

(4) 小(的)橘子 (Li and Thompson, 1981, p. 119)

xiǎo(-de) júzi

small(-ADJ.) orange

a small orange

(5) 好看的东西 (Zhang, 2001, p. 75)

hǎokàn-de dōngxi

pretty-ADJ. thing

pretty things

(6) 很好的东西 (Zhang, 2001, p. 75)

hěn hǎo-de dōngxi

very good-ADJ. thing

very good things

4.2.3 Possessive marker *-de*

When using *-de* (的) in order to construct a possessive sentence, the syntactic structure is identical to the attributive structure, using two nouns and the marker *-de* (Zhang, 2001). However, the major difference between the attributive and the possessive marker (POSS.) is that the latter expresses genitive or possession, and the attributive marker does not. The meaning of possession is determined entirely by the semantic meanings of the two nouns in the phrase (7) (Li and Thompson, 1981). Personal pronouns, such as *wǒ* (我, I/me) and *tā* (他, he/him), indicates possession when combined with the possessive marker *-de* (8) (Wu and Liang, 1992).

Sentence structure: N1 + POSS. + N2

(7) 兔子的耳朵 (Li and Thompson, 1981, p. 113)

tùzi-de ěrduo

rabbit-POSS. ear

rabbit's ear

(8) 我的衬衫 (Li and Thompson, 1981, p. 113)

wǒ-de chènshān

I-POSS. shirt

my shirt

4.2.4 Relative clause marker *de*

In a Chinese relative clause, the clausal modifier is placed before the head noun, both in subject relative clauses (9) and object relative clauses (10) (Hu, et al., 2016). *De* (的) functions as a relative clause marker (REL.), which marks the relationship between the head noun and the clausal modifier, and *de* is placed between the two constituents (11) (Zhang, 2001).

Sentence structure: Relative clause + REL. + N

(9) 打猫狗 (Hu, et al., 2016, p. 6)

dǎ māo de gǒu

hit cat REL. dog

the dog that hits the cat

(10) 猫打的狗 (Hu, et al., 2016, p. 6)

māo dǎ de gǒu

cat hit REL. dog

the dog that the cat hits

(11) 教你口语的老师叫什么名字? (Zhang, 2001, p. 143)

jiāo nǐ kǒuyǔ de lǎoshī jiào shénme míngzi?

teach you oral-language REL. teacher call what name

what is the name of the teacher who teaches you spoken Chinese?

4.3 Phrasal morphemes

The two following sections introduces and explains the verb complement marker *-de* and *classifiers*.

4.3.1 Verb complement marker *-de*

As in Zhang (2001; 2004), the focus of the present study is on “the complement of manner”. The verb complement marker (COMPL.) *-de* (得) is part of the so called complex stative construction. This construction involves a stative verb phrase or clause having the function of an adverb or predicative adjective, which in turn describes in what manner the event

expressed by the preceding clause is executed (see Li and Thompson (1981) for a detailed discussion on this issue). For the purpose of the present study, the function of the stative verb phrase/clause is (perhaps somewhat simplistically) considered as a post-verbal adverbial construction.

Hence the verb complement marker *-de* is placed between and connects a clause with a stative verb phrase or stative clause in order to express in what manner the event denoted by the preceding clause is performed (12).

Sentence structure: C + COMPL. + Stative verb phrase/Stative clause

(12) 我跑得很快 (Zhang, 2001, p. 78)

wǒ pǎo-de hěn kuài

I run-COMPL. very fast

I run very fast

4.3.2 Classifiers

Classifiers (CLF.) are grammatical features found in the Chinese language. These are numeral classifiers, and they occur in numeral noun phrases or expressions of quantity (Aikhenvald, 2000). The so-called *classifier phrase* is the combination of a demonstrative (13) and/or number (14)/quantifier (15) and a classifier, which in turn is placed in front of the noun (or noun phrase) (Li and Thompson, 1981). There is a vast number of classifiers in Chinese, and the choice of which one to be used in a specific phrase is predominantly determined semantically. The semantic connotation of the classifiers varies quite substantially, and display characteristics such as shape, size and structure of the noun which they refer to. This implies that specific classifiers are combined with specific nouns, however, most (but not all) classifiers can regularly be replaced by the somewhat “generic” classifier *ge* (个) (Aikhenvald, 2000).

Additionally, some words designate measures themselves, and these words are not combined with classifiers in accordance with the already stated principles (16) (Li and Thompson, 1981). In the present study, three words that can employ several grammatical functions, including the function of a classifier, were encountered during the collection of data. Since they do not follow the principles of the previously mentioned *classifier phrase*, they have not

been accounted for in the results. The words are: *sui* (岁, year), *ci* (次, sequence) and *biàn* (遍, all over/ [illustrate the process of an action from start to finish]) (Oxford, 2010).

Sentence structure: Demonstrative/Number/Quantifier + CLF. + N

(13) 那本书 (Wu and Liang, 1992, p. 27)

nà běn shū

that-CLF. book

that book

(14) 三个人 (Li and Thompson, 1981, p. 104)

sān ge rén

three-CLF. person

three people

(15) 几本书 (Ragvald, 2006, p. 45)

jǐ běn shū

how many/a few-CLF. book

how many/a few books

(16) 五遍 (Chen, 1994, p. 121)

wǔ biàn

five-CLF.

five times (as in “I read the book five times”)

4.4 Sentence linking elements

In spoken language, two sentences are sometimes related and therefore needs to be linked together. In Chinese, these relations can be explicitly signaled by the speaker by using so called *sentence linking elements* (Li and Thompson, 1981), and the present study concerns three such elements: the temporal structure *-de shihou*, the *yihou*-structure and the *yiqian*-structure.

The three sentence linking elements of the present study are *forward linking elements* that are placed in *clause-final position*, and all three follow a mutual sentence structure. *Forward*

linking involves two clauses, where the first clause is dependent on the second for the semantic meaning to be complete. In order to link the two clauses together, the *forward linking element* is placed in the end of the first clause (Li and Thompson, 1981). See the sentence structure below:

Sentence structure: C1 + forward linking element + C2

The three following sections describe the sentence linking elements of the present study.

4.4.1 Temporal structure –*de shihou*

The temporal structure (TEMP.) involves the forward linking element –*de shihou* (的时候), meaning *when* or *while*, which is placed at the end of the first clause (Li and Thompson, 1981). By doing so, C1 is linked together with C2 indicating that when the information expressed by C1 took place, the information of C2 also did (17).

Sentence structure: C1 + TEMP. + C2

(17) 他小的时候没人照顾他 (Li and Thompson, 1981, p. 634)

tā xiǎo de shíhou méi rén zhàogu tā

he small TEMP. not person care-for he

when he was small there was no one to take care of him

4.4.2 The *yihou*-structure and *yiqian*-structure

The two forward linking elements *yihou* (YIHOU) and *yiqian* (YIQIAN) follow the same sentence structure, and therefore, they are described in the same section. In order to link together the first clause with the second, both of the forward linking elements can be placed at the end of the first clause. However, *yihou* (以后) means *after* and *yiqian* (以前) means *before*. Hence, by using *yihou*, the semantic meaning of the two clauses linked together is that C2 takes or took place after C1 (18). By using *yiqian*, the meaning is that C2 takes or took place before C1 (19) (Li and Thompson, 1981). See the examples below.

Sentence structure: C1 + YIHOU/ YIQIAN + C2

(18) 下课以后我就去游泳 (Li and Thompson, 1981, p. 634)

xiàkè yǐhòu wǒ jiù qù yóuyǒng

descend-class YIHOU I then go swim

after I get out of class I go swimming

(19) 上课以前我先喝一杯茶 (Li and Thompson, 1981, p. 634)

shàngkè yǐqián wǒ xiān hē yī bēi chá

ascend-class YIQIAN I first drink one-CLF. tea

before going to class I first drink a cup of tea

4.5 Non-canonical clause types

Both the *ba*-structure the *bei*-structure are non-canonical clause types, and when employing these structures, the object is not placed in post-verbal position. Instead the object occurs with either the *ba*-marker (BA) or the *bei*-marker (BEI), and is placed in front of the verb (Huang and Shi, 2016).

Sentence structure: S + BA/BEI + O + V

The following sections describe the usage of these two structures.

4.5.1 The *ba*-structure

An aspect of major importance is that the *ba*-structure expresses an aspect of disposal, meaning that it expresses how the object is handled, manipulated or disposed of. It is therefore essential that the utilized verb expresses this aspect, because if it does not, it cannot be included in the *ba*-structure. Verbs that do not express the aspect of disposal are (among many others) *love* (ài, 爱) and *miss* (xiǎng, 想) (Li and Thompson, 1981). The *ba*-structure also indicates that the action of the verb will result in or cause change to the object. To demonstrate this change or result, some sort of complement (COMP.) is usually included in the *ba*-sentence (Li and Cheng, 1988), which is combined with the verb. Such complementing elements can for instance be aspect markers such as *le* (了) (20) or *-guo* (过), resultative expressions like *diào* (掉) (21) and directional expressions as *shàng* (上) (Huang and Shi, 2016) (22) *dào* (到) or *cháo* (朝) (Ragvald, 2010). When using the *ba*-structure, the subject can sometimes be omitted.

It should be noted that the *ba*-structure is a very complex structure, which encapsulates several grammatical aspects. Hence, it is therefore necessary to only illustrate the most relevant aspects for the present study.

Sentence structure: (S) + BA + O +V + COMP.

(20) 我把一件事忘了 (Li and Thompson, 1981, p. 465)

wǒ bǎ yī jiàn shì wàng le

I BA one-CLF. matter forget ASPECT

I forgot something (i.e. something in particular)

(21) 把电视关掉 (Li and Thompson, 1981, p. 467)

bǎ diànshì guān diào

BA TV close off

turn off the TV

(22) 你把裤子穿上 (Li and Thompson, 1981, p. 467)

nǐ bǎ kùzi chuān shàng

you BA pants wear ascend

put on your pants

4.5.2 The *bei*-structure

The *bei*-structure is similar to the *ba*-structure, however, the *bei*-structure is a passive construction (Li and Thompson, 1981). The patient phrase appears in subject position and the agent phrase, which is introduced by the passive marker *bei*, ends up in object position (23). The agent phrase can and is often omitted, leaving the entire clause agentless (24). As in the case of the *ba*-structure, the *bei*-structure is most often completed with a complement (e.g. by attaching an aspect marker to the verb) in order to express some kind of change of situation (Huang and Shi, 2016).

As in the case of the *ba*-structure, only the most relevant aspects of the *bei*-structure for the present study are described.

Sentence structure: S + BEI + (O) +V + COMP.

(23) 他被姐姐骂了 (Li and Thompson, 1981, p. 492)

tā bèi jiějie mà le

he BEI elder-sister scold ASPECT

he was scolded by (his) older sister

(24) 他被骂了 (Li and Thompson, 1981, p. 493)

tā bèi mà le

he BEI scold ASPECT

he was scolded

This chapter summarizes the most relevant Chinese morphemes and structures for the present study. The next chapter presents previous studies within PT and second language acquisition of Chinese.

5. Previous research: PT applied to Chinese

This section is an introduction of previous research that have been made within the research field of Chinese second language acquisition using the theoretical framework of PT. Three main studies made by three different authors are presented in chronological order. By doing so, the reader will be provided with a clear and adequate picture of the previous studies that have been executed within the same field of research as in the present study.

5.1 Zhang (2001; 2004)

Zhang (2001; 2004) is a study regarding three English-speaking learners' interlanguage-development of eight grammatical morphemes in Chinese. What follows is a presentation of Zhang's research.

