

HUMAN  
COGNITIVE  
PROCESSING 67

# Cognitive Linguistics and the Study of Chinese

*Edited by*  
Dingfang Shu  
Hui Zhang  
Lifei Zhang

John Benjamins Publishing Company

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# Cognitive Linguistics and the Study of Chinese

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### **Volume 67**

Cognitive Linguistics and the Study of Chinese  
Edited by Dingfang Shu, Hui Zhang and Lifei Zhang

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## Series Editors' Preface

It was at the 11th International Cognitive Linguistics Conference held July 11–17, 2011, in Xi'an, China, that we were approached by two representatives of Professor Jie Zhang, then Dean of the School of Foreign Languages and Cultures, Nanjing Normal University (NNU). On behalf of Dean Zhang, they wanted to know if I (Klaus) would be interested in spending twelve months at NNU, over a period of three years, in the role of Distinguished Visiting Professor. I (Linda, research partner and spouse) said 'yes', and, consequently, in 2012, 2013 and 2014 we spent four months per year in residence at NNU, i.e. two months in the spring and two in the fall.

During the above-mentioned period, I (Klaus) gave lectures and talks on the beautiful downtown Suiyuan campus of NNU and at various other universities in China on cognitive linguistic and pragmatic topics, such as motivation in grammar and discourse, conceptual metonymy, the role of inferencing in the construction of meaning, and the semantics and pragmatics of diverse morphological and syntactic constructions in English, to name just a few topics. Some of the themes covered in these lectures have also been published in a collection of revised articles and book chapters authored by Linda and myself, which, thanks to the kind invitation of Dingfang Shu, editor of the Cognitive Linguistics Classic Papers Series, appeared in 2017 as a monograph titled *Motivation and Inference: A Cognitive Linguistic Approach* (Shanghai Foreign Language Education Press.)

During our stay at NNU, I also organized a Cognitive Linguistics and Pragmatics Colloquium, whose purpose was to provide faculty and doctoral students with a bi-monthly opportunity to present their research in a collegial and friendly atmosphere and to receive constructive feedback, with the goal that their research find professional outlets in conferences and publications. Professor Hui Zhang, one of the editors of the present volume, gave two well-received talks on cognitive linguistic and neurolinguistic topics at the colloquium.

Apart from being an important center of Cognitive Linguistics in China, NNU is also renowned for its School of Semiotics. In addition to cooperating with me (Klaus) on various cognitive linguistic projects, Linda was appointed Associate Editor for the journals *Chinese Semiotic Studies* (2012–2017) and *Language and Cognitive Science* (2015–2016).

Towards the end of our stay in Nanjing, Linda and I, assisted by our Chinese colleagues and supported by Dean Jie Zhang, organized an international conference *Cognitive Linguistics and Pragmatics: Theory and Practice* at NNU (October 24–26, 2014), with Gilles Fauconnier and Jeannette Littlemore as plenary speakers from outside China. Furthermore, Dingfang Shu, President of the China Cognitive Linguistics Association (CCLA), our colleagues Hui Zhang and Yuhong Liu at NNU and I gave plenary talks.

China has seen a remarkable growth in cognitive linguistic research and publications over the last twenty years. The China Cognitive Linguistics Association (CCLA), which was founded in 2006, has approximately 400 members (Dingfang Shu, p.c.) and is affiliated with the International Cognitive Linguistics Association (ICLA), the international umbrella organization of Cognitive Linguistics (see Table 1).<sup>1</sup>

**Table 1.** ICLA and affiliates

Country/Region/Language	Name	Year Founded
International	ICLA	1989
South Korea	DISCOG	1991
Spain	AELCO-SCOLA	1998
Finland	FiCLA	1999
Japan	JCLA	2000
Slavic	SCLA	2000
Poland	PTJK/PCLA	2001
Argentina	AALiCO	2003
Russia	RCLA/RALK	2003
Germany	GCLA/DGKL	2004
France	AFLiCo	2005
United Kingdom	UKCLA	2005
U.S.A.	CSDLA	2005
China	CCLA	2006
Scandinavia (Sweden, Denmark, Norway, Finland)	SALC	2006
Estonia	ECLA	2007
Belgium and Netherlands	BeNeCLA	2008

1. For the history of ICLA see: <https://www.cogling.org/historical-background>. For additional information about affiliates see: <https://www.cogling.org/about/affiliates>.

