

Preface

This book contains two parts: the theoretical analysis of Mandarin additive particles: *hai*, *you* and *ye*, and children's acquisition of these particles.

Mandarin additive particles are investigated with respect to the information structure and their interaction with prosody. The major claim is that the various uses of these particles are related by virtue of their interaction with information structures. When they are followed by an accented focus in their c-command domain, a default focus structure arises, and a proposition with different entities from the presupposed one is added in the discourse. When the particles associate with a preceding accented focus, two possibilities arise: pure addition of contrastive topic or scalar addition. If the particles are accented themselves, they function as focus operated by an ASSERT operator, and they are also scope particles with different associates.

Mandarin additive particles are claimed to have different scopes and associates with respect to their interaction with prosodic prominence. Stressed *hai* and stressed *you* have a wide scope, in which case the associate is co-extensive with the whole VP, whereas stressed *ye* and unstressed particles have a narrow scope of the accented constituents. These particles have different presuppositions in these conditions.

The acquisition part explores the production and comprehension of these particles. A series of experimental studies have been conducted to explore 2- to 8-year-olds' production and understanding of different variants of Mandarin additive particles. The experiments of production are mainly elicitation tasks with picture description and video description, and for children under 3, a game play is designed to create a natural environment; the comprehension tasks are act-out tasks and truth-value judgment, and children are asked to give explanations to their judgments. The results show that like other languages, Mandarin additives are acquired as early as 2 years old for all the six variants. However, the comprehension patterns split with regard to different variants: children comprehend stressed *hai* and stressed *you* as early as 2, though they cannot interpret stressed *ye* and unstressed additives correctly until 7 years old, and a few children wrongly interpret these particles as stressed *hai*.

Our experimental results seem to suggest that children at a very young age have mastered the linguistic knowledge necessary to produce correct sentences with additive particles, such as that of scope, focus, c-command relation and even the idiosyncratic properties of different particles. However, children as old as 7 could not understand *ye* as well as the additives with a following focus. The incapability is caused by different presuppositions of stressed *ye* and stressed *hai* and *you*. To understand additive particles, children have to accommodate the presupposition to the context. Stressed *ye* presupposes a proposition which contains a different element from the host sentences of *ye*, and so is that of unstressed additives with a following focus. Following Crain & Thornton (1998), I assume that presenting sentences of stressed *ye* without its anaphoric presuppositions will render children's failure of accommodating correct presuppositions. The reason why children could do much better in stressed *hai* and stressed *you* cases is that their presupposition is anaphoric within the host sentence, and children need not accommodate the presupposition with different elements. In production, the presupposition is provided in the context, and children need not accommodate the presupposition, and so they can do well in the elicitation task.

It is further observed in our study that children tend to interpret stressed *ye* and unstressed additive particles as stressed *hai*. The default interpretation of sentences with additive particles is the wide-scope reading. Children adopt the same processing strategy as adults, and it also provides evidence to the “modularity matching model” of language processing theory.

前言

本书是在我 2009 年于香港城市大学所做的博士论文的基础上修订而成的，从选题、构思、拟定框架、理论论述、实验验证到最后成文，都得到了潘海华教授的悉心指导。本书的写作也得到了方立教授、李行德教授、胡建华教授、邓思颖教授、李宝伦教授、陈月红教授和杨小璐教授等各位老师和前辈的多方面指导，他们都曾在论文的撰写过程中给了我很多宝贵意见，也感谢多次跟我进行激烈讨论的李汝亚博士、张庆文博士、刘鸿勇博士以及香港城市大学的各位同学，没有他们的陪伴和鼓励，本书的写作过程会变得更加艰难。同时，还要感谢北京语言大学青年学者文库出版基金的资助，并由衷感谢北京语言大学出版社总编辑张健女士、责任编辑孙玉婷女士为本书的出版所付出的辛苦与努力。最后，特别感谢始终支持我的家人及所有给予我关怀和帮助的师友。本书的疏漏之处，敬请各位同仁指正！

本书主要研究内容为汉语中的添加算子“又”、“也”、“还”的理论和习得问题。添加算子是从焦点信息结构的角度对语言中表示添加的词进行的分类，这些词对句子中的焦点敏感，表示除了预设的部分以外，还有其他的选项也符合命题的陈述。

文献中一般将添加算子分为三类：*too* 类算子；*still* 类算子以及 *again* 类算子，汉语中相对应的添加算子分别为：“也”、“还”和“又/再”。各个语言中的添加算子所表达的意义基本相同，但是也各有自己的特点，汉语中的添加算子一般被看作是一种副词，在句中的位置比较固定，研究汉语的文献中这些词也是讨论的热点，但是从它们和焦点关联的角度进行的探讨还不多见，另外，添加算子和句中的焦点重音关系密切，句子的焦点位置影响了句子的真值条件，添加算子的焦点在句子中可以出现在其右边，也可以出现在其左边，并且添加算子本身也可以重读，这种焦点算子和句子重音的互动有着系统性的规律，本书将从焦点解读的角度对汉语中的添加算子进行系统性的研究。

此外，对添加算子的儿童语言习得研究发现，儿童很早就可以产出添加算子，但是对添加算子的理解却很晚，有时要到 6、7 岁才可以正确解读，这就是一语习得中的理解—产出不平衡的现象，这种现象在很多语言中都存在，已有的研究包括德语、英语、荷兰语、日语和粤语等语言，但汉语添加算子的习得却没有相关研究。本书将从焦点关联的角度对汉语儿童添

加算子的习得进行研究,并将研究结果同其他语言的研究进行对照,以找出儿童语言习得中的普遍发展规律。

研究的章节安排如下:第一章对全书的理论背景进行介绍,第二章到第四章分别讨论了“也”、“还”和“又”和焦点的关联及解读,第五章系统总结了汉语中的添加算子和焦点的关系。第六章到第八章是对汉语儿童添加算子习得的讨论,第九章是对整个研究工作的总结。下面是各章的详细介绍。