The study concerns the interlanguage-development of eight Chinese grammatical morphemes for three English-speaking learners. The purpose of the study was to determine the acquisition process of these eight morphemes in accordance with the hierarchical processing procedures of PT by observing their presence in the learners' speech production (Zhang, 2001). In other words, Zhang applied PT to Chinese and then suggested a Chinese hierarchy of processing procedures.

The hierarchy of processing procedures applied to the eight Chinese grammatical morphemes is presented below in Table 4.

Table 4. Applying processing procedures to Chinese (Zhang, 2001; 2004)

	Processing Procedure	Information Exchange	Chinese morphemes
5	Sub.-clause procedure	Main and sub-clause	-
4	S-procedure	Inter-phrasal information	Relative clause marker <i>de</i>
3	Phrasal procedure	Phrasal information	Classifier V-compl. marker <i>-de</i>
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>
1	Word/Lemma	Words/Chunks	Single constituent

5.1.1 Methodology

A longitudinal research design that lasted for one academic year (37 weeks) was utilized. The data collection began 5 weeks into the first semester, and hence after, data collection sessions were held once every 3 weeks (no sessions were held during school breaks). The sessions consisted of various tasks that the participants individually worked on together with the researcher, and each session ended with a conversation. Examples of tasks are; describing drawings, retelling a story and roleplaying, and every session lasted for 15-50 minutes. The tasks are categorized as “free-speech tasks”, with the purpose of eliciting spontaneous speech of the participants. The researcher provided the participants with unfamiliar vocabulary if necessary, but no assistance regarding grammatical information was given. The collected data was tape recorded and transcribed (Zhang, 2004).

A total of 3 individuals (in their late teens and early twenties) participated in the study, all enrolled in a first-year Chinese course at an Australian university. They are L1 speakers of English and studied Chinese as a second language at the time of the study. All of them had no proficiency in the target language before their participation in the study, but it was stated that all of them had positive experiences of previously learning second language successfully. The participants attended the same lectures and used the same textbook, having in total 10 hours of lectures and tutorial sessions in classroom environment per week (Zhang, 2004).

5.2 Gao (2005)

Gao (2005) is a study concerning two groups of people learning Chinese as a second language. Gao’s work is an unpublished doctoral dissertation, and due to this circumstance, her work has not been available for the present study (Wang, 2011). However, information about Gao’s study found in Wang (2011) is included in the present study.

This study concerns the acquisition of grammatical morphemes and syntactic markings among adult learners of Chinese as a second language. Gao’s findings were similar to Zhang’s, with the addition of identifying grammatical structures such as topicalization and the *ba*-structure, which are found at the later levels (stages 4 and 5 respectively) in the PT-hierarchy (Wang, 2011).

5.2.1 Methodology

The applied methodology consisted of both longitudinal and cross-sectional elements, and lasted for 7 months. Elicitation tasks (such as picture description and role play) and interviews were utilized for collecting speech production data, and the interview sessions lasted between 15 to 40 minutes. By using such methodology, authentic speech production of the participants was retrieved (Wang, 2011).

The participants of this study were divided into two groups of learners of Chinese as a second language. One group consisted of 9 English L1 speakers located in New Zealand, and the other group consisted of 51 participants located in China with in total 11 different first languages (e.g. German and Japanese) (Wang, 2011).

5.3 Wang (2011)

Wang (2011) is yet another study concerning SLA of Chinese using the PT-framework. The focus of the study was to confirm and extend the developmental sequence of grammatical features found by Zhang and Gao by obtaining more empirical support, and additionally, develop tasks suitable for a learnable and/or teachable syllabus (Wang, 2011).

5.3.1 Methodology

The methodology is described as an “exploratory-qualitative-statistical method”, which follows a research design consisting of both longitudinal and cross-sectional factors. It is characterized as a mixed methodology incorporating non-experimental approaches, such as production tasks and interviews, followed by a qualitative statistical analysis of the collected language production data. The purpose of the tasks was to elicit the natural language production of the participants (Wang, 2011).

The data collection lasted over one academic year (38 weeks). The data collection sessions began after 5 weeks into the first semester, followed by subsequent sessions with the participants on a regular basis every 2 or 3 weeks (except during school breaks). Each session lasted between 20-35 minutes, all sessions were audio-recorded, and the collected material was transcribed by the researcher. The participants were given unfamiliar vocabularies when necessary during the tasks, but grammatical forms were not provided (Wang, 2011).

A total of 8 individuals between the ages 19 and 22 participated in the study, and they were at the time studying Chinese as a second language at Newcastle University. All participants are

English L1 speakers, except for one whose mother tongue is German. At the time of their participation, all had learned Chinese for some time (between 1.5 months and 11 months), and they were already proficient speakers of other languages beside Chinese. All participants were taught from the same syllabus, used the same textbook, and received in total 6 hours of lectures and tutorial sessions per week during that academic year (Wang, 2011).

5.4 Summaries of the studies

Two tables are presented in this section. Table 5 is a summary of the findings of Zhang (2001; 2004), Gao (2005) and Wang (2011), and their relation to the processing hierarchy of PT. Table 6 is a short summary of each study.

Table 5. Summary of the findings of Zhang, Gao and Wang

	Processing Procedure	Information Exchange	Zhang (2001; 2004)	Gao (2005)	Wang (2011)
5	Sub.-clause procedure	Main and sub-clause	-	<i>ba</i> -structure	<i>bei</i> -structure <i>ba</i> -structure
4	S-procedure	Inter-phrasal information	Relative clause marker <i>de</i>	Relative clause marker <i>de</i> Topicalization	Object topicalization: T(=O)SV(Comp) T(=O)(S)V(Comp)
3	Phrasal procedure	Phrasal information	Classifier V-compl. marker <i>-de</i>	Adjunct fronting Classifier	Adjunct topicalization: T(=Adjunct)SV(O) 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 word order: SVO Possessive marker <i>-de</i> Adjective marker <i>-de</i> Attributive marker <i>-de</i>	Canonical SV(O): declaratives interrogatives (y/n, wh-, intonation) Subject topicalization: T(=S)VO
1	Word/Lemma	Words/Chunks	Single constituent	Invariant forms	Formulaic expressions

Table 6. Summary of the studies of Zhang, Gao and Wang

	Participants	Research Period	Research Design	Research Methods
Zhang (2001; 2004)	3 adult English L1 speakers	37 weeks	Longitudinal	Tasks Conversation
Gao (2005)	9 English L1 speakers (New Zealand) 51 speakers of other L1 (China)	7 months	Longitudinal Cross-sectional	Tasks Interviews
Wang (2011)	7 adult English L1 speakers 1 adult German L1 speaker	38 weeks	Longitudinal Cross-sectional	Tasks Interviews

5.4.1 Problematizing the findings of Zhang, Gao and Wang

Observing Table 5, it is evident that there are both similarities and differences concerning the location of certain linguistic elements in the authors' hierarchies. This section problematizes and briefly discusses some of these differences.

One difference is the location of *topicalization*. Gao (2005) placed topicalization at stage 4 as one single category. Wang (2011), on the other hand, has divided topicalization into 3 categories, placing subject topicalization at stage 2, adjunct topicalization at stage 3 and object topicalization at stage 4. Secondly, when comparing the findings of Zhang (2001; 2004) with the findings of Gao (2005), most linguistic components (with a few exceptions) can be found in both hierarchies located at the same stages. However, comparing Zhang (2001; 2004) with the findings of Wang (2011), not a single linguistic feature or structure in Zhang's hierarchy is to be found in Wang's, and vice versa.

At this point, only speculations can be made concerning the reasons for the different hierarchies. For example, despite that all three hierarchies were constructed on the basis of the same theoretical framework, and that the studies used similar research designs and methodology, the generated empirical data of each study could still be very different. This could for instance be due to the design of elicitation tasks or influential factors related to the participants (e.g. age differences and educational background). Hence, the studies would generate completely different findings, and therefore resulting in different hierarchies. This issue leads to the next chapter.

6. Present study - Methodology

The fact that the hierarchies of previous studies (Zhang (2001; 2004), Gao (2005) and Wang (2011)) indeed differ from each other should be considered as an indication for the need of further research on the subject in question. Hence, the present study was conducted for the purpose of further investigating the field of second language acquisition of Chinese within the theoretical framework of PT. Additionally, the present study aims to examine the developmental processes of not only university students, but also high school students.

This chapter is a thorough description of the methodology and procedures utilized for completing the present study.

6.1 Methodology

The research has been performed using a deductive approach. In short terms, this can be explained as; by employing existing theories, one or several hypotheses can be derived and empirically tested, which in return makes it possible to draw conclusions considering individual phenomenon. Since the starting point in the research lies within an already existing theory, the conclusions and results drawn from the research can be considered being objective and not influenced by the subjective perceptions and opinions of the researcher (Patel and Davidson, 2003). This is due to the fact that a deductive approach offers logical explanations derived from an established theory of what can be expected of a certain phenomenon, even before it has been discovered or tested (Hempel, 1966).

A cross-sectional research design consisting of two elicitation tasks was developed, and each participant participated one time only. This method made it possible to collect the participants' natural production of speech using the target language at a specific point in time, and this data is the foundation of which this study is based on.

6.2 Participants

A total number of 15 Swedish L1 speakers that studied Chinese as a second language at the time participated in the present study. They were divided into 3 groups in accordance with the respective Chinese course they were partaking in at the time of participation. The main objective was trying to find an equal amount of both male and female participants with as small age difference as possible, both within the same and among the different groups.

Before participating in the study, all participants were instructed to individually fill out a form (Appendix A) concerning their gender, age, other languages they had previously studied (apart from Chinese), information concerning their present and total studies in Chinese and their experiences of visiting China. More detailed information concerning the participants' backgrounds follows down below.

6.2.1 Group A

This group consisted of 6 participants, 4 females and 2 males. The age span is 16-19. The participants in this group were high school students that studied Chinese as a second language at basic level called “Step 1” (“Steg 1” in Swedish). At the time of participation, they had studied Chinese for 7 months, having in total 2 hours and 40 minutes of lectures a week.

All participants stated their mother tongue being Swedish, and one participant (A1) also stated German being her mother tongue. All participants had previously studied other languages.

3 participants had experience of visiting China, and the different purposes of the visits were traveling, work and the work of a parent.

Table 7 summarizes the information of the participants in group A.

Table 7. Summary of group A

	Gender	Age	Mother tongue(-s)	Other languages	Present Chinese studies	Total Chinese studies	Visiting China
A1	F	16	Swedish German	English(9 years) French(5 years)	Step 1 2 h, 40 min/week	High school (7 months)	2 months Travel/Parent's work
A2	F	17	Swedish	English(10 years) Spanish(5 years) German(6 months)	Step 1 2 h, 40 min/week	High school (7 months)	N/A
A3	F	16	Swedish	English(10 years) Spanish(4 years)	Step 1 2 h, 40 min/week	High school (7 months)	10 days Travel
A4	M	16	Swedish	English(7 years) German(5 years)	Step 1 2 h, 40 min/week	High school (7 months)	N/A
A5	M	17	Swedish	English(7 years) German(5 years)	Step 1 2 h, 40 min/week	High school (7 months)	N/A
A6	F	19	Swedish	English(14 years) Spanish(6 years) Korean(1 year)	Step 1 2 h, 40 min/week	High school (7 months)	1 month Travel/Work

6.2.2 Group B

This group consisted of 5 participants, 2 females and 3 males. The age span is 19-22. The participants in this group were university students studying Chinese as a second language at university level, second semester. The course they were taking at the time is called “Chinese: Level 1 (KINC12)” (“Kinesiska: Grundkurs (KINC12)” in Swedish), and is the follow-up course to the first semester course called “Chinese: Beginners’ Course (KINC11)” (“Kinesiska: Nybörjarkurs (KINC11)” in Swedish) (Lund University, 2015). At the time of participation, they had studied Chinese for 7 months having in total 8 hours of lectures a week. Thus, they had studied Chinese within the same time span as group A, but more intensively due to more hours of lectures.