It was also during our stay in China that, in 2013, the idea was born and supported by Dingfang Shu, who co-edits the present volume with Hui Zhang and Lifei Zhang, for an HCP volume with a collection of chapters that are representative of ongoing cognitivist work by Chinese scholars on grammatical, semantic and pragmatic themes of Chinese linguistics. The present volume is *the first* of its kind that, we hope, will spark additional volumes on contemporary cognitive linguistic research in other countries in Asia, the Americas, Australia, and Europe. In this regard, the present volume is highly emblematic, metonymically evoking potential future volumes of its kind.

Klaus-Uwe Panther  
Linda L. Thornburg  
Kendal, UK



# Foreword

The idea of editing a volume of cognitive linguistic studies by Chinese scholars in view of the Chinese language was first conceived around 2014 when Professor Klaus Panther was Distinguished Professor at Nanjing Normal University. While in China, interacting with Chinese scholars, he was fascinated by the examples Chinese scholars used in their discussions of issues in Cognitive Linguistics and the insights they provided for the applicability of the theories developed mainly on the basis of evidence from Indo-European languages. He even tried to learn Chinese in order to find out why his Chinese friends and students told him that Cognitive Linguistics seemed so appealing to Chinese scholars in their efforts to account for the unique properties and special structures of Chinese. So, before the end of his stay in China, he proposed that I edit a collection of papers that apply cognitive linguistic theories to the analysis of Chinese data in order to familiarize readers and colleagues whose mother tongue is not Chinese with an idea of how Cognitive Linguistics has fared in China.

Cognitive Linguistics (CL), though diverse in its strands and lacking a uniform theoretical framework, “has not only stood its ground as one of the most lively linguistic enterprises but has also affected almost every aspect of linguistic research in China” (Shu, Zhang and Li, this volume) since its introduction nearly 30 years ago. In China, among those linguistic strands that are influenced by and thus benefit from cognitive linguistic theories, the most productive and impressive is the study of Chinese grammar. Many cognitive linguistic theories, such as metaphor and metonymy theory, cognitive grammar, construction grammar, etc. are embraced by scholars from the foreign languages circle and the Chinese circle alike and are exploited successfully in the tackling of thorny linguistic problems in Chinese, which pose great challenges for other theoretical frameworks. In view of the disharmonies among traditional Indo-European grammatical analytic frameworks and the quest to elucidate the peculiarities of Chinese grammar, the vitality and explanatory power of CL with regard to Chinese phenomena seem even more extraordinary.

CL is becoming increasingly popular with young linguists in China. In addition to the application of cognitive linguistic theories in the analysis of grammatical constructions and categories of Chinese, many language teachers are trying to

incorporate cognitive linguistic research findings in their language teaching. This volume, however, serves only as a window on how linguists in China adopt and adapt cognitive linguistic principles and methods in studying Chinese data and comparing Chinese with other languages. Interested readers may find many other resources, e.g. journal articles and books published both in and outside China, to obtain a more comprehensive understanding of what is going on with respect to the CL movement in China.

The contributions to this volume come from fourteen scholars, most of whom have long been active practitioners of cognitive linguistic theories and have been applying cognitive linguistic concepts and theories to the analysis of the Chinese language in their research.

In editing this work, I have received great help from Professor Klaus Panther, Linda Thornburg, the contributors and my colleagues and students, e.g. Zhang Lifei, Li Tian, Fang Ying, to name just a few.

The work has been delayed a bit due to my new assignments and workload. I apologize for the delay and hope that this volume will serve the purpose we set out to fulfill.

Dingfang Shu  
Shanghai

# Abbreviations

1	first person	IND	indicative
2	second person	INTERJ	interjection
3	third person	LOC	locative
ADV	adverbial	NEG	negative
ADJ	adjective	NMLZ	nominalizer/nominalization
ALL	allative	NP	noun phrase
AUX	auxiliary	PASS	passive
CLF	classifier	PFV	perfective
COMP	complementizer	PL	plural
COMPL	completive	POSS	possessive
COND	conditional	PRED	predicative
CONJ	conjunction	PRT	particle
CRS	current relevant state	PROG	progressive
CVB	converb	PST	past
DAT	dative	Q	question particle
DEM	demonstrative	REL	relative
DET	determiner	REFL	reflexive
DUR	durative	RES	resultative
MOD	modality	SG	singular





# Introduction to this volume

Dingfang Shu, Hui Zhang and Lifei Zhang

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## 1. Introduction

Apart from the introductory chapters, this volume consists of ten chapters, which are thematically subdivided into three parts. All of them deal with morphosyntactic, semantic and pragmatic properties of Chinese and are intended to provide international readers with a necessarily somewhat restricted, but it is hoped, helpful state-of-the-art picture of cognitive linguistic research conducted by Chinese scholars on Mandarin Chinese. The chapters reflect what has aptly been termed the “empirical turn” by Ronald Langacker 2016: 470) and the “quantitative turn” in a volume edited by Laura Janda (2013), i.e. the systematic reliance on corpus examples and experimentally gained data, rather than on introspection.