第一章先对添加算子的研究相关的理论问题进行了介绍,本研究以 Rooth (1985, 1996) 的选项语义学 (alternative semantics) 作为焦点研究的理论框架,采用三分结构 (Heim 1982, Partee 1991) 对焦点结构进行表达,同时也讨论了和句子解读相关的事件语义学的有关概念,并在此基础上提出了汉语添加焦点算子研究所涉及的问题,概览了全书的结构。

第二章讨论了添加算子“也”与焦点的关联、辖域的确定以及所引出的预设。如果焦点成分出现在“也”的 **c-command** 的范围内,“也”与焦点就形成了一个典型的焦点结构,在其 **c-command** 范围的成分都有可能成为“也”的焦点,“也”的语义可以参照 Krifka (1999) 中关于添加焦点的解释,表征为: $[ADD1 [\dots F1 \dots]]: [\dots F \dots](\exists F' \neq F [\dots F' \dots])$, 也就是除了预设的成分外,在选项集中还存在另外一个不同的选项也满足句子的语义要求。此外,本章还对“也”和其他焦点算子的互动进行了讨论,同时提出在汉语中“也”也满足“唯一不同”的要求 (**one-distinction requirement**), 只是这个不同不仅限于句中重读的对比成分,也可以是语境中的不同命题。“也”的第二个变体是重读的“也”,当“也”重读时,“也”本身成为句子的焦点,受 **ASSERT** 算子的控制,“也”的辖域是其左边的成分,添加的成分是句子的对比话题,而非焦点,右边的成分应该和其预设中的谓词成分相同,重读“也”不一定遵守“唯一不同”的要求。“也”的第三个变体是焦点出现在“也”左边,焦点成分是对比焦点,而此时焦点成分的语义是有歧义的:既可以表示纯添加的语义,也可以和“连”连用形成等级添加焦点 (**scalar additive particle**)。此外本章还讨论了“也”的预设问题,提出“也”的预设可以引入 (**accommodate**) 到语境中来。

第三章关于“还”的研究也将“还”分为三个变体:焦点前“还”,焦点后“还”和重读“还”,添加算子“还”表示增量义 (**incremental requirement**)。焦点前“还”和焦点前“也”一样,引出一个典型的焦点结构,添加一个和预设成分不同的成分,而焦点后的“还”也可以表示等级添加,但是和“连……也”不同,“连……还”出现的环境要受到更多的限

制，这种限制和“还”的基本语义相关。和非重读的“还”不同，重读的“还”的辖域为整个命题，重读“还”和完成体、表示完成的动词情状和一些比较句不相容，这些限制和其增量要求有关。此外，和“也”相同，“还”也允许预设引入。

第四章关于“又”的讨论也采用和前两章相同的方法，从焦点关联的角度将“又”分为三个变体：焦点前“又”、焦点后“又”和重读“又”。与“也”和“还”不同，除了表示添加之外，“又”对添加的命题多了时间序列上的要求。焦点前的“又”也引出了一个典型的焦点结构，表示除了预设成分外，还有其他选项满足命题要求，而且这个选项在时间序列上要晚于预设的命题。焦点后的“又”只能表示纯粹的添加，没有等级添加的语义，而重读的“又”也是以整个命题作为其辖域，表示“重复”的意义。此外，本章还对和 *again* 类添加算子的理论问题如“同事件论元效应”(same eventuality argument effect)、**“动态要求”(dynamicity requirement)**、和“又”同现的时态要求、“又”的预设及其重复义(repetitive)和恢复义(restitutive)的关联等问题进行了探讨。

第五章对“也”、“还”、“又”的焦点关联进行了总结，并对不同的添加算子变体的辖域、添加成分、语义要求等进行了对比研究，用表格的形式对汉语的添加算子进行了系统性的解释。

从第六章开始是对汉语儿童添加焦点算子的习得研究的介绍。第六章回顾了其他语言中对添加算子的习得研究，在添加算子的习得研究中发现了理解—表达不对称的现象，本章提出了汉语儿童习得研究中的相关问题。

第七章报告了本研究对汉语儿童添加算子的生成实验，实验对象为母语为汉语的儿童，分为两个年龄段：2;00-2;06 的儿童主要采用游戏的方法来采集数据，对于 2;06 以上的儿童采用游戏法和图片/视频描述法进行生成实验。实验的结果发现：汉语儿童 2;00 多的时候就可以正确生成“也”、“又”、“还”三组添加算子，并能对这三组添加算子的不同变体进行区分，很少犯错。这说明汉语儿童很早就能掌握以下知识：重音知识、辖域的确定、预设的关联、选项集的确定等知识，而且这些知识出现得很早，在习得这些知识的过程中缺乏否定的证据。此外，对这些知识的习得在多种语言中都能发生在早期，具有普遍性的特点，这些都为语言天赋论(language innateness)提供了支持。

汉语儿童对添加算子的理解实验在第八章进行了讨论。跟生成实验不同，对添加算子不同变体的理解呈现了不平衡的特征。根据焦点算子和焦点的关联特征，实验选取了焦点前的“还”，重读的“也”、“还”、“又”四