2 participants (B1 and B2) had experience of studying Chinese as a second language prior to their studies at university level. Participant B1 had at the age of 6 studied Chinese by participating in “mother tongue studies” (in Swedish called “Modersmålsundervisning”), and B2 had studied Chinese as a second language for 3 years on high school level.

All participants stated their mother tongue being Swedish, except for one (B4) that stated his mother tongue being the Chaozhou dialect (further discussion considering this in section 8.6.3). All participants had previously studied other languages.

Participants B1 and B4 had experience of visiting China, and the different purposes of the visits were traveling and visiting family. Despite that this was not included in the forms, these 2 participants have Chinese roots.

Table 8 summarizes the information of the participants in group B.

Table 8. Summary of group B

	Gender	Age	Mother tongue(-s)	Other languages	Present Chinese studies	Total Chinese studies	Visiting China
B1	F	21	Swedish	English(11 years) German(7 years)	Basic 8 h/week	University (7 months) Mother tongue studies (age of 6)	Several times (each time/2 weeks) Travel/Visit
B2	F	19	Swedish	English(10 years) German(6 years)	Basic 8 h/week	University (7 months) High school (3 years)	N/A
B3	M	21	Swedish	English(15 years) German(3 years)	Basic 8 h/week	University (7 months)	N/A
B4	M	21	Chaozhou dialect	English(10 years) German(4 years)	Basic 8 h/week	University (7 months)	Several times (N/A) Travel
B5	M	22	Swedish	English(N/A) Japanese(1,5 years) Spanish(1 semester)	Basic 8 h/week	University (7 months)	N/A

6.2.3 Group C

This group consisted of 4 participants, 1 female and 3 males. The age span is 24-28. The participants were university students that were studying a bachelor course in Chinese as a second language at university level, fourth semester. The course they were taking at the time of participation is called “Chinese B.A. Course (KINK11)” (“Kinesiska: Kandidatkurs (KINK11)” in Swedish), and to enter this course one needs to have conducted previous studies in Chinese for at least 3 semesters (full time studies) at university level or possessing merits corresponding to the previous criteria (Lund University, 2015). At the time, the participants had studied Chinese for between 1.5-3 years, having in total 4 hours of lectures a week.

All participants stated that their mother tongue is Swedish, and one (C2) also stated Bosnian as his mother tongue. All participants had previously studied other languages. Participant C3 did not state whether he had studied English, although it is very fair to assume that he has, due to his educational background.

All participants had previously been to China as exchange students studying Chinese as a second language, and each person’s stay varied between approximately 6 months to 2 years.

Table 9 summarizes the information of the participants in group C.

Table 9. Summary of group C

	Gender	Age	Mother tongue(-s)	Other languages	Present Chinese studies	Total Chinese studies	Visiting China
C1	F	27	Swedish	English(19 years) French(7 years) Danish(6 months)	B.A. Course 4 h/week	University (3 years)	2 years, 1 month (Study)
C2	M	26	Swedish Bosnian	English(19 years) German(14 years) Japanese(3 years)	B.A. Course 4 h/week	University (2 years)	6 months (Study)
C3	M	24	Swedish	French(N/A) Spanish(N/A) German(N/A) Finnish(N/A)	B.A. Course 4 h/week	University (1,5 years)	1 semester (Study)
C4	M	28	Swedish	English(N/A) German(4 years)	B.A. Course 4 h/week	University (1,5 years)	1 semester (Study)

6.3 Materials

The collection of empirical data was accomplished by using a methodology consisting of two elicitation tasks, and the participants' performances were documented by both audio and video recordings. The audio was recorded using a mobile phone (Samsung Galaxy A5), and the video recordings were done using a digital camera (Andersson CTC 2.8). The audio recording device was activated the entire time of a session, but the video recording device was only activated during the time a participant was asked to actively speak Chinese. The collected data was transcribed using the computer software ELAN, and the speech production of the participants were transcribed into both Chinese characters and *pinyin* (romanization), which thereafter were translated into English (Wong, 1993). ELAN was also used as a tool for analyzing the data by "tagging" and "commenting" relevant production of speech.

6.3.1 Pilot study – testing the materials

In order to construct valid and reliable elicitation tasks that would generate ecological data, a number of pilot tasks were constructed and tested by myself, whom is considered a high proficiency L2 speaker of Chinese. A control group of Chinese L1 speakers was originally supposed to do the pilot tasks for ensuring their reliability, but do to time constraints, the employment of such a control group was made impracticable. Hence, I had to carry out the

pilot testing myself, which in the end may not have generated as reliable tasks as if a control group had done it, but still made it possible to improve the tasks in order to more effectively elicit the sought morphemes and structures of the present study.

As a result of this pilot testing, two different tasks with the potential of complementing one another were combined, namely a “closed” Interview-task and an “open” Retelling-task (Podesva and Sharma, 2013). These two tasks are described in the sections 6.4.1 and 6.4.2.

6.4 Procedure of the elicitation tasks

The participants of group A participated at two separate occasions (participants A1-A3 at the first occasion, and A4-A6 did it at the second). At the first occasion, the sessions were held in a small room, and at the second occasion in a normal classroom. Both group B and C did it at one occasion each, where group B did it in a normal classroom and group C in a small room. All participants participated individually under supervision of the author of the present study.

Before beginning the tasks, all participants were orally informed about the purpose of the study and the procedures of the tasks, and thereafter asked to give their informed consent by signing a form containing the same information (participants under the age of 18 also needed a parent’s consent). The author of the present work guaranteed anonymity by signing the same form. The participants filled in a form concerning gender, age, language background, information concerning their studies in Chinese and experiences of visiting China. The participants were reminded of them being both audio and video recorded, and that they had the opportunity to withdraw their consent and stop participating at any time. Thereafter the two tasks commenced, one “Interview-task” and one “Retelling-task”. The task order was identical for all participants by first doing the “Interview-task” followed by the “Retelling-task”.

6.4.1 Interview

This first task was a short interview where the participants were informed to answer 9 closed questions in Chinese (Appendix B). If a participant had troubles understanding a question, the question was first repeated in Chinese. If the participant still did not understand, the question was translated into Swedish, but the participant was still asked to answer the question in Chinese.

6.4.2 Retelling

This second task began with the participants watching a short video clip on a computer (*The Pear Stories: Cognitive, Cultural, and Linguistic Aspects of Narrative Production*, 1980). The video clip is 5:54 minutes long, and the participants watched it individually without interacting with anyone. When the video had ended, the participants were instructed to retell the video in Chinese to the author of the present study. They were thereafter provided with a short wordlist (Appendix C) containing 14 Chinese words written in both Chinese characters and *pinyin*, and the Swedish translations of each word were included. The participants had the opportunity to examine the wordlist before starting retelling the video clip, and they were allowed to look at the word list as much as they desired while retelling. They were free to retell the video in any way they wanted using their language skills in Chinese, and they decided themselves when to end the task. In other words, they were not instructed to e.g. retell the video chronologically, and neither were they told to speak within a certain time frame.

6.5 Ethical aspects

When executing any research involving human subjects, ethical aspects needs to be taken into consideration, and perhaps the most crucial aspect worth mentioning is the one of informed consent. What this term encapsulates might be slightly vague, but one can roughly divide it into two main factors. Firstly, a human subject that potentially will act as a participant needs to be provided with information about the study itself to such a degree that he or she understands enough in order to make a decision of whether participating or not (Mackey and Gass, 2016). One should also point out that informing a potential participant does not necessarily only require the researcher telling him or her what will happen, but also what will not happen. The second factor is that participation must be voluntary (Podesva and Sharma, 2013). The person in question must be given the opportunity to choose whether to participate or not, and should also have the opportunity to withdraw earlier given consent at any point.

The identity of the participants should be kept anonymous to as great extent as possible (e.g. by giving the participants numbers or code names instead of using their real ones), and the participants should be informed about the precautions that will be made to maintain confidentiality (Mackey and Gass, 2016).

In the present study, ethical aspects as mentioned above were taken into consideration. All participants were informed both in writing and orally about the purpose of the study, the

procedures of the data collection tasks and that anonymity would be guaranteed by replacing all real names with code names. They were also informed that the only people, except for the author of the present study, having access to the video and audio recordings were my two supervisors.

Before participating, all participants signed a form (Appendix D) containing information about the study, and by doing so they gave their informed consent of voluntarily participating. Anyone under the age of 18 was also ordered to have their form signed by a parent in order to guarantee that a parent was informed and agreed to their child's participation. All forms were signed by the author of the present study, guaranteeing that the given information was correct and that their identities would be kept anonymous. All participants were also reminded before beginning the tasks that they had the right to withdraw their consent and stop their participation at any time.

In this chapter, the methodology of the present study is introduced. A cross-sectional research design consisting of two elicitation tasks was utilized, and the participants are Swedish L1 speakers studying Chinese as a second language. The next chapter presents the results of the present study.

7. Present study - Results

This chapter presents the results and findings obtained from the two elicitation tasks of the present study. Both a quantitative and qualitative analysis were applied in order to find specific morphemes and structures in the participants' speech production. Morphemes and structures that followed the correct grammatical forms (see "sentence structures" in chapter 4) at a specific point during the elicitation tasks were accounted for once. Hence, if a participant repeated a certain morpheme in the same specific context, it was accounted for as one occurrence of that certain morpheme. All findings are categorized in 3 sections down below, summarized in different tables. The sections present the findings in the following order:

Section 7.1 summarizes all findings of the present work, illustrating the emergence of the morphemes and structures in the participants' speech production. Section 7.2 depicts all findings in accordance with the participants' accuracy of using them in their speech. Section 7.3 consists of an implicational scale showing all findings in consonance with how actively they were used by the participants.

If no other instructions are given, the tables are structured as follows: All participants are sorted in the vertical column to the far left in accordance with their group and codename. The different PT-stages and their respective morphemes of the hierarchies from previous research are structured horizontally. Each number in the tables represents the amount of times a participant used a certain morpheme in his or her spontaneous speech production. If no number is specified, and instead a forward slash "/" is present, the morpheme or structure in question was not used by the participant. However, a minus "-" indicates that a morpheme or structure was not used in an obligatory context.

7.1 Emergence

This section summarizes all findings made in the present study. The findings do not only contain morphemes and structures that have previously been researched by Zhang (2001; 2004), Gao (2005) and Wang (2011). Findings unique for the present study are also included, namely the 3 sentence linking elements; the temporal structure *-de shihou* (的时候), the *yihou*-structure (以后) and the *yiqian*-structure (以前).

The findings are summarized in 3 tables: Table 10 summarizes the morphemes and structures collected from the Interview-task, and Table 11 summarizes the ones from the Retelling-task. Table 12 summarizes the total number of found morphemes and structures, and also summarizes the number of participants that produced each specific morpheme or structure (see the bottom line).

The findings in this section's tables are organized in accordance with the hierarchical stages of Zhang (2001; 2004), Gao (2005) and Wang (2011). However, the 3 structures unique for the present study are not organized in accordance with any hierarchical stage, but their potential locations in the PT-hierarchy are discussed in chapter 8 (section 8.4). These 3 structures are located to the far right in the tables.

7.1.1 Interview

Table 10 shows the findings elicited from the Interview-task. Participants are sorted in the left vertical column, and morphemes and structures are sorted in the top horizontal line.