## 2. The chapters in this volume

### 2.1 Part I. Morphological, lexical and syntactic constructions

Part I of this volume focuses on idiosyncratic syntactic and semantic properties of constructions in Mandarin Chinese, a language that is typologically quite different from many Indo-European languages. The chapters in this part raise intriguing questions concerning the treatment of polysemy, i.e. the (undesirable) proliferation of meanings of a lexical item (Chapter 1), the meanings and uses of specific constructions (Chapters 2 and 3) and the status of word classes such as nouns and verbs, whose distinctness is taken for granted in works on Indo-European languages, but highly problematic in Chinese (Chapters 4 and 5).

The first chapter in Part I “When constructions meet context: The polysemy of Mandarin *hai* revisited” by Wei-lun Lu investigates the various senses of the function word *hai*. On the basis of corpus data of spoken Mandarin Chinese, the author analyzes the constructions and the discourse contexts in which *hai* is

found, in an effort to account for its polysemy. In contrast to previous studies, the author contends that *hai* has a highly schematic prototypical function: it connects the proposition following it back to contextually relevant propositions in prior discourse. Lu argues against the “polysemy fallacy”, demonstrating that the various usages of *hai* boil down to *contextually* derived interpretations. He exemplifies and offers an in-depth analysis of the concessive, temporal continuance, marginality, additive and comparative readings of *hai*. Finally, the author shows that *hai* frequently collocates with morphemes such as *you* (‘have, exist’) and the predicator *shi*, resulting in the formation of new constructional units such as *haiyou* and *haishi*, respectively.

The two contributions that follow also deal with schematic constructions. In Chapter 2, “On the partial productivity of constructions: Creativity and semantic constraints on the Chinese *zhe* existential construction”, **Zhen Tian** addresses the partial productivity of a highly productive construction – the Chinese *zhe* existential construction – by examining the collostructional strength between verbs and this construction. The analysis proposes that there is a blending of scenes in the use of transitive verbs in this construction and the semantic constraints limiting new instances are a consequence of the relative salience of the following participant roles licensed by the verb, i.e. theme, patient and location. The author provides evidence that verbs with the profiled role of agent or experiencer are not compatible with this construction.

Chapter 3 by **Yuchen Li** and **Zhengguang Liu**, “A corpus-based study of subjectification and the *disposal* construction in modern Mandarin: The BA construction vs. the BA-GE construction” is a synchronic study of the syntactic structure and meaning of expressions containing the morpheme BA, in contrast to formally similar BA-GE-patterns. Using corpus data, the authors investigate each sentence with respect to 28 semantic and syntactic variables. Based on the findings of a collexeme analysis of corpus data and relying on Langacker’s theoretical concept of subjectification, the authors provide evidence that the BA-pattern and the BA-GE-pattern constitute different constructions, especially with regard to the meaning component of ‘disposal’. While the BA construction denotes disposal events, in the BA-GE construction, the objective meaning of ‘disposal’ is backgrounded and the speaker’s subjective perspective on the event becomes foregrounded. The study shows that subjectification, in Langacker’s sense, is an essential theoretical concept in the description and explanation of constructional meaning.

Chapters 4 and 5 both focus on abstract word class constructions. In Chapter 4, “Types of negatives and the noun-verb distinction in English and Chinese” by **Jiaxuan Shen**, the author puts forth the thesis that while in English nouns and verbs are two separate categories, nouns in Chinese constitute a superordinate category that includes the verb category, and a noun-verb distinction should not be

assumed in the study of Chinese grammar. The most important division of negatives in Chinese is between indicative and non-indicative negation, or between the negation of *you* ('has/there is') and the negation of *shi* ('is'), but not between noun and verb negation. The cognitive and philosophical roots of this difference between English and Chinese are further elaborated.

In Chapter 5, "The conceptual spatialization of actions or activities in Chinese", **Wenbin Wang** begins with the assumption that nouns are semantically 'spatial' and verbs 'temporal' concepts. The author focuses on the semantics of a grammatical pattern in Chinese that combines an adjective with a verb (Adj+V construction). The Adj+V construction is used pervasively in Chinese, i.e., verbs are often modified by adjectives. In particular, spatial adjectives can be used to modify verbs in Chinese. Given these grammatical facts, the author advances the hypothesis that actions or activities are often conceived of as three-dimensional entities or substances in Chinese. Rather than concluding that the existence of the construction is evidence of a word class shift from verb to noun, from a cognitive perspective, Wang contends that the Adj+V construction mirrors a certain way of thinking about actions and activities in terms of entities and substances located in space. In this sense, the author's conclusion echoes Shen's (this volume: Chapter 4) thesis that in Chinese verbs are a subcategory of nouns.