个变体。焦点前的添加算子有着共同的焦点结构，即添加成分和预设成分有所不同，因此实验选取最常出现的“还”作为实验对象，代表了焦点前的一组添加算子。焦点后的添加算子涉及等级添加等问题，在本次研究中暂不涉及这方面的实验。而重读的添加算子添加成分各不相同：重读的“还”是同质添加、重读的“又”添加的成分和预设成分相同，只是有时间序列上的要求，而重读“也”添加的是和预设不同的成分。对于 2;06 以下的儿童，采用游戏法进行理解实验，而对于 2;06 以上儿童，使用图片 / 视频等让其进行真值判断实验。实验结果表明：2;06 的儿童就可以很好理解重读“还”，其次是重读的“又”，而对于焦点前的“还”和重读的“也”，一直到 6-7 岁才可以理解，而且在理解时，汉语儿童的错误比较多的是将非重读的“还”和重读的“也”理解为重读的“还”。这种不同添加算子变体理解之间的不平衡以及理解和生成之间的不平衡需要合理的解释。通过考察添加算子陈述和预设的关系，本研究发现：儿童对添加算子的理解障碍不是由其缺乏预设、辖域等知识引起的，而是由于受认知能力的限制，不能对预设进行引入而造成的。这和其他语言的添加算子理解实验有相同的观察，而本研究通过对汉语不同添加算子变体的进一步研究给出了不同的解释。

第九章对汉语添加算子的理论和习得研究做出了总结，并对将来要完成的相关研究进行了进一步介绍：理论方面，还可以考察更多的和添加算子有关的现象，比如添加算子的重复、添加算子的语气作用等，同时还可以参考限制焦点算子等其他焦点算子的重读问题进行更系统的研究；习得方面，可以关注等级添加算子的习得，在研究添加算子和预设、辖域等关系的同时，对等级序列、语用蕴含等知识也进行考察。此外，还可以对其他焦点算子进行研究，看这种生成—理解的不平衡现象是否普遍存在，以进一步探讨引起这种不平衡现象的原因。

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Chapter 1 Overview and Background

1.1 Overview

We are concerned in this book with what are called *additive particles*. Expressions falling under this rubric come in three terms in Chinese: *hai* (“still”, “another”), *you* (“again”) and *ye* (“too”, “either”, “also”). Our focus of attention is the issues of the semantics and pragmatics of these particles in adult and child grammar.

In the literature of focus theory, it is agreed that there are generally three types of focus particles, namely, the restrictive, the additive and the scalar (including scalar additive) particles. These three kinds of focus particles are different in their focalizing ways and focusing domains. As the name suggests, focus particles should associate with foci. However, different from restrictive particles, additive particles are claimed to always apply to the topic of utterances in contexts (Krifka 1999, Dimroth 2002). Since the contribution of additive particles is mainly on the presupposition part, it is claimed that the organization of the coherent discourse, instead of the sentence, is the appropriate context for analyzing additive particles.

Although the particles under each of the three categories are thoroughly studied as a group, no systematic analysis has been provided due to the complexity of the factors such as prosody, syntactic position and the semantic and pragmatic effects. As Nederstigt (2003) addresses, “this approach of generalizing the characteristics for all focus particles from the analysis of only a few ‘prototypical’ particles fails when the analysis is applied to particles that are less common” (p18). The members of additive particles provide an illustration to this view, since each of them shows its own characteristics which are not fully specified or even run against the general theory of additive particles. In this book, I will focus on the subset of the additive particles in Mandarin Chinese, which include *hai*, *you* and *ye*, and show that the semantics of additive particles is more complex than it appears to be. Chinese additive particles will be examined systematically and a picture of these particles will be provided semantically and pragmatically.

The other aim of this study is to probe into the acquisition pattern of additive particles in Mandarin. In the literature of first language acquisition, a

phenomenon is discussed that the comprehension of additive particles lags behind their production. Although this phenomenon has been observed, no satisfactory explanation has been provided yet. I conducted experiments in the production and comprehension of Mandarin additive particles and found that the production-comprehension asymmetry exists in the acquisition of Mandarin additive particles. I claim that this asymmetry is due to children's lack of capability to accommodate presuppositions, and it is the absence of cognitive ability rather than linguistic knowledge that is responsible for the delay of comprehension of additive particles.

Thus, the contribution of the study is two-fold: a systematic analysis of Mandarin additive particles and the acquisition pattern of these particles.

The introductory chapter is meant to set the scene for what is to come. It is organized in two parts: the theoretical framework and the research issues.

1.2 General Review of Focus Particles and Additive Particles

1.2.1 Focus Particles and Focalization

In languages, there are various ways of marking focus: by syntactic structures (*e.g.* the cleft sentence), by focus markers (*only*, *too*, etc.), by pitch accents (a general device found extensively in languages, see Jacobs 1983, König 1991), or by the combination of these devices. I am mainly concerned in this book with the group of focus particles, or “focalizers”, which are considered as “relational items” in literature, since their value exists in the relation with other elements in the sentence or in the discourse, which is referred to as the domain of application of the particles. The meanings of the particles decide the property of the relations among the focus and other members in its alternative sets. Two components are involved in the contribution of the focus particles to the meaning of sentences: the sense of focus particles and the scope of these particles.

Focus particles and focalization are generally analyzed from several dimensions. Generally, focus particles always take the elements with the prominent stress as their focusing domains. However, in some cases, where focus particles themselves can be stressed, the interpretation and the representation render a problem to the focus theory.

Syntactically, it is generally claimed that focalizers, or focus operators, are always conjoined to the XP of the focus phrases and c-command them. This

association is not necessarily done at the surface level, but also at the underlying “logical form” level, and thus the focusing domain at that level is called an f-command domain to distinguish from the c-command domain at the surface level (Hajičová, Partee & Sgall 1998: 167). Whether focus association is computed linearly or not is still under discussion.

The distribution of accents together with syntactic structures is crucial in determining the focus marking in a sentence (Jackendoff 1972, Kadmon 2001, Selkirk 1986). Jackendoff proposes that when prosody marks the focused constituent in a sentence, the focalizer will associate with this constituent if it is in its range. However, if the stressed constituent is outside the range of the focalizer, the sentence is not acceptable¹. The so-called “free focus”, which is not restricted by a focalizer, but is marked with a stress, is bound by a covert operator, ASSERT operator, in Jacobs’ term. Krifka (1999) further distinguishes three kinds of assertions: normal assertion, scalar assertion and emphatic assertion. Emphatic assertion is defined in such a way that it is semantically stronger than any other contextually relevant assertions.