Table 10. Findings from the Interview-task

	Stage 2					Stage 3		Stage 4	Stage 5		temp.	yihou	yiqian
	guo	zhengzai	attr. de	adj. de	poss. de	V- comp.de	clf.	rel. de	ba	bei			
A1	-	/	/	/	1	/	1	/	/	/	/	/	/
A2	/	/	/	/	1	/	/	/	/	/	/	/	/
A3	-	/	/	/	/	/	1	/	/	/	/	/	/
A4	/	/	/	/	/	/	-	/	/	/	/	/	/
A5	/	/	/	/	1	/	1	/	/	/	/	/	/
A6	-	/	/	/	1	/	-	/	/	/	/	/	/
B1	1	/	/	/	/	/	1	/	/	/	/	/	/
B2	1	/	/	/	/	/	/	/	/	/	/	/	/
B3	1	/	/	/	1	/	1	/	/	/	/	/	/
B4	-	/	/	/	/	/	2	/	/	/	/	/	/
B5	/	/	/	/	1	/	-	/	/	/	/	/	/
C1	1	/	/	/	1	/	4	/	/	/	/	/	/
C2	1	/	1	/	1	/	1	1	/	/	-(c)	/	/
C3	1	/	1	/	2	/	2	/	/	/	/	/	/
C4	3	/	1	/	1	/	4	/	/	/	/	/	/

(c) At one occasion, the participant clearly had the intention of producing a sentence using the temporal structure *-de shihou*, however, the marker *-de* was absent.

7.1.2 Retelling

Table 11 shows the findings elicited from the Retelling-task. Participants are sorted in the left vertical column, and morphemes and structures are sorted in the top horizontal line.

Table 11. Findings from the Retelling-task

	Stage 2					Stage 3		Stage 4	Stage 5				
	guo	zhengzai	attr. de	adj. de	poss. de	V- comp.de	clf.	rel. de	ba	bei	temp.	yihou	yiqian
A1	/	/	1	/	1	/	11	/	-	/	/	/	/
A2	/	/	/	/	1	/	/	/	/	/	/	/	/
A3	/	/	/	/	/	/	5	/	/	/	/	/	/
A4	/	/	/	/	/	/	-	/	/	/	/	/	/
A5	/	/	/	/	/	/	7	/	/	/	/	/	/
A6	/	/	/	/	/	/	/	/	/	/	/	/	/
B1	/	/	1	/	1	/	13	1	-	/	1	/	/
B2	/	/	-	/	1	/	10	/	/	/	/	/	/
B3	/	/	/	/	1	/	7	1	-	/	/	/	/
B4	/	/	1	/	/	/	6	/	-(b)	/	/	/	/
B5	/	1(a)	/	/	1	/	14	2	-	/	/	1	/
C1	/	/	1	2	2	/	28	1	-	/	/	/	/
C2	/	/	3	/	1	/	8	2	-(b)	/	1	/	/
C3	/	/	4	/	2	/	28	3	/	-(b)	3	1	1
C4	/	/	/	/	2	/	8	/	/	/	/	2(d)	/

(a) In this case, the participant used the marker *zai*, not *zhengzai*-. However, due to the very similar functions and meanings of the two morphemes, *zai* is equated to *zhengzai*-.

(b) In these cases, the participants used the *ba*-structure and *bei*-structure incorrectly. Participant B4 had two instances and participant C2 had one instance of using the *ba*-structure incorrectly. Participant C3 had one instance of using the *bei*-structure incorrectly.

(d) On both occasions, the participant said *zhihou*, not *yihou*. However, due to these two words being arguably the same (in structure, function and meaning), they are equated to one another.

7.1.3 Summary

Table 12 summarizes all findings of the present study (findings previously presented in both Table 10 and Table 11). Participants are sorted in the left vertical column, and morphemes and structures are sorted in the top horizontal line. The total numbers of participants that produced each morpheme or structure are summarized in the bottom yellow line.

Table 12. Summary of all findings of the present study

	Stage 2					Stage 3		Stage 4	Stage 5		temp.	yihou	yiqian
	guo	zhengzai	attr. de	adj. de	poss. de	V-comp.de	clf.	rel. de	ba	bei			
A1	-	/	1	/	2	/	12	/	-	/	/	/	/
A2	/	/	/	/	2	/	/	/	/	/	/	/	/
A3	-	/	/	/	/	/	6	/	/	/	/	/	/
A4	/	/	/	/	/	/	-	/	/	/	/	/	/
A5	/	/	/	/	1	/	8	/	/	/	/	/	/
A6	-	/	/	/	1	/	-	/	/	/	/	/	/
B1	1	/	1	/	1	/	14	1	-	/	1	/	/
B2	1	/	-	/	1	/	10	/	/	/	/	/	/
B3	1	/	/	/	2	/	8	1	-	/	/	/	/
B4	-	/	1	/	/	/	8	/	-(b)	/	/	/	/
B5	/	1(a)	/	/	2	/	14	2	-	/	/	1	/
C1	1	/	1	2	3	/	32	1	-	/	/	/	/
C2	1	/	4	/	2	/	9	3	-(b)	/	1(c)	/	/
C3	1	/	5	/	4	/	30	3	/	-(b)	3	1	1
C4	3	/	1	/	3	/	12	/	/	/	/	2(d)	/
	7	1	7	1	12	0	12	6	0	0	3	3	1

(a) In this case, the participant used the marker *zai*, not *zhengzai*-. However, due to the very similar functions and meanings of the two morphemes, *zai* is equated to *zhengzai*-.

(b) In these cases, the participants used the *ba*-structure and *bei*-structure incorrectly. Participant B4 had two instances (25) (26) and participant C2 had one instance (27) of using the *ba*-structure incorrectly. Participant C3 had one instance (28) of using the *bei*-structure incorrectly.

(c) At one occasion, the participant clearly had the intention of producing a sentence using the temporal structure *-de shihou*, however, the marker *-de* was absent (29).

(d) On both occasions, the participant said *zhihou*, not *yihou*. However, due to these two words being arguably the same (in structure, function and meaning), they are equated to one another.

In the case of participant B4 using the *ba*-structure, both of the produced sentences followed the correct sentence structure, S + BA + O + V. However, the verbs in both sentences do not express how any change or result have been caused the objects, and therefore they are grammatically incorrect. If the verbs had been followed by a complementing element expressing such change or result, the sentences would have been grammatical.

(25) 三个人把他帮助

sān ge rén bǎ tā bāngzhù

three-CLF. person BA he help

The participant's presumably intended meaning (in relation to the video clip): *three persons help him*

(26) 把梨偷

bǎ lí tōu

BA pear steal

The participant's presumably intended meaning (in relation to the video clip): *(someone) steals the pears*

The case of C2 using the *ba*-structure is slightly difficult to assess round due to the participant hesitating when making his statement (hence the dots in (27)). Thus, there are two options: either did he start using the *ba*-structure, then changed his mind and tried to express himself in another way, or this was indeed a complete attempt of using the *ba*-structure. Assuming it is the latter alternative, the fact remains that it is a somewhat confusing composition. The main issue is that the verb is used in the presence of two different complementing elements, making it unclear what the participant actually intended to say. Hence it is very hard to pinpoint where the actual problem lies, but since the statement does not correspond to the sentence structure of the *ba*-structure, it is not grammatically correct.

(27) 把梨...放...篮子里放下

bǎ lí...fàng...lánzi lǐ fàng xià

BA pear...put...basket in put down

The participant's presumably intended meaning (in relation to the video clip): *(someone) puts the pears in the basket*

The issue with the *bei*-structure used by C3 mainly concerns the semantic meaning of the sentence, not the grammatical aspects. To put it all in context one needs to recall that the task consisted of the participant retelling a video clip to the author of the present study, whom of course also had seen the video. Hence, the contextual nature of this task is that both the participant and the author of the present work knew what happened in the video. Based on this

contextual background, even though the statement is grammatically correct, it is safe to say that the participant's statement most probably did not transmit the semantic meaning that he intended, and thus it is considered being incorrect.

(28) 所以他以为是那三个男孩子被偷了

suǒyǐ tā yǐwéi shì nà sān ge nánháizi bèi tōu le

so he believe is that three-CLF. boy BEI steal ASPECT

so he believed that those three boys had been stolen

The participant's presumably intended meaning (in relation to the video clip): *so he believed that it was those three boys that had stolen (the pears)*

Participant C2 had the intention of producing a sentence using the temporal structure *-de shihou*. However, the marker *-de* was absent, and therefore the sentence is grammatically incorrect.

(29) 我出生在波斯尼亚，可是三岁时我来瑞典

wǒ chūshēng zài Bōsīníyà, kěshì sān suì shíhou wǒ lái Ruìdiǎn

I born in Bosnia, but three year time I come Sweden

The participant's presumably intended meaning: *I am born in Bosnia, but when I was three years old I came to Sweden*

Observing the morphemes of stages 2, 3 and 4 in Table 12, the most frequently used morphemes were classifiers and the possessive marker *-de*, where each of these were used by 12 different participants. Both the experiential marker *-guo* and the attributive marker *-de* were used by 7 participants, and the relative clause marker *de* was used by 6 participants. The adjective marker *-de* and *zhengzai-* were used by 1 participant each, and the verb-complement marker *-de* was not used by any of the participants.

Considering the structures on stage 5, the *ba*-structure was used by 2 participants, and the *bei*-structure was used by 1 participant. However, none of the participants used any of these two structures in a correct manner.

The temporal structure *-de shihou* and the *yihou*-structure were used by 3 participants, and the *yiqian*-structure was used by 1 participant.

7.2 Accuracy

The following tables of this section have the purpose of portraying the accuracy of the participants' usage of the different morphemes and structures during the two elicitation tasks. This is depicted according to the following structure:

The tables follow the same structure as the ones in the previous section (participants to the far left, and the morphemes and structures are located horizontally in the top). However, unlike previous tables, two numbers separated with a forward slash "/" (e.g. 2/2) are written in the different cells. The numbers left of the "/" represents the amount of morphemes or structures the participants used in their production of speech. The number to the right of the "/" represents the amount of occasions where a certain morpheme or structure were required in order to produce a grammatically correct statement.

Ergo, if both numbers in one cell are the same, e.g. 2/2, this indicates that the participant in question used a certain morpheme or structure correctly at 2 out of 2 required occasions. However, if the numbers do not correspond, e.g. 1/2, this indicates either that a participant did not use a certain morpheme or structure at 1 out of 2 required occasions, or that the morpheme or structure was used incorrectly resulting in an ungrammatical statement at 1 out of 2 required occasions.

The findings are organized in accordance with the hierarchical stages of Zhang (2001; 2004), Gao (2005) and Wang (2011), and the 3 structures unique for the present study are located to the far right in similar fashion as in section 7.1.

7.2.1 Interview

Table 13 shows how accurately the morphemes and structures were used by the participants during the Interview-task. Participants are sorted in the left vertical column, and morphemes and structures are sorted in the top horizontal line.

Table 13. Accuracy: Interview-task

	Stage 2					Stage 3		Stage 4	Stage 5		temp.	yihou	yiqian
	guo	zhengzai	attr. de	adj. de	poss. de	V- comp.de	clf.	rel. de	ba	bei			
A1	0/1	/	/	/	1/1	/	1/1	/	/	/	/	/	/
A2	/	/	/	/	1/1	/	/	/	/	/	/	/	/
A3	0/1	/	/	/	/	/	1/1	/	/	/	/	/	/
A4	/	/	/	/	/	/	0/5	/	/	/	/	/	/
A5	/	/	/	/	1/1	/	1/1	/	/	/	/	/	/
A6	0/1	/	/	/	1/1	/	0/1	/	/	/	/	/	/
B1	1/1	/	/	/	/	/	1/1	/	/	/	/	/	/
B2	1/1	/	/	/	/	/	/	/	/	/	/	/	/
B3	1/1	/	/	/	1/1	/	1/1	/	/	/	/	/	/
B4	0/1	/	/	/	/	/	2/2	/	/	/	/	/	/
B5	/	/	/	/	1/1	/	0/1	/	/	/	/	/	/
C1	1/1	/	/	/	1/1	/	4/4	/	/	/	/	/	/
C2	1/1	/	1/1	/	1/1	/	1/1	1/1	/	/	0/1(c)	/	/
C3	1/1	/	1/1	/	2/2	/	2/2	/	/	/	/	/	/
C4	3/3	/	1/1	/	1/1	/	4/4	/	/	/	/	/	/

(c) At one occasion, the participant clearly had the intention of producing a sentence using the temporal structure *-de shihou*, however, the marker *-de* was absent.