## 2.2 Part II. Cognitive pragmatics

The two chapters included in this part contribute to a deeper understanding of language-in-context and its communicative functions. To a great extent, this part could be regarded as reflecting the contemporary state of the art of the pragmatic tradition ushered in by Shenghuan Xu during the 1980s and 1990s. Chapter 6 addresses the pragmatic issue of anaphoric reference, i.e. the issue of textual coherence. Chapter 7 argues for combining theoretical concepts of Cognitive Linguistics and contemporary pragmatics in the analysis of a specific speech act.

In Chapter 6, "Structural salience and referential accessibility: A cognitive account of inter-clausal NP anaphora in Chinese complex sentences", **Yulong Xu** focuses on the placement of the subject of Chinese sentences; i.e., the subject NP of a preposed subordinate clause can be placed either before or after the subordinate conjunction. The author argues forcefully that this positional difference depends on whether the NP is intended to be conjoint or disjoint in reference with the subject NP of the main clause. Based on the pragmatic notions of topicality and accessibility, he proposes two hypotheses to account for the preferred patterns of inter-clausal NP anaphora in Chinese complex sentences. These hypotheses are corroborated by the results of a statistical analysis based on corpus data. Where

the hypotheses seem to fail, the author identifies other factors that account for the apparent anomalies.

In Chapter 7, “Complementing Cognitive Linguistics with pragmatics and vice versa: Two illustrations from Chinese”, **Rong Chen** presents two examples in Chinese to argue for the need and benefit of combining Cognitive Linguistics with pragmatics in the study of language. The first illustration supporting his argument is based on an analysis of the greeting expression *Ni chi le mo?* (‘How are you?’) in a dialect of Chinese. The author demonstrates that an adequate analysis of the expression can be obtained by combining the basic tenets of construction grammar with principles of speech act theory. The second illustration comes from metaphorical uses. By looking at metaphors that are not meant to help the hearer to understand something but rather to view it from a different perspective, the author makes the same point, namely that Cognitive Linguistics and pragmatics can fruitfully complement each other to lead to new insights into language structure and use.

### 2.3 Part III. Neurocognition and psycholinguistics

The final three chapters testify to the increasing significance of neurocognitive and psycholinguistic research in Chinese linguistics. The chapters deal with experimental work on idioms (Chapter 8), metaphors (Chapter 9) and caused motion events (Chapter 10), covering both substantive constructions and abstract conceptual constructs.

In Chapter 8, “A neurocognitive approach to Chinese idiom comprehension: An ERP study”, **Hui Zhang** investigates three-character idioms, which abound in Chinese. The author applies event-related potential (ERP) techniques to study how idiom base-forms and their variants are contextually processed in Chinese three-character idioms. In Chinese, such idioms may take two forms, the base-form and a figurative form, e.g. *zou houmen* with the literal meaning ‘enter through the back door’ and the figurative sense ‘pull strings or find an influential person for help’. The base form *zou houmen* may change according to its context, as in *zoule sanci houmen*, which has the figurative sense that someone pulled strings or found an influential person for help three times. The ERP data reveal that, independent of literally or figuratively biased contexts, three-character idioms and their variants are processed similarly. The data provide neural evidence that different types of discourse context play a facilitative role in the processing of base-forms and variants.

In Chapter 9, “The role of metaphor in categorization: A time course study”, **Rong Zhou** and **Yumiao Gong** use a priming paradigm and, manipulating metaphor similarity and different states of affairs (SOAs), explicate the role of metaphor in categorization and the time course of induction of the abstract meaning in the

categorical vehicle. This study is thus concerned with the processing of metaphor in real time for the purpose of elucidating metaphor categorization. The authors distinguish between attributive metaphors such as *THE SURFACE OF THE LAKE IS A MIRROR*, in which the attributes of a lake are likened to those of a mirror, and conceptually complex relational metaphors like *HISTORY IS A MIRROR*, which exhibit a structural resemblance between the topic *HISTORY* and the metaphorical vehicle *MIRROR*. The authors find experimental evidence that for attributive metaphors only literal meanings of the vehicle are activated, while in relational metaphors they are activated for 300ms, but then actively suppressed. The experimental data suggest that, for relational metaphors, structure mapping and schema induction underlie metaphorical categorization.