Semantically, focus particles are distinguished as different subgroups from two dimensions: additive vs. restrictive, scalar vs. non-scalar. The four parameters will define focus particles as “scalar additive”, “scalar restrictive”, “non-scalar additive” and “non-scalar restrictive”. The following table is the illustration of these types of focus particles in Chinese:

Table 1. Table of Focus Particle Types of Chinese

| Scalar Additive | Scalar Restrictive | Non-scalar Additive | Non-scalar Restrictive |
|--|---|--|---|
| <i>Shenzhi</i> (“even”) <i>Gengbieshuo</i> (“let alone”) (<i>Lian</i>)... <i>dou/ye/hai</i> (“even”) | <i>Zhidao</i> ... <i>cai</i> (“until”) <i>Zhi</i> (“only”) | <i>Ye</i> (“also”) <i>Hai</i> (“still”) <i>You</i> (“again”) | <i>Zhi</i> (“only”) <i>Guang</i> (“only”) <i>Jiu</i> (“only”) |

The main concern of the book is the first and the third group of the focus particles, namely, the scalar additive and the non-scalar additive. Their distribution and semantic/pragmatic properties will be explored in the study.

1 There is debate on this issue, for instance, in the contrastive topic case, as shown in the following:

- (i) — Did John only introduce Bill to Sue?
—No. **Joe** only introduces Bill to Sue.

1.2.2 Additive Particles

The category of additive particles contains several elements, such as *hai*, *you* and *ye* in Mandarin Chinese. As the name suggests, an additive particle first should be a particle conveying an “adding” sense, and since additives are focus particles, they will interact with the foci in sentences. In the literature, *too/auch* is generally analyzed as the “prototype” of additive particles, which can be represented as follows (Krifka 1999):

$$(1) [ADD_1[...F_1...]]: [...F...](\exists F' \neq F [...F'])$$

Assertion Presupposition

However, under the name of “additives”, these particles show different properties as to their meanings and focusing domains. As it stands, different additive particles show some variations from the common properties. The licensing conditions and semantics of the additive particles are different with regard to their core meanings.

1.3 Theoretical Assumptions

We subscribe to Rooth’s “alternative semantics” for focus interpretation, and tripartite structure for the representation of quantificational structure of additive particles. Sentences are interpreted within event-based semantics, that is to say, sentences always describe some events. Here we take the word “eventuality” to contain events and states. Sentences are also claimed to be associated with certain “eventualities”.

1.3.1 Alternative Semantics

Alternative semantics¹ is proposed as a theory of association with focus in Rooth (1985) and the subsequent works (Rooth 1992, 1995). The central idea of alternative semantics is that focusing on certain constituent evokes a set of alternatives to that part. Association with focus means that the position of focus within the scope of focus particles results in difference in interpretation, often leading to different truth-conditions. This point is famously illustrated by the focus particles *only* and *even*.

The main aspects of alternative semantics are listed below.

¹ The term “alternative semantics” is coined by von Stechow (1989).

(i) In-situ interpretation of focus

As opposed to the focus-movement theory in Chomsky (1976), alternative semantics holds that focus is interpreted in situ, and no movement is involved to avoid the problems such as “weak crossover” and “island constraint”. In interpreting the focus of a sentence, Rooth (1985) proposes that a focus establishes a relation between the value of a focused expression and a set of alternatives (see also Jacobs 1983). As is indicated by Rooth, “the basic idea of alternative semantics can be illustrated with the question-answer paradigm” (Rooth 1996: 276). The interpretive procedure specified in alternative semantics “does not involve assigning scope to focused phrases; they can be interpreted in place” (Rooth 1985: 62). Rooth calls it “domain selection theory”, which means there is no direct relation between focusing adverbs and the focus feature, and the focus is interpreted in the definition of p -sets (the family of propositions corresponding to presuppositions of the sentence). Thus, it averts the constraints on movement in the derivation of LFs in the scope theory of association with focus, which makes explicit reference to the focus feature.

(ii) Two types of semantic values

Rooth (1992) claims that every focusing phrase, say ϕ , has two semantic values: an ordinary semantic value, represented as $[[\phi]]^0$, and a focus semantic value, symbolized as $[[\phi]]^f$. The set of alternatives for the associate of a focus operator is a set that contains both its ordinary semantic value, i.e. the denotation of the associate itself, and at least one element distinct from it. He further claims that the focus semantic value considered in a specific case is a relevant subset of the focus semantic value of the sentence, constrained by contextual information. The set of alternatives is indicated as $ALT(\phi)$, which is provided by the focus semantic value of ϕ (according to the definition of Rooth (1985), $ALT(\phi) = [[\phi]]^f$).

(iii) Compositional computation

The computation of alternatives is carried out compositionally. To illustrate the rundown of the work of alternative semantics, an example is raised here to compute the sentence “John only introduced BILL to Sue”, in which the focus is BILL and the focus operator is “only”. I will simplify the illustration by ignoring the intensional meaning, only using the extensional meanings of the phrases.

The first step is to compute the ordinary semantic values.

- (2) a. $[[\text{BILL}_F]]^0 = \text{BILL}$
 $[[\text{introduce}]]^0 = \text{INTROD}$
 $[[\text{introduc. Bill}_F]]^0 = \text{INTROD}(\text{BILL})$
 $[[\text{Sue}]]^0 = \text{SUE}$
 $[[\text{introduce Bill}_F \text{ to Sue}]]^0 = \text{INTROD}(\text{BILL})(\text{SUE})$
 $[[\text{John}]]^0 = \text{JOHN}$
 $[[\text{John only introduce BILL}_F \text{ to Sue}]]^0 = \text{INTROD}(\text{BILL})(\text{SUE})(\text{JOHN})$

Then the focus semantic value is taken into consideration.