7.2.2 Retelling

Table 14 shows how accurately the morphemes and structures were used by the participants during the Retelling-task. Participants are sorted in the left vertical column, and morphemes and structures are sorted in the top horizontal line.

Table 14. Accuracy: Retelling-task

	Stage 2					Stage 3		Stage 4	Stage 5		temp.	yihou	yiqian
	guo	zhengzai	attr. de	adj. de	poss. de	V- comp.de	clf.	rel. de	ba	bei			
A1	/	/	1/1	/	1/1	/	11/11	/	0/1	/	/	/	/
A2	/	/	/	/	1/1	/	/	/	/	/	/	/	/
A3	/	/	/	/	/	/	5/5	/	/	/	/	/	/
A4	/	/	/	/	/	/	0/2	/	/	/	/	/	/
A5	/	/	/	/	/	/	7/7	/	/	/	/	/	/
A6	/	/	/	/	/	/	/	/	/	/	/	/	/
B1	/	/	1/1	/	1/1	/	13/13	1/1	0/2	/	1/1	/	/
B2	/	/	0/1	/	1/1	/	10/10	/	/	/	/	/	/
B3	/	/	/	/	1/2	/	7/7	1/1	0/1	/	/	/	/
B4	/	/	1/1	/	/	/	6/6	/	0/2(b)	/	/	/	/
B5	/	1/1(a)	/	/	1/1	/	14/14	2/2	0/1	/	/	1/1	/
C1	/	/	1/1	2/2	2/2	/	28/28	1/1	0/1	/	/	/	/
C2	/	/	3/3	/	1/1	/	8/8	2/2	0/1(b)	/	1/1	/	/
C3	/	/	4/4	/	2/2	/	28/28	3/3	/	0/1(b)	3/3	1/1	1/1
C4	/	/	/	/	2/2	/	8/8	/	/	/	/	2/2(d)	/

(a) In this case, the participant used the marker *zai*, not *zhengzai*-. However, due to the very similar functions and meanings of the two morphemes, *zai* is equated to *zhengzai*-.

(b) In these cases, the participants used the *ba*-structure and *bei*-structure incorrectly. Participant B4 had two instances and participant C2 had one instance of using the *ba*-structure incorrectly. Participant C3 had one instance of using the *bei*-structure incorrectly.

(d) On both occasions, the participant said *zhihou*, not *yihou*. However, due to these two words being arguably the same (in structure, function and meaning), they are equated to one another.

7.2.3 Summary

Table 15 summarizes how accurately the morphemes and structures were used by the participants during both tasks. Participants are sorted in the left vertical column, and morphemes and structures are sorted in the top horizontal line.

Table 15. Accuracy: Summary of both tasks

	Stage 2					Stage 3		Stage 4	Stage 5				
	guo	zhengzai	attr. de	adj. de	poss. de	V-comp.de	clf.	rel. de	ba	bei	temp.	yihou	yiqian
A1	0/1	/	1/1	/	2/2	/	12/12	/	0/1	/	/	/	/
A2	/	/	/	/	2/2	/	/	/	/	/	/	/	/
A3	0/1	/	/	/	/	/	6/6	/	/	/	/	/	/
A4	/	/	/	/	/	/	0/7	/	/	/	/	/	/
A5	/	/	/	/	1/1	/	8/8	/	/	/	/	/	/
A6	0/1	/	/	/	1/1	/	0/1	/	/	/	/	/	/
B1	1/1	/	1/1	/	1/1	/	14/14	1/1	0/2	/	1/1	/	/
B2	1/1	/	0/1	/	1/1	/	10/10	/	/	/	/	/	/
B3	1/1	/	/	/	2/3	/	8/8	1/1	0/1	/	/	/	/
B4	0/1	/	1/1	/	/	/	8/8	/	0/2(b)	/	/	/	/
B5	/	1/1(a)	/	/	2/2	/	14/15	2/2	0/1	/	/	1/1	/
C1	1/1	/	1/1	2/2	3/3	/	32/32	1/1	0/1	/	/	/	/
C2	1/1	/	4/4	/	2/2	/	9/9	3/3	0/1(b)	/	1/2(c)	/	/
C3	1/1	/	5/5	/	4/4	/	30/30	3/3	/	0/1(b)	3/3	1/1	1/1
C4	3/3	/	1/1	/	3/3	/	12/12	/	/	/	/	2/2(d)	/

(a) In this case, the participant used the marker *zai*, not *zhengzai*-. However, due to the very similar functions and meanings of the two morphemes, *zai* is equated to *zhengzai*-.

(b) In these cases, the participants used the *ba*-structure and *bei*-structure incorrectly. Participant B4 had two instances and participant C2 had one instance of using the *ba*-structure incorrectly. Participant C3 had one instance of using the *bei*-structure incorrectly.

(c) At one occasion, the participant clearly had the intention of producing a sentence using the temporal structure *-de shihou*, however, the marker *-de* was absent.

(d) On both occasions, the participant said *zhihou*, not *yihou*. However, due to these two words being arguably the same (in structure, function and meaning), they are equated to one another.

The tables show that the majority of morphemes and structures were used with a relatively high accuracy. There are a few exceptions, e.g. in the case of the experiential marker *-guo*, where four participants did not use the morpheme in obligatory contexts. However, there are two structures that are in need of more attention, namely the *ba*-structure and *bei*-structure. Concerning the *ba*-structure, both participant B4 and C2 actively attempted to use this structure, but failed to use it correctly, resulting in ungrammatical statements. Another 5 participants were required to use the *ba*-structure at least once when completing the elicitation tasks, but as the tables indicate, they did not. The reason for them being required to use the *ba*-structure is due to all of them having produced sentences where the *ba*-structure is

obligatory in order to grammatically express the semantic meanings they presumably were intending to express (based on the context of the video clip they were retelling).

Regarding the *bei*-structure, participant C3 actively attempted to use this structure, which resulted in an incorrect statement.

7.3 Implicational order

Table 16 is an implicational scale showing all findings of the morphemes and structures the participants actively used in their production of speech. The structure of the table is as follows:

The participants are located in the column to the far left. They are arranged in accordance with the total number of different morphemes and structures that they used in their speech (disregarding how many times one specific morpheme or structure was used). The participants with the lowest number are located in the top and the ones with the highest are placed in the bottom. The numbers of the total sum of used morphemes and structures for each participant are written in the green column to the far right.

The morphemes and structures in the horizontal top line are structured in accordance with the total amount of participants that used them in their speech. Those that were most frequently used are located to the left, and the ones used least frequently to the right. The total numbers of participants that used a certain morpheme or structure are summarized in the yellow bottom line of the table. The numbers inside the parentheses written beneath each morpheme and structure in the top line indicate the stages in the hierarchies of Zhang (2001; 2004), Gao (2005) and Wang (2011), and the 3 structures unique for the present study have not been appointed such a number.

Table 16. Implicational scale of the present study

	poss. de (2)	clf. (3)	attr. de (2)	guo (2)	rel. de (4)	temp.	yihou	adj. de (2)	zhengzai (2)	yiqian	ba (5)	bei (5)	V- comp.de (3)	
A4	/	-	/	/	/	/	/	/	/	/	/	/	/	0
A2	2	/	/	/	/	/	/	/	/	/	/	/	/	1
A6	1	-	/	-	/	/	/	/	/	/	/	/	/	1
A3	/	6	/	-	/	/	/	/	/	/	/	/	/	1
A5	1	8	/	/	/	/	/	/	/	/	/	/	/	2
B4	/	8	1	-	/	/	/	/	/	/	-(b)	/	/	2
A1	2	12	1	-	/	/	/	/	/	/	-	/	/	3
B2	1	10	-	1	/	/	/	/	/	/	/	/	/	3
B3	2	8	/	1	1	/	/	/	/	/	-	/	/	4
C4	3	12	1	3	/	/	2(d)	/	/	/	/	/	/	5
B5	2	14	/	/	2	/	1	/	1(a)	/	-	/	/	5
C1	3	32	1	1	1	/	/	2	/	/	-	/	/	6
B1	1	14	1	1	1	1	/	/	/	/	-	/	/	6
C2	2	9	4	1	3	1(c)	/	/	/	/	-(b)	/	/	6
C3	4	30	5	1	3	3	1	/	/	1	/	-(b)	/	8
	12	12	7	7	6	3	3	1	1	1	0	0	0	

(a) In this case, the participant used the marker *zai*, not *zhengzai*-. However, due to the very similar functions and meanings of the two morphemes, *zai* is equated to *zhengzai*-.

(b) In these cases, the participants used the *ba*-structure and *bei*-structure incorrectly. Participant B4 had two instances and participant C2 had one instance of using the *ba*-structure incorrectly. Participant C3 had one instance of using the *bei*-structure incorrectly.

(c) At one occasion, the participant clearly had the intention of producing a sentence using the temporal structure *-de shihou*, however, the marker *-de* was absent.

(d) On both occasions, the participant said *zhihou*, not *yihou*. However, due to these two words being arguably the same (in structure, function and meaning), they are equated to one another.

7.3.1 Summary

Table 16 shows that learners that had studied Chinese for a shorter period of time used a smaller number of morphemes and structures in their speech than learners that had studied longer. In relation to this, one should note that participant B1 surpassed both participant C4 and C1. B1 and C1 used 6 morphemes and structures from stages 2, 3, 4, and C4 used 5 morphemes and structures from stages 2 and 3. Both B1 and C4 used one of the structures unique for this study, but C1 did not.

Participant B5 and C4 used 5 morphemes and structures each, including the *yihou*-structure. However, only B5 used the relative clause marker *de* (stage 4), thus resulting in B5 being located further down in the implicational table than C4.

Additionally, participant A1 used one more morpheme than B4. Both participants used morphemes from stages 2 and 3, however, B4 also attempted to use the *ba*-structure from stage 5.

The participants of group A used morphemes from stages 2 and 3. The participants from both group B and C used or tried to use morphemes and structures from stages 2, 3, 4 and 5. It can also be seen that among the morphemes and structures used by 3 participants or more, the most frequently used morphemes and structures are those on the lower stages in the hierarchy. The ones used least frequently are those on the highest stage in the hierarchy, and these were used by participants with high language proficiency. As for the morphemes and structures used by 3 participants or less, these are all located at the stages 2, 3 and 5.

Finally, attention should be brought to the fact that both the possessive marker *-de* and the classifier were used by 12 participants each. In other words, the two most frequently used morphemes are found on different stages in the hierarchy, stage 2 and stage 3 respectively. This further display that all of the remaining morphemes located on stage 2 were less frequently used than the classifier.

What follows next is a discussion concerning the results and findings presented in this chapter.

8. Discussion

This chapter is a discussion mainly focusing on the results of the present study. However, it also provides some discussions concerning issues related to the utilized methodology of the present study, and ends with a section of suggestions for future research.