- b. $[[\text{Bill}_F]]^f = \text{ALT}(\text{BILL})$
 $[[\text{introduce}]]^f = \{ \text{INTROD} \}$
 $[[\text{introduce}]]^f = \{ X(y) \mid X \in [\text{introduce}]_f, y \in [\text{Bill}_F]_f \}$
 $= \{ \text{INTROD}(y) \mid y \in \text{ALT}(\text{BILL}) \}$
 $[[\text{Sue}]]^f = \{ \text{SUE} \}$
 $[[\text{introduce Bill}_F \text{ to Sue}]] = \{ \text{INTROD}(y)(\text{SUE}) \mid y \in \text{ALT}(\text{BILL}) \}$
 $[[\text{John}]]^f = \{ \text{JOHN} \}$
 $[[\text{John introduce Bill}_F \text{ to Sue}]]^f = \{ \text{INTROD}(y)(\text{Sue})(\text{John}) \mid y \in \text{ALT}(\text{BILL}) \}$

c. Meaning rule for adverbial only:

$$[[\text{only VP}]]^0 = \lambda x [\text{VP}]^0(x) \wedge \forall P \in [\text{VP}]^f [P(x) \rightarrow P = [\text{VP}]^0]$$

- d. $[[\text{only introduce Bill}_F \text{ to Sue}]]_f$
 $= \lambda x \{ \text{INTROD}(\text{BILL})(\text{SUE})(x) \}$
 $\wedge \forall P \in \{ [\text{INTROD}(y)(\text{SUE})] \mid y \in \text{ALT}(\text{BILL}) \}$
 $[P(x) \rightarrow P = [\text{INTROD}(\text{BILL})(\text{SUE})]]$

- e. $[[\text{John only introduce Bill}_F \text{ to Sue}]]$
 $= \text{INTROD}(\text{BILL})(\text{SUE})(\text{JOHN})$
 $\wedge \forall P \in \{ [\text{INTROD}(y)(\text{SUE})(\text{JOHN})] \mid y \in \text{ALT}(\text{BILL}) \}$
 $[P(x) \rightarrow P = [\text{INTROD}(\text{BILL})(\text{SUE})(\text{JOHN})]]$

An important point is that the quantified constituent in the alternative theory is not the entities or properties, but rather propositions. That is to say, in the sentence “John introduced BILL to Sue”, with BILL in the focus position, the alternatives should be the set of “John introduced x to Sue” instead of the set of entities or properties of John.

(iv) Anaphoric antecedent

Rooth (1992) continues to argue that behind various focus phenomena, there

is a simple mechanism that “the focus semantic value is used to introduce into the context an *anaphoric* element that will be on a quest to find an antecedent (or licenser). The various focus-related effects “come from where and when a licensing antecedent is found” (cf. von Stechow 1994: 38). A two-place operator \sim is introduced to compute on the focus anaphora, which needs to find an antecedent in the context. A context-supplied domain C is introduced to restrict the domain of the quantifier, which is interpreted as a subset of the focus semantic value of S , containing at least the ordinary value of S and one element distinct from that.

The context operator C is pragmatically decided. For example, in the sentence “Mary threw a party. Everyone danced”, the only involved domain is the set of the people present in Mary’s party. Those who did not appear are not relevant, and the context operator C is pragmatically determined (Rooth 1992). Thus, the meaning of “only” can be represented in the following way:

$$(3) [[\text{only } VP]]^0 = \lambda x [VP]^0(x) \wedge \forall P [[P \in C \wedge P(x) \rightarrow P = [VP]^0]]$$

The semantic representation of additive particles like *also* can be formulated in the following way:

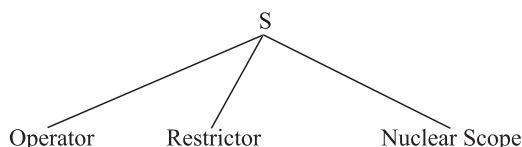
$$(4) \exists Q [Q \in C \& Q \neq S'] \text{ where } Q \text{ is a proposition and } C \subseteq [S']^f$$

On this analysis, the focus semantic value of the sentence, $[S]^f$, and the alternative set C are decided by the focused constituents, with the focus being replaced by a variable in the proposition.

1.3.2 Tripartite Structures

The original introduction of tripartite structure is made by Kamp and Heim in the theory of quantification and anaphora. It is mainly based on noun phrase quantifications, and the structure of the sentence containing quantifiers can be divided into three parts: *Det'* (*CNP'*, *VP'*)¹. Therefore, the quantifier as the operator takes two arguments, which shows the properties of the Kamp-Heim restrictor and nuclear scope. The general structure can be abstracted as follows (Heim 1982):

1 In generalized quantifier theory, the representation of the D-quantifier structure is $[Det' (CNP')](VP')$, in which *Det'* functions as a function taking the noun phrase as the first argument and then yield another function $Det'(CNP')$, which takes *VP* as the second argument. For the detailed discussion, see the classical reference: Barwise & Cooper (1981). For the investigation of the properties of various determiners and related function-words, the subsidiary structure represented above is ignored, and the tripartite structure is represented as $Det'(CNP', VP')$.



The classical example can be illustrated in the following sentences:

(5) Most quadratic equations have two different solutions.

(5') Most (quadratic equations, have two different solutions)

Partee (1991) extends the tripartite structure to the field of adverbial quantifications¹, and thus the D(eterminer)-quantification and A(dverbial)-quantification are claimed to share the same structure: operator-restrictor-nuclear scope. The restrictor part provides a domain over which the quantification quantifies and the nuclear scope is the assertion part of the sentence. The parallel sentence can be represented in the similar way with the D-quantification case². The representation of A-quantification is: *ADV'(NP', VP')*, in which the operator takes two open sentences as the arguments.

(6) A quadratic equation usually has two different solutions.

(6') Usually, x is a quadratic equation, x has two different solutions.

Although the structure is a flat one, it always involves a binary-branching nested structure. For instance, in the D-quantification case, the determiners combine directly with the common noun phrase and then are type-shifted to a functor taking the VP as the argument, and in the A-quantification case, adverbs combine with the nuclear scope first, and the restrictor is type-shifted to a higher level, as a functor taking the widest scope.

It is noted in the literature that not all sentences should be interpreted with tripartite structures (Kamp 1981, Heim 1982). This structure is only in connection with “strong operators” such as universal quantifiers. However, against this viewpoint, the Prague School holds that every sentence can be represented in such

1 Adverbial quantification was brought to prominence by Lewis (1973) and was richly discussed in Kamp (1981) and Heim (1982).

2 This type of structure indicates that the operator is an “unselective binder” of all free variables in restrictor clause, which was first noticed in Lewis (1973). It is closely related with the presupposition and anaphor resolution in the literature, one example of which is the discussion of donkey sentences such as “Usually, if a man owns a donkey, he beats it”. For the detailed discussion of the anaphora of donkey sentences, refer to Kamp (1981) and Heim (1982).

a structure (cf. Sgall, Hajičová & Panevová 1986, Hajičová, Partee & Sgall 1998).

The tripartite structures are claimed to have two properties: one is that in tripartite structures, one of the arguments functions as a “domain operator” or “domain argument”, which shows the property of conservativity¹. The first argument of the determiner sets the scene. For instance, the sentence “every man smokes” can be interpreted as “every man is a man who smokes”; the second property is that the two arguments are in an asymmetric relation, which means that the conjunction of the two arguments are not switchable to produce the same truth condition.

Although A-quantifiers share the same structure with D-quantifiers, they are different in that for the latter, the partition of the sentence is obvious in syntax, that is, the first argument is in the restrictor and the VP in the nuclear scope², whereas the tripartite structure of A-quantifiers is determined in a large part by *topic-focus structure*. The topic contributes to the restrictor and the focus to the nuclear scope. For instance, sentence (7) can be represented (7').

(7) Mary always takes JOHN to movie.

(7') ALWAYS (Mary takes x to movie) (x=John)³

| | | |
|----------|------------|---------------|
| Operator | Restrictor | Nuclear Scope |
|----------|------------|---------------|

In the A-quantifier case, the position of focus decides which constituents enter the restrictor position and which enter the nuclear scope, and thus affects the truth condition of the sentences. The focus-sensitivity effect of adverbial quantifiers can be illustrated by shifting the focus positions of the above sentences. For instance, with “Mary” in focus, the restrictor is “x takes John to movie” and the nuclear

1 A determiner O is conservative iff for all sets A, B:

$[[O]](A, B) \Leftrightarrow [[O]](A, A \cap B)$

Barwise & Cooper (1981) argues that all natural language quantifiers are conservative on their first argument.

2 It is observed that focus effects can influence the domain determination of D-quantification sentences. The widely discussed example is “Most ships pass through the lock at night”. With different foci, the constituents entering the restrictor domain differ. This phenomenon is noticed first by Krifka (1990).

3 This kind of representation is of the tradition of structure meanings, which holds that the background part could apply to the focus part by function-argument application (von Stechow 1991b, Krifka 1990). In alternative semantics terms, the representation should be that ALWAYS (Mary takes x to movie) (Mary takes John to movie), in which case, sentences with different focus share the same assertion, but differ in the presupposition.

scope contains “x= Mary”. A given sentence can be analyzed in a variety of ways into a tripartite structure, with different choices for the type of its operator and arguments.

The determination of the quantifier domain of an operator is a largely implicit, contextually driven matter (Rooth 1992, von Stechow 1994). In the case of tripartite structure involving focus, focalizer is the counterpart of the operator; the background is the restrictor; and the focus is in the nuclear scope. The focal mapping constitutes not only an important issue in the syntax-semantics interface study but also an interesting topic in semantic-pragmatic interface research.

1.3.3 Eventuality Types

The pioneering work of the distinctions of event types was done by philosophers such as Vendler, who distinctively divided verb types into *state*, *activity*, *accomplishment* and *achievement*. Since then, the classification of verb types (or predicate types) has been brought into the vision of semantics.

These works are done along two lines, the **tense-logic** and the **event-semantics**. The representative of the former is Dowty (1972, 1979), whose work is largely based on Vendler's. From his work, the notion of event types has caused great attention in the literature for its crucial role in natural language semantics. He divides the predicate types into two super-categories: *momentary* and *interval* predicates according to their ability to co-occur with **progressive**, with momentary corresponding to “state” in Vendler's term, and intervals to activity, accomplishment and achievement. Under intervals, the parameter “**change-of-state**” functions to distinguish “activity” from “accomplishment” and “achievement”, with “activity” denotes *indefinite change of state* over time and the latter two *definite change of state* over time, and they are further distinguished by the complexity of the change: “accomplishment” involves **complex change** and “achievement” **singular change**. Dowty's classification does not correspond to Vendler's completely. In Dowty's categories, Vendler's *states* are subdivided according to their capability of being progressive, with “stand”, “lie”, “be a hero” under this category, which are called “interval states”. As Filip (1999) points out, the other difference lies in the role of “agentivity” of the accomplishment and the achievement categories, although this role is not the real factor in distinguishing event types.