This chapter is structured in the following way: Section 8.1 discusses morphemes and structures used by more than 3 participants, and section 8.2 discusses those that were used by 3 or less participants. Section 8.3 and 8.4 discusses the possibilities for adjusting and broaden the span of the PT-hierarchies constructed in previous research. Section 8.5 discusses issues concerning the methodology, while section 8.6 discusses issues relating to certain participants. Section 8.7 provides suggestions for future research.

8.1 Discussion – morphemes and structures used by more than 3 participants

This section discusses the morphemes and structures that were used by more than 3 different participants during the elicitation tasks, which are the following: the experiential marker *-guo* (stage 2), the attributive marker *-de* (stage 2), the possessive marker *-de* (stage 2), classifiers (stage 3) and the relative clause marker *de* (stage 4). First an overview of the results is provided which then leads to further discussions focusing on specific morphemes and structures.

8.1.1 Overview

The starting point is to provide an overview and discuss to what extent the participants used certain Chinese morphemes and structures when completing the elicitation tasks. Therefore, one must recapitulate to Table 16, the implicational table.

The participants of group A used morphemes located at stages 2 and 3, and the participants of group B and C used or tried to use morphemes and structures located at stages 2, 3, 4 and 5. In other words, the learners with lowest language proficiency only used morphemes of the lower stages in the PT-hierarchy, whereas the participants with higher language proficiency used morphemes and structures of both the lower and higher stages. Hence the initial picture is that the results of the present study corroborate the hierarchies of previous research. However, there are a number of aspects that also have to be taken into account before deriving any final conclusions.

According to Table 16, both the possessive marker *-de* (stage 2) and classifiers (stage 3) were used by 12 participants respectively. Following the classifiers are the attributive marker *-de* (stage 2) and the experiential marker *-guo* (stage 2), both used by 7 participants, and the relative clause marker *de* (stage 4) was used by 6 participants. The participants' usage of the aforementioned morphemes seem to follow the hierarchical pattern as predicted by previous research, aside from the striking exception of the classifiers taking precedence over the attributive marker *-de* and the experiential marker *-guo*. This issue requires more attention.

Since the possessive marker *-de* was used by two participants (A2 and A6) whom did not use classifiers during the tasks; this morpheme is hence considered to require less processing procedures than classifiers. Therefore, the possessive marker *-de* should be located at a lower stage in the PT-hierarchy than the classifier, as in the case of previous studies. However, the question is why the attributive marker *-de* and the experiential marker *-guo* were not used by more participants, and thus come after the classifiers in the implicational table (Table 16). Previous studies predict that the attributive marker *-de* and the experiential marker *-guo* (as in the case of possessive marker *-de*) require less processing procedures than classifiers, and therefore both morphemes should proceed the classifiers in the PT-hierarchy.

Despite the presented results in Table 16, I argue that the attributive marker *-de* and the experiential marker *-guo* nevertheless should be located at the same stage in the PT-hierarchy as the possessive marker *-de*, namely stage 2, and a thorough discussion concerning this follows in section 8.1.2.

8.1.2 Attributive marker *-de* and experiential marker *-guo*

The reason for the attributive marker *-de* and the experiential marker *-guo* being used to a smaller extent than the classifiers is mainly due to the design of the elicitation tasks. Although the tasks included situations where the participants indeed had the option of using both of the two morphemes in their speech, the number of obligatory contexts for the usage of these morphemes were almost equal to zero. In other words, even though the participants might have acquired and were able to use these morphemes in their speech, they were more or less never required to actually use them.

Looking into this more closely, there were no obligatory contexts for using the attributive marker *-de* in any of the two elicitation tasks, but there were several occasions where the usage of this morpheme was an option. Concerning the experiential marker *-guo* on the other

hand, there was one question in the Interview-task (question number 6) which main purpose was to elicit this particular morpheme. However, despite the inclusion of such a question, one must be aware that the usage of *-guo* is only obligatory when one has the intention of giving a confirming answer. Even though it is a possibility to use *-guo* when stating a negative answer to a “*guo-question*” (following the structure: *negation + verb + -guo*), one also has the option of using the negating phrase “*mei you*” (没有), which both participant A5 and B5 did when completing the Interview-task. The only participants that did not use the experiential marker *-guo* in obligatory contexts were participants A1, A3, A6 and B4.

This leads to another issue, namely the question why participants A1, A3, A6 and B4 did not use the experiential marker *-guo* when required. Only speculations can be made concerning what any possible reason might be, but my fairest guess (especially concerning the participants of group A) is that this is a result of insufficient input. This assumption is mainly derived from the fact that the participants of group A had not covered the experiential marker *-guo* in class before participating in the present study. In order to speculate on this issue, the case of participant A1 is discussed. Observing the implicational table (Table 16) one can see that participant A1 in total used 3 morphemes, the possessive marker *-de* (stage 2), the attributive marker *-de* (stage 2) and classifiers (stage 3). Thus, participant A1 was able to use two morphemes located at stage 2 in the PT-hierarchy, but did not use the experiential marker *-guo* (stage 2) in an obligatory context.

According to PT, the learner uses available input and the given learning device when acquiring the procedural skills necessary for processing different grammatical structures of the target language. In other words, if no input of certain grammar is given, the learner cannot acquire it. Hence, even if a specific grammatical structure is located at a stage in the PT-hierarchy that includes other grammatical features that the learner has already acquired, the specific grammar in question cannot be acquired by the learner unless he or she is provided with enough input. Therefore, the reason for participant A1 being able to use some specific morphemes located at stage 2 in the PT-hierarchy (the possessive marker *-de* and the attributive marker *-de*) but not another (the experiential marker *-guo*) could therefore be considered as the result of the learner not having had access to sufficient input concerning the proper use of the experiential marker *-guo*.

8.1.3 Classifiers

As Table 16 displays, 12 participants (same amount as for the possessive marker *-de* (stage 2)) used classifiers (stage 3) when completing the elicitation tasks. Interestingly enough, classifiers (stage 3) were more frequently used than some morphemes located at stage 2 in the PT-hierarchy, and this issue is discussed in this section.

Not only did 12 participants use classifiers in their spontaneous speech production, but each participant used classifiers at more than five different occasions. This constitutes a firm indication that all 12 participants indeed have acquired and mastered this grammatical morpheme. However, before making any conclusions, one must consider whether there is a possibility that the sentence structure for classifiers (*Demonstrative/Number/Quantifier + CLF. + N*) can occur as an invariant form or chunk. Despite it being possible for a learner to learn this kind of sentence structure in a “chunk-like” manner, i.e. “learn it” without having acquired the necessary processing procedures, I argue that this is not likely to be the case in the present study. This assumption is based on the fact that the participants overall used classifiers to a great extent in various situations, which makes it highly improbable that the “classifier-structure” would be a chunk. However, there might still be a slight chance that a few participants with lower language proficiency could have learned using classifiers as chunks, and in order to illustrate this, the case of participant A3 is exemplified.

Participant A3 used classifiers to the least extent compared to the other participants that did, but A3 did in fact use classifiers at 6 different occasions. In these different situations, she used the classifier *ge* (个) in combination with the numerals “one” and “three” and with different nouns (such as the words for “basket” and “stone”). Even though this can be interpreted as A3 having acquired the “classifier-structure”, the fact that she only used one kind of classifier in combination with numerals and nouns constitutes the suspicion that there still exists a slight possibility for this “classifier-structure” being a chunk (e.g. in the sense that whenever a numeral is placed before a noun the classifier *ge* is placed after the numeral). The greater variation of different classifiers used in combination with different nouns, numerals, demonstratives etc., the smaller chance of the “classifier-structure” being a chunk. When examining the other participants’ speech production, it is evident that the diversity of different combinations using different classifiers increases the further down in the implicational table (Table 16) the participants are located. This indicates that the higher language proficiency the participant possesses, the more likely it is that he or she can use a wider range of classifiers in

varying combinations. Thus, the possibility of the participants with higher language proficiency having learned classifiers as chunks is renounced, whereas the (very slight) possibility for learners with lower language proficiency having done so remains.

Allow us to recapitulate to the question of why classifiers (stage 3) were more frequently used than other morphemes that are located at stage 2. Is the reason for this solely due to the participants having acquired this morpheme and not the other morphemes at stage 2, or are there other factors contributing to this outcome? Speculating about why classifiers were used more frequently than other morphemes, this might be due to the design of the elicitation tasks. If the elicitation tasks were very suitable for eliciting this particular morpheme, concurrently, the same elicitation tasks could therefore be less suitable for eliciting other morphemes (e.g. the morphemes at stage 2 in the PT-hierarchy), thus resulting in classifiers being more frequently used than other morphemes. In other words, the fact that classifiers (stage 3) were used to a greater extent than morphemes located at stage 2 might not be directly related to which stage these morphemes are located at in the PT-hierarchy, but rather due to the design of research and methodology.

8.1.4 Relative clause marker *de*

As described in section 4.2, the *associative phrase* is a general strategy of modifying nouns or noun phrases in Chinese. By using the marker *-de* (的), two noun phrases are linked together, and depending on the semantic meanings of the noun phrases involved, the meaning of the entire phrase may differ. In other words, the same phrasal structure is used for modifying nouns or noun phrases regardless of the modifier being an adjective, noun or clause. The present study has mainly focused on four different associative phrases, and interestingly enough, despite these phrasal structures being fundamentally identical, the relative clause marker *de* is located at a different stage (stage 4) in the PT-hierarchies of previous studies than the rest, which are located at stage 2.

Since the semantic meaning of the modifier determines the function and meaning of the entire phrase, the informational exchange between the modifier and the head noun is hence determined by the information contained within the modifier. In relation to the relative clause structure (stage 4), this indicates that there is a greater exchange of information between the relative clause and the head noun in comparison to the information exchanged between the noun, pronoun or adjective and head noun in the structures located at stage 2. Roughly speaking, the more information that is to be exchanged, the more processing procedures are

required for the learner to have accessed, and this implicitly indicates that the relative clause marker *de* in that case should be used by learners with a relatively high language proficiency in Chinese. A correlation such as this can indeed be observed in the implicational table (Table 16) where a total of 6 participants, all from group B and C, used the relative clause marker *de*. In relation to this, it should also be noted that the possessive marker *-de* (stage 2) was used by totally 12 participants from all three groups. This strongly indicates that the relative clause marker *de* indeed requires more processing procedures than the other three morphemes, and should therefore be located at a higher stage in the PT-hierarchy. However, the question is whether the relative clause marker *de* should in fact be located at stage 4. A further discussion concerning the location of the relative clause marker *de* in the PT-hierarchy follows in section 8.3.

8.2 Discussion – morphemes and structures used by 3 or less participants

The morphemes and structures that were used by 3 or less participants (only including participants from group B and C) are located at stages 2, 3 and 5 in the PT-hierarchy (except for the temporal structure *-de shihou*, the *yihou*-structure and the *yiqian*-structure), but do not follow an implicational pattern in accordance with the hierarchical predictions of PT. The reason for this is simply due to the collected data set being too small, and as a result, no implicational pattern can be distinguished. The sample size being insufficient is probably mainly a result of the elicitation tasks not being well suited for eliciting these morphemes and structures, or the number of participants being too small. Hence, no valid and reliable conclusions concerning these morphemes' and structures' locations in the PT-hierarchy can be made based on the collected data.

However, speculations can still be made in order to inspire future studies concerning these morphemes and structures. The following section (section 8.2.1) is dedicated to my collected thoughts concerning the *ba*- and *bei*-structures.

8.2.1 *Ba*-structure and *bei*-structure

Previous studies argue that both the *ba*- and *bei*-structure are to be located at stage 5 in the PT-hierarchy. Although the collected data cannot corroborate nor falsify this, it is still relevant to discuss this claim.