The other contribution of Dowty is the “aspect calculus”, which contains three

sentential operators DO, CAUSE and BECOME. With statives as the basic one, the non-stative sentences are derived from them with the help of three operations: activity predicates with DO operation, both accomplishment and achievement with BECOME operation, but only accomplishment has the CAUSE operation, which is a two-place sentence connective. The following examples illustrate this point:

- (8) a. The door was open (stative)
 b. The door opened (accomplishment)
 c. John opened the door (achievement)

The representations of the sentences are a', b' and c' respectively.

- (8') a'. $\lambda x[\text{Open}(x)]$
 b'. $\lambda x[\text{BECOMEOpen}(x)]$
 c'. $\lambda x\lambda y[\text{CAUSE}((x, \text{BECOME}(\text{Open}(y))))]$

Dowty's lexical decomposition work is applied to the interpretation of the sentences with AGAIN words, which will be elaborated later in the following chapters.

In the **event-semantics** camp, Bach (1981, 1986) is figured out as the representative theory. By adopting the notion of mereological "part" relation and by providing the parallel analysis of nominal and verbal predicates, he unifies events and states into the category of "eventualities". The category of "eventuality" will be at work in this study. Under this name, three subcategories are subsumed: *states*, *processes* and *events*.

States are properties of times. It is either static or dynamic according to their ability to occur with progressive; dynamic states such as "sit", "stand" can be progressive, and they belong to the "stage-level" predicates in Carlson (1977)'s term. In contrast, static states cannot be individualized or counted, but allow a specification of duration. They cannot appear in a progressive sentence. For instance, the sentence "I am knowing the beautiful girl" is not grammatical. This type is one of Carlson's "object-level" predicates.

Non-states include **processes** and **events**. The basic distinction between states and non-states is due to the feature of "change", with states involving no change and non-state definitely involving a change. **Processes** correspond approximately to Vendler's activity category, and **events** to the accomplishment and achievement. The difference between these two types lies in that processes are addable, which means that two or more processes of the same kind can be added up to form a

process of the same kind. Events are abstract individuals. They always involve change, and can be classified and counted. However, events are anti-subdivisible, and an event can be divided into different parts that have the same property. Events cannot be located at times, as any change can only be stated with reference to at least two times.

I will adopt Bach (1986)'s two-dimension division of eventualities and the notion of "eventuality" will be a pervasive term in this book.

1.4 Problems of Additive Particles in Mandarin

In this part, I deal with the delimitation of the uses of these additive particles and figure out the problems of concern. As the name "additive" suggests, the particles being discussed here involve an additive meaning. However, these particles are considered as adverbs with polysemous senses in the literature, some being closely related with the additive meaning, but some with extended subjective and mood uses. As a tradition in the literature, quite a lot of endeavors have been done to search for the univocal manifestation of these words. However, as my interest in these particles is on their functions as focusing particles and their interaction with quantification and scope, this tradition will not be followed in the book, nor will the dictionary of the use types of these particles be provided.

These particles are investigated under the category of "additive particles", which include two aspects in their meaning: addition and focus-sensitivity. By "addition", it means that an inclusion computation is involved, and by "focus-sensitivity", it refers to the interaction of the particles with some stressed elements and the domain effect.

1.4.1 Types of Mandarin Additive Particles and Their Interaction with Focus

The research problems of additive particles in Mandarin Chinese can be illustrated in the following sentences.

(9) 张三 还 吃了一个苹果。

Zhang San *hai* eat an apple

(10) 张三 又 吃了一个苹果。

Zhang San *you* eat an apple

(11) 张三 也 吃了一个苹果。

Zhang San *ye* eat an apple

In written Chinese, with no mark of intonation, it's hard to decide the meanings of the above sentences because all of them are ambiguous at least in three ways according to the different accented constituents, as illustrated below.

(12) a. (张三吃了一个苹果) 张三 还 吃了一个苹果。

(Zhang San ate an apple) Zhang San *hai* eat an apple

(Zhang San ate an apple) Zhang San ate another apple.

b. (张三吃了一个桃子) 张三 还 吃了一个苹果。

(Zhang San ate a peach) Zhang San *hai* eat an apple

(Zhang San ate a peach) Zhang San ate an apple too.

c. (别说李四了) 张三 还 吃了一个苹果(呢)。

(let alone Li Si) Zhang San *hai* eat an apple

Even Zhang San ate an apple (let alone Li Si).

(13) a. (张三刚才吃了一个苹果) 张三 又 吃了一个苹果。

(Zhang San ate an apple) Zhang San *you* eat an apple

(Zhang San ate an apple) Zhang San ate another apple.

b. (张三吃了一个桃子) 张三 又 吃了一个苹果。

(Zhang San ate a peach) Zhang San *you* eat an apple

(Zhang San ate a peach) Zhang San ate an apple too.

c. (李四吃了一个苹果) 张三 又 吃了一个苹果。

(Li Si ate an apple), Zhang San *you* eat an apple

(Li Si ate an apple) Zhang San ate an apple too.

(14) a. (李四吃了一个苹果) 张三 也 吃了一个苹果。

(Li Si ate an apple) Zhang San *ye* eat an apple

(Li Si ate an apple) Zhang San ate an apple too.

b. (张三吃了一个桃子) 张三 也 吃了一个苹果。

(Zhang San ate a peach) Zhang San *ye* eat an apple

(Zhang San ate a peach) Zhang San ate an apple too.

c. (李四吃了一个苹果) 张三 也 吃了一个苹果。

(Li Si ate an apple) Zhang San *ye* eat an apple

(Li Si ate an apple) Zhang San ate an apple too.

In the above cases, the presupposition and focus vary with the shift of stress in the sentences. The relations between the focus and other members of the alternative sets are also different. The main question concerns the constraints and the licensing conditions of the stressed and unstressed additive particles. The focus structure of these particles is also under our discussion with respect to the stressed and unstressed particles.