Referring to Table 15, throughout the elicitation tasks there were in total 9 obligatory contexts for the *ba*-structure and 1 obligatory context for the *bei*-structure. The *ba*-structure was

required to be used by 7 participants (from group A, B and C), however, only two participants (B4 and C2) actually attempted to use it in their speech, but failed to do it correctly. The *bei*-structure on the other hand was only required once in the case of participant C3, but he failed to use it correctly. In connection to this, it should also be noted that all of these participants (except for A1 and B4) managed to use the relative clause marker *de* (stage 4) correctly when completing the elicitation tasks.

What these results indicate is that learners with a relatively high language proficiency in Chinese had difficulties using these two structures properly in their spontaneous speech. Speculating about plausible reasons for this, in the cases of the *ba*-structure, the different statements were all grammatically incorrect, and this might be due to the participants not having accessed the required processing procedures or due to insufficient linguistic input. However, in the case of the *bei*-structure, the statement was grammatically correct, but the semantic meaning was not what the participant wanted to convey. This might be an indication that the participant, at the time, had not fully acquired this structure, and instead employed the *bei*-marker in accordance with his own interlanguage grammar, and not the grammar of the target language. For instance, according to the participant's interlanguage, the *bei*-marker might be a lexical morpheme used as a prefix to the verb which is used when expressing passive aspect. Even though the present work cannot define the reasons for these incorrect statements, future research might be able to.

Speculations aside, it is still evident that the learner is required to have attained a relatively high proficiency in the target language in order to accurately use both the *ba*- and the *bei*-structure correctly in his or her spontaneous speech. Hence it is important to continue researching these structures for the purpose of ascertain their location in the PT-hierarchy.

8.3 Discussion – the location of the relative clause marker *de* in the PT-hierarchy

The question of whether the relative clause marker *de* should be located at stage 4 in the PT-hierarchy was first stated in section 8.1.4. Both Zhang (2001; 2004) and Gao (2005) suggests that the relative clause marker *de* is to be located at stage 4 in the PT-hierarchy, but the present study proposes that the relative clause marker *de* should in fact be located at stage 5. The origin of this contradiction is explained in this section.

Zhang (2001) argues that the relative clause marker *de* is an inter-phrasal morpheme, due to it having the function of linking the information of the relative clause together with the head noun. This is not an incorrect statement, but it fails to give a complete picture of the Chinese relative clause. Zhang focuses on the relation between the relative clause and the head noun, which are linked together with the relative clause maker *de*. However, she seems to ignore the fact that the relative clause itself most certainly needs to be combined with another clause in order to function properly in a semantic context. This can be exemplified (30) using Zhang's own example found in her work (2001):

(30) [教你口语的]老师叫什么名字?

[jiāo nǐ kǒuyǔ de] lǎoshī jiào shénme míngzi?

[teach you oral-language REL.] teacher call what name

what is the name of the teacher [who teaches you spoken Chinese]?

In the example, one can see the relative clause in the brackets, and one can also see how the relative clause is connected to the head noun, which in turn is connected to a VP. If the relative clause and head noun is not combined with the VP, the semantic context of the clause would be incomplete. Even though there may exist exceptions (e.g. in certain conversational contexts where the head noun and VP are implied or previously mentioned), this example constitute that the construction of a relative clause does not only involve an inter-phrasal process, namely combining the relative clause with the head noun. It also includes the process of combining the information of the relative clause and head noun with the VP. In order to accomplish this, the speaker must be able to unify information across clauses, and be able to differentiate a sub-clause from a main clause, which in turn requires the speaker to have acquired the processing procedures located at stage 5 in the PT-hierarchy. Therefore, the present study suggests that the relative clause marker *de* should be located at stage 5 in the PT-hierarchy.

8.4 Discussion – the location of the sentence linking elements in the PT-hierarchy

The 3 sentence linking elements unique for the present study are the temporal structure *-de shihou* (的时候), the *yihou*-structure (以后) and the *yiqian*-structure (以前). These structures are suggested to be located at an *intra-stage* within stage 4 in the PT-hierarchy. This *intra-stage* is henceforth referred to as *stage 4b*, and this proposition is discussed in this section.

Firstly, it must be clarified that the data set of the present study is much too insufficient, thus no corroborations concerning these three structures' de facto location in the PT-hierarchy can be made. This being said, looking at the implicational table (Table 16), it is evident that these structures were exclusively used by learners with high language proficiency. The temporal structure *-de shihou* (31) and the *yihou*-structure (32) were both used by 3 participants from the groups B and C, and the *yiqian*-structure (33) was used by one participant from group C.

(31) 他接受那个帽子的时候自行车的男孩子给他三个梨

tā jiēshòu nà ge màozi de shíhou zìxíngchē de nánháizi gěi tā sān ge lí
he receive that-CLF. hat TEMP. bike-ATT. boy give he three-CLF. pear
 when he receives that hat the boy (with) the bike gives him three pears

(32) 他骑车以后他丢了那个篮子

tā qí chē yǐhòu tā diū le nà ge lánzi
he ride bike YIHOU he lose ASPECT that-CLF. basket
 after he rode the bike he lost that basket

(33) 他继续以前那两个男孩子他们看见那个有自行车的男孩子丢了帽子

tā jìxù yǐqián nà liǎng ge nánháizi tāmen kànjiàn nà ge yǒu zìxíngchē de nánháizi diū le tā de màozi
he continue YIQIAN that two-CLF. boy they see that-CLF. have bike REL. boy lose ASPECT he-POSS. hat

before he continues those two boys they see (that) that boy that has a bike has lost his hat

The fact that only learners with high language proficiency used these three structures is an implicit indication that the structures might be located at one of the higher stages in the PT-hierarchy. However, this does not explicitly favor the idea of them being located at for

instance stage 5, and therefore the composition and the information exchange of these structures must be further analyzed.

The compositions of all three structures follow a pattern much similar to the one of the relative clause marker *de*, connecting the information of two related clauses using a linking element. However, there is a major difference between the relative clause marker *de* and the three sentence linking elements. In the case of the relative clause marker *de*, the relative clause must be connected to a head noun which in turn must be connected to a VP in order to create a complete semantic context. These conditions must be fulfilled, otherwise the semantic meaning is incomplete, however, the sentence linking elements are in fact not required to fulfill the same kinds of conditions. Even though these elements connect the information of two semantically related clauses, both C1 and C2 can have a proper semantic function on their own (although there might exist certain exceptions). In other words, the procedures when using the relative clause marker *de* involve the process of the speaker being able to differentiate a sub-clause from a main clause. However, the usage of the sentence linking elements involves the process of linking two clauses that are solely related in a semantic context, but do not necessarily have the relation of a sub-clause and a main clause. Hence, using the sentence linking elements probably do not require the learner to have accessed the processing procedures of stage 5 in the PT-hierarchy (as for using the relative clause marker *de*) due to this utilization not involving the process of differentiating a sub-clause from a main clause. It is therefore more probable that the required processing procedures are located at a lower stage, namely stage 4, but at one of the higher *intra-stages* within this stage, stage 4b. If this is the case, it provides a fairly reasonable explanation to why only high proficiency learners used these structures.

In summary, all three sentence linking elements involve the exchange of information between clauses, and only high proficiency learners used these during the elicitation tasks. I therefore argue that there is a possibility that the temporal structure *-de shihou*, the *yihou*-structure and the *yiqian*-structure require the learner to have accessed the processing procedures of the higher intra-stage 4b in the PT-hierarchy in order to actively use these in spontaneous speech. However, due to the insufficient amount of data, more research regarding this issue needs to be made.

8.5 Discussion – Methodology

The four following sections discuss instances and issues concerning the utilized methodology and research design of the present study.

8.5.1 Observer’s Paradox

The unavoidable phenomenon when conducting any kind of research involving human participants is called the “Observer’s Paradox”. It can be described as the inevitable fact that a participant, to a certain degree, will be affected by the knowledge of being observed during the time of completing a task, and this will of course influence the results. This situation cannot be avoided, but the researcher can minimize the influential factors of observation by making them less obvious for the participant (Podesva and Sharma, 2013). In the present study, attempts for reducing negative influences of the “Observer’s Paradox” were made by trying to positively encourage the participants before and during the tasks, and to create a relaxed atmosphere.

8.5.2 Inconsistencies in procedure

A minor inconsistency in the procedure related to the Retelling-task was documented. When the participants of group A watched the video, I was sitting outside the room in which the task was done, and did not enter the room until the video had ended. When the participants of group B watched it, I was sitting in the same room, quite far behind the participants during the whole time they watched the video clip. When the participants of group C did it, I was sitting in front of them during the whole time they were watching the video.

In relation to what was mentioned about the “Observer’s Paradox” (section 8.5.1), one cannot exclude the possibility of this inconsistency having had a negative influence on the participants, and if so, the degree of negative influence might differ among the groups. However, since this minor inconsistency in procedure did not occur during the time of the participants producing spontaneous speech of Chinese, it is not considered as bias.

8.5.3 Informal learning of the participants

No information concerning the participants’ informal learning of Chinese was included in the present study, and the lack of such information might result in providing an insufficient picture of the participants’ language proficiency in the target language. The aforementioned information is a factor influencing the replicability and generalizability of the study, and it is

regrettable that it was not collected (Mackey and Gass, 2016). Therefore, the suggestion for future studies is that information concerning the participants' informal learning of the target language is gathered.

8.5.4 Alternative methodology

The following section delineates suggestions of alternative methods, and the reasons for these not being included in the present work.

A cross-sectional research design was utilized in the present study, and the alternative would be a longitudinal research design. However, longitudinal studies mainly require two important factors, more precisely, time and willing participants. Longitudinal studies usually last for several months, even years, and it is crucial that the participants are willing to continue participating during the entire process. Both of these factors were extremely limited resources in the present work, which in return resulted in the construction of the already mentioned cross-sectional research design.

Concerning the elicitation tasks of the present study, these could have been complemented by additional tasks. A combination of several tasks, each focusing on eliciting specific morphemes and structures relevant for the study, would have generated both more consistent and a vastly larger amount of corpus. Unfortunately, the time constraints of the present work made it impossible to include a disproportionate number of tasks, leaving no choice but to restrain the amount of elicitation tasks.

8.6 Discussion – Participants

The following sections concern instances related to three individual participants, namely participant A5, A6 and B4. Each case is discussed separately.

8.6.1 Extra word – A5

At one point when performing the Retelling-task, participant A5 asked how one says the word “boy” in Chinese (nánhái, 男孩). I told him the word one time only, and no instructions of how to use the word syntactically were given. This word is not included in the wordlist, which means that no other participant was given this kind of assistance when performing the same task. However, this instance is not considered to have had a negative impact on the validity of the present work.

Referring to the framework of PT, the first stage of language acquisition involves gaining access to the words in the target language, simply because without words syntax cannot be produced. Nonetheless, despite words being a prerequisite for the production of syntax, mere lexical knowledge is no guarantee for actually being able to produce syntactical constructions that are grammatically correct. In this and other cases, e.g. Zhang (2004), the only help given was a single word without any references of how to use it syntactically, which signifies that this instruction should not have had any crucial impact on the informant's production of speech. In other words, giving the participant an "extra" word did not in itself help him to determine how use it syntactically. Hence the generated data can be considered valid and reliable.

8.6.2 Incompletion of task – A6

Participant A6 completed the Interview-task, but did not agree to do the Retelling-task. Although this resulted in a much smaller sample size of her spontaneous speech production, it cannot be considered to have influenced the outcome of the present study to any larger extent.

8.6.3 Chaozhou dialect – B4

Participant B4 stated his mother tongue being Chaozhou dialect. This is a sub-dialect of the Min dialects that are primarily spoken in the Fujian province (China), and is in many aspects very different from Mandarin Chinese (Sun, 2006). Since the present study concerns Swedish L1 speakers' second language acquisition of Chinese, this is a matter that needs to be addressed. Only speculations can be made, but some major points are discussed down below.

To begin with, we should remind ourselves that the processing procedures of PT can be applied to any language, and is not influenced by the L1 of the learner. Since participant B4's L1 is a Chinese variety that is not Mandarin Chinese, the developmental process of acquiring Mandarin Chinese as a second language should therefore not be any different for him than for any other participant.

Considering participant B4's performance during the elicitation tasks, it would not be farfetched to assume that his proficiency in Mandarin Chinese is on the level of a learner, and not on the level of a native speaker. In both Table 15 and Table 16, it can be observed that B4 used the least number of morphemes of all participants in group B, and he did not succeed to use the *ba*-structure grammatically (a structure at stage 5 in the PT-hierarchy). What is also worth noticing (looking at Table 16) is that participant A1 surpassed B4 by using one more

morpheme, namely the possessive marker *-de* (stage 2 in the PT-hierarchy). However, since B4 used the attributive marker *-de* (stage 2 in the PT-hierarchy), classifiers (stage 3) and attempted to use the *ba*-structure (stage 5), it is most likely that B4's language proficiency is approximately on the same level as the other participants of group B, but not on the same level as a native speaker of Mandarin Chinese.

Despite the fact that this participant has stated the Chaozhou dialect as his mother tongue, it does not exclude the possibility of his proficiency in Swedish being the same as an L1 speaker's. There are two main reasons for this notion:

1. An individual can have several L1's (so called bilingualism and multilingualism), and if that is the case, Swedish could be his other L1 (Meisel, 2011).
2. Assuming that the Chaozhou dialect is the only L1 of participant B4, the fact that he has lived in Sweden for a long time (presumably since birth or early childhood), his proficiency in Swedish could indeed be the same as an L1 speaker's. Swedish could maybe even be considered his "primary language" due to living in a country for a very long time where Swedish is the official language. The amount of linguistic Swedish input and output that he has received and produced over time could therefore much likely be considerably greater than the amount of his L1, which would result in "native-like" proficiency in Swedish (Kelly, 1969).

Despite that the Chaozhou dialect is the stated L1 of participant B4, and that only speculations can be made concerning his proficiency in Swedish, his developmental process of acquiring Mandarin Chinese as a second language should still, in accordance with PT, be the same as the other informants'. Therefore, the speech production data of this participant is accountable and valid in the present work.

8.7 Future research

This section is dedicated to shed light on several aspects that tentatively should be the objectives of future research within the field of second language acquisition of Chinese and the framework of PT.

In this chapter, it has already been addressed that the collected data set of the present study is rather small. Since only a very large data set with great linguistic variability can provide a basis for making valid generalizations concerning the developmental process of Swedish L1

speakers' second language acquisition of Chinese, more linguistic data must be collected. In order to do so, longitudinal studies concerning Swedish L1 speakers' second language acquisition of Chinese should be carried out, focusing on the acquisition processes of specific groups of participants over a long period of time. Not only would such studies hopefully provide a larger data set with greater linguistic variability, but also make it possible to derive more accurate conclusions concerning the developmental processes of Swedish L1 speakers' second language acquisition of Chinese.

Concerning the Chinese morphemes and structures discussed in the present study, the following are suggested to be the objectives of future investigations: the relative clause marker *de*, the *ba*-structure, the *bei*-structure, the temporal structure *-de shihou*, the *yihou*-structure and the *yiqian*-structure. In the present study, these morphemes' and structures' locations in the PT-hierarchy have been discussed, however, due to the lack of sufficient and evidential data, their locations in the hierarchy can neither be corroborated nor falsified. Thus, future researchers are encouraged to further investigate these morphemes and structures in order to conclude their appropriate locations in the PT-hierarchy.

This section concludes the discussions of the present work. The next and final chapter summarizes the present study by answering the research questions.

9. Conclusion

This final chapter summarizes the present work by answering the research questions stated in the first chapter. Every research question is discussed and answered separately.

9.1 Answering the main research question

Firstly, it is relevant to recapitulate to the main research question of the present study:

Main research question

Do Swedish learners of Chinese as a second language use the same developmental stages as have been found in earlier studies regarding English-speaking learners (Zhang, 2001; 2004; Gao 2005; Wang 2011)?

It is relevant to once again point out that the data set of the present study is rather small and insufficient, which makes it very difficult to provide any general answers to the research questions of the present study. However, despite this issue, the findings and results show an implicational pattern corresponding to the predictions of previous studies. The issue of certain morphemes and structures not following the implicational pattern is believed to be related to the design of research and methodology, and the size of the collected data, rather than the predictions of previous studies being inaccurate. Hence, it is indeed very likely that Swedish learners of Chinese as a second language do use the same developmental stages as have been found in earlier studies regarding English-speaking learners. This claim falls in line with the predictions of PT, namely that the framework of this theory can be applied to any language, and that the acquisition process of learning Chinese as a second language is the same for all learners irrespectively of their L1.

9.2 Answering the subordinate research question

The subordinate research question of the present study is:

Subordinate research question

Should the locations of Chinese morphemes and structures within the PT-hierarchies of earlier studies be modified (in terms of removing, relocating or adding more morphemes and structures to the hierarchies) on the basis of grammatical descriptions and the generated findings of the present study?

In spite of the fact that the findings of the present study favor the possibility of Swedish learners of Chinese use the same developmental stages as have been found in earlier studies regarding English-speaking learners, the present study provides suggestions to modifications to the already established PT-hierarchies of previous studies. These suggestions are the following:

1. The relative clause marker *de* is to be relocated from stage 4 to stage 5 in the PT-hierarchy.
2. The sentence linking elements; the temporal structure *-de shihou*, the *yihou*-structure and the *yiqian*-structure are all to be added to *intra-stage* 4b in the PT-hierarchy.

Future researchers are encouraged to conduct investigations concerning these two suggestions. This can hopefully provide a more accurate picture of these structures' definite locations in the PT-hierarchy. See Table 17 for a complete overview of the hierarchies of previous research and the present study.

Table 17. Overview: Hierarchies of previous studies and the present study

	Processing Procedure	Information Exchange	Zhang (2001; 2004)	Gao (2005)	Wang (2011)	Present study (2017)
5	Sub.-clause procedure	Main and sub-clause	-	<i>ba</i> -structure	<i>bei</i> -structure <i>ba</i> -structure	Relative clause marker <i>de</i> <i>bei</i> -structure <i>ba</i> -structure
4b	S-procedure	Inter-phrasal information	-	-	-	Sentence linking elements: temporal structure <i>yihou</i>-structure <i>yiqian</i>-structure
4	S-procedure	Inter-phrasal information	Relative clause marker <i>de</i>	Relative clause marker <i>de</i> Topicalization	Topicalization: T(=O)SV(Comp) T(=O)(S)V(Comp)	Topicalization: T(=O)SV(Comp) T(=O)(S)V(Comp)
3	Phrasal procedure	Phrasal information	Classifier V-compl. marker <i>-de</i>	Adjunct fronting Classifier	Topicalization: T(=Adjunct)SV(O) Subordinate clause: adverbial clause coordinate clause	Adjunct fronting Topicalization: T(=Adjunct)SV(O) Subordinate clause: adverbial clause coordinate clause Classifier V-compl. marker <i>-de</i>
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 word order: SVO Possessive marker <i>-de</i> Adjective marker <i>-de</i> Attributive marker <i>-de</i>	Canonical SV(O): declaratives interrogatives (y/n, wh-, intonation) Topicalization T(=S)VO	Canonical SV(O): declaratives interrogatives (y/n, wh-, intonation) Topicalization T(=S)VO 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>
1	Word Lemma	Words Chunks	Single constituent	Invariant forms	Formulaic expressions	Single constituent Invariant forms Formulaic expressions

9.3 Summary

This concludes the present study concerning Swedish L1 speakers' second language acquisition of Chinese. The findings of this study advocates that the developmental stages of previous studies are the same for Swedish L1 learners of Chinese as for English L1 learners. However, suggestions to modifications of the locations of certain grammatical structures in the PT-hierarchy have been made, and future researchers are invited to further investigate these claims.

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Appendix A: Form for collecting personal information

All participants filled in this form in order to provide their personal information concerning gender, age, other languages they had previously studied, information concerning their present and total studies in Chinese and their experiences of visiting China.

Informationsblankett

Namn	
Ålder	
Kön	
Vilket språk är ditt modersmål?	
Kan du sedan tidigare och/eller har du studerat andra språk, i så fall vilka, och hur länge?	
Hur länge har du studerat kinesiska?	
Har du varit i Kina, om ja, vad gjorde du där (studerade/jobbade/reste etc.), och hur länge?	
Var studerar du kinesiska nu, på vilken nivå och hur många timmar/vecka?	

DATUM:

KODNAMN:

Appendix B: Interview questions

These are the 9 closed questions that the participants answered during the “Interview-task”.

Start with saying “Hello” in Chinese

1. 你叫什么名字? - What is your name?
2. 你好吗? /你今天怎么样? - How are you? / How are you today?
3. 你多大了?/你几岁了? - How old are you?
4. 你是哪国人? - From which country are you?
5. 你的老师是哪国人? - From which country are your teacher?
6. 你有没有去中国? - Have you been to China?
7. 你家有几口人? - How many family members do you have?
8. 你有什么爱好? - What are your hobbies?
9. 你想做什么工作? - What do you want to work with?

Appendix C: Wordlist

This is the wordlist given to the participants during the “Retelling-task”.

Pear - 梨(lí)

Fall/Drop - 落(luò)

Basket - 篮子(lánzi)

Scarf - 围巾(wéijīn)

Clean/Polish - 擦(cā)

Put/Place - 放(fàng)

Goat - 羊(yáng)

Bike - 自行车(zìxíngchē)

Steal - 偷(tōu)

Stone - 石头(shítou)

Run into - 撞(zhuàng)

Fall down - 掉落(diàoluò)

Help - 帮助(bāngzhù)

Give - 给(gěi)

Appendix D: Form of consent

All participants gave their consent by signing this form. All under the age of 18 were required to have a parent's signature and consent to be allowed to participate. The form contains information about the purpose of the study, the procedures of data collection tasks and that anonymity is guaranteed by replacing all real names with code names.

Undersökning om hur man lär sig kinesiska

Jag heter Magnus Brolin och är masterstudent vid Lunds universitet. Jag håller på med en undersökning om kinesiska som andraspråk, och behöver därför hjälp av elever och studenter som studerar kinesiska på gymnasiet och universitet. Undersökningen innebär att jag först gör en kort intervju och därefter diskuterar vi ett bildmaterial, och detta blir ett utmärkt tillfälle för deltagarna att använda sin kinesiska. Förhoppningsvis kommer denna undersökning att öka vår kunskap om hur svenska modersmålstalare lär sig kinesiska som andraspråk, och även vara till hjälp när det gäller att förbättra metoderna i undervisningen i kinesiska.

Alla namn kommer att ersättas med kodnamn så att det inte går att identifiera deltagarna. Det är dessa kodnamn som kommer att användas i alla rapporter. Det är bara jag och mina handledare som kommer att lyssna på det inspelade materialet och det kommer att förstöras när undersökningen är slutförd. Jag svarar gärna på frågor om undersökningen via e-post.

Jag har läst igenom ovanstående information och deltar i undersökningen

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Deltagarens namnteckning

Ort och datum

.....

.....

Målsmans namnteckning

Ort och datum

(om under 18 år)

.....

.....

Undersökarens namnteckning

Ort och datum