1.4.2 Research Issues

The points to be made regarding the delimitation of the scope of the research is that the main concern of the study is on the semantics and pragmatics of these additive particles in adult Chinese and child Chinese. I will not talk about the phonological realization of focus in the sentence, though it is an independently crucial topic in understanding focus effects. This topic is widely discussed in the literature, with Selkirk (1984) as one of the starting works. For the successive discussions on this topic, interested readers may refer to Cinque (1993), Zubizarreta (1998), Lee, Gordon & Büring (2007), where a lot of phonological realization of focus is explored.

However, the stress patterns of the sentences with focus do play a crucial role in the current study. Although I will not deeply explore the specific phonological realization of focus, two general considerations of the phonological aspects find their way into this discussion.

One is about **the stress of certain constituent** in the sentence. As is commonly known, the constituent carrying a main stress is usually realized as the focus. However, this constituent may not be the sole part of the focus. The feature of focus may percolate along the branch to the dominating upper node. For example, in English, the stress is always on the rightmost (or deeply embedded since English is a right-branching language) constituent in the phrase containing the focus (Chomsky 1971). So, in the following sentence, with the stress on the rightmost constituent of the sentence, the possible focusing scope includes the object, the verb phrase, and even the whole sentence. The potential focusing scope is represented with the bracket.

(15) [John [saw [Mary]_{F1}]_{F2}]_{F3}

As the answers to the three different *wh*-questions, the resulting sentences carry the same intonation pattern, that is, placing the stress on the rightmost constituent, the object. However, the focusing domains are different.

- (16) a. Whom did John see?
 b. What did John do?
 c. What happened?

The other phenomenon about the phonological realization of sentences is that of the mark of **contrastive topics**. As Büring (1999) argues, contrastive topics, which also induce alternative sets, carry certain stress patterns. While the focus of a sentence carries a falling tone, the contrastive topics carry a rising one. It will be adopted to distinguish contrastive topics and contrastive focus in the initial place of sentences.

In the semantic and pragmatic part, I intend to work out a system of Mandarin additive particles, with respect to their licensing conditions, semantic and pragmatic restrictions. As to the distinctions between different types of additive particles, König (1981) makes a comparison between German *auch* and *noch*, and claims that these two particles can interchange with each other when “a quantity of some kind is added to another contextually given quantity” (p152). However, different restrictions can also be found among these additive particles. For example, *noch* is said to differ from *auch* in that what is added by *noch* is not necessarily distinct from the focus of the particle, which can induce an “another” meaning (König 1991)¹, whereas for *auch*, there is a “one-distinction” restriction, which requires that the added part and the domain of application should have one and only one distinction (cf. Kaplan 1984). Although the distinction is observed, no systematic work has been provided as to the subcategories of additive particles. The questions that arise are what the respective representations of the members of additive particles are, and what the relationship is between them and the core meaning of additive particles.

In our exploration, stress creeps in as a crucial factor in deciding the focusing domains of additive particles, which induces the same focusing pattern for all these particles. As indicated in the literature, particular additive particles, such as E. *too* and G. *auch* have stressed and unstressed variants (König 1991, Hoeksema & Zwarts 1991, Reis & Rosengren 1997, Krifka 1999). The stressed and unstressed additive particles have different meanings and focusing patterns, however, no systematic work has been found to investigate the distinctions in the literature. Our study will work out the system of stressed and unstressed additive particles

1 In this sense, *noch* should be stressed.

in Mandarin Chinese, and some comparisons will be made against those in other languages.

Since focus particles can be stressed, then the following question is the focus structures of stressed focus particles. Since G. *auch* and E. *too* can carry a pitch accent in an utterance, Krifka (1999: 125), in the analysis of German *auch*, proposes that they can function as the focus of a sentence, and the alternatives to ADD are affirmation and negation, which is motivated by the assumption that a sentence with a stressed *auch* is the answer to a polarity question which contains only two answers. If the particle itself is the focus, the alternative set is established by contrastive topics, since both focus and contrastive topics have a contrastive meaning. In Krifka's analysis, the contrastive topics, although they can be stressed, are not necessarily prosodically marked in this case since it is the only option for the focusing domain of stressed *auch*.

The study will extend the discussion of *auch/too* to the other subcategories of additives, such as *hai* ("still") and *you* ("again"), and a different account will be provided to the semantics of stressed additive particles.

The **acquisition** study of the additive particles will investigate the production and comprehension of these particles. It is observed in the literature that in some cases, there is an asymmetry between children's production and comprehension, which means that children produce certain items before their comprehension of them. Experiments of the production and comprehension of Mandarin additives are conducted to see whether this asymmetry can be observed in the acquisition of Mandarin additives, and explanations will be provided to find the real reason for the asymmetry.

1.5 Structure of the Book

The contents of the book are organized in the following way:

After the introductory section in the first chapter, Chapter 2, Chapter 3 and Chapter 4 discuss the property of Mandarin additive particles *ye*, *hai* and *you* respectively. A general empirical and descriptive study is done to find the semantics and pragmatics of these particles. These three chapters are self-contained. Interested readers in some specific particles could go to the respective chapter directly without resort to the discussion of other particles.

Chapter 5, based on the empirical data of these particles, reflects on the

general quantificational and focus structure of additive particles. The distinctions between these particles are also included in this part. The picture of the additive particles of Mandarin Chinese is drawn and the labor division of these additives is investigated.

From Chapter 6, children's acquisition of additive particles is under investigation. In Chapter 6, previous studies of the additive acquisition are reviewed and the research issues of the acquisition of additives of Mandarin Chinese are listed.

Chapter 7 provides the production data of additive particles in Mandarin Chinese and Chapter 8 reports the results of the comprehension data of these particles. Chapter 8 also discusses the results of the experiments and some proposals are provided.

Chapter 9, the last chapter, assembles the main results and conclusions. Tasks for future research are identified from both theoretical and acquisitional perspectives.