Concluding the volume is Chapter 10, **Yinglin Ji's**, "Linguistic and mental representations of caused motion in Chinese and English children". The author examines (non)linguistic representations of caused motion by Chinese and English children in two cartoon-based experiments. An important result of this chapter is that typological properties influence the semantic density of children's utterances. Regardless of age, children express denser semantic information in Chinese than in English. In the non-linguistic match-to-sample task, 3-year-old children are found to be predominantly path-oriented, as evidenced by their significantly longer fixation on path-match (rather than manner-match) videos. The analysis of reaction time indicates that 8-year-old children and adults show significant variations in spatial cognition that can be related to linguistic differences: English speakers tend to be more manner-oriented while Chinese speakers are equally manner- and path-oriented.

### 3. Conclusion

The contributions to this volume testify to the flowering of the cognitive linguistic paradigm in China and its fruitful application to the study of the Chinese language by scholars around the world. As is evidenced in the subsequent chapters and is also shown in some detail in the General Introduction to this volume, in the last several decades, the theoretical tools of Cognitive Linguistics as well as psycholinguistic and neurolinguistic experimentation have afforded fascinating new insights into the Chinese language.

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# General introduction

## 30 years of Cognitive Linguistics in China

Dingfang Shu, Lifei Zhang and Tian Li

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### 1. Introduction

It has been over 40 years since the 1975 Summer School of Linguistics took place at the University of California, Berkeley. This gathering, to a great extent, marks the beginning of the Cognitive Linguistics (CL) enterprise worldwide, owing largely to the talks given by four eminent scholars, namely, Paul Kay's presentation on color words, Eleanor Rosch's investigation of basic level categories, Leonard Talmy's discussion of different strategies for encoding spatial relations and Charles Fillmore's explication of Frame Semantics. After decades of "inner development and steady growth" (Ruiz de Mendoza Ibáñez and Dirven 2010: 13), CL has developed into one of the most dynamic and attractive frameworks within both theoretical and descriptive linguistics (Geeraerts and Cuyckens 2007).

Cognitive linguistics came to China towards the late 1980s and early 1990s when its second wave of expansion began, which was directed largely toward Asia and southern Europe (Geeraerts and Cuyckens 2007). Nonetheless, after nearly 30 years of introduction and indigenization, CL, together with its many strands, has not only stood its ground as one of the most lively linguistic enterprises but has also affected almost every aspect of linguistic research in China, such as theoretical inquiry, ontological investigation, contrastive analysis, and language acquisition.

In an attempt to sketch the almost three decades long development of CL in China both qualitatively and quantitatively, this chapter tries to answer the following questions:

- What is the overall picture of CL's development in China (Section 1)?
- What are some of the most favored strands and how do they feature in Chinese CL (Section 2)?
- What are the major characteristics of Chinese CL studies (Section 3)?
- What is the future research agenda for Chinese CL studies (Section 4)?



## 2. The overall picture

To depict the development of CL in China in a more objective and comprehensive way, we conducted a survey based on data from three sources, namely, journal articles, books (including monographs and collections), and various academic activities.<sup>1</sup> As journal articles and books are subject to statistical analysis, a few words about how the data were collected and annotated are in order before presenting the results of the survey.

### 2.1 Data collection and annotation

For articles, we selected the seven most influential journals as our data source. Three of them are oriented towards foreign language research, i.e. *Foreign Language Teaching & Research* (FLTR) 《外语教学与研究》, *Journal of Foreign Languages* (JFL) 《外国语》, and *Modern Foreign Languages* (MFL) 《现代外语》; another three, paralleling the three foreign language journals, are Chinese oriented, i.e. *Studies of the Chinese Language* (SCL) 《中国语文》, *Chinese Teaching in the World* (CTW) 《世界汉语教学》, and *Language Teaching and Linguistic Studies* (LTLS) 《语言教学与研究》; and, finally, *Contemporary Linguistics* (CL) 《当代语言学》, which focuses on the introduction of foreign linguistic theories and ontological investigations. All seven journals are among the most prestigious in China and rank high in CSSCI (Chinese Social Science Citation Index), the most authoritative ranking for journals dedicated to social science studies.

As CNKI (China National Knowledge Infrastructure), the largest online service providing academic publications in China, contains digital archives of the seven selected journals, the job of picking out articles related to CL is simple and direct. We just browsed the catalogue of each journal from 1988 (the choice of 1988 as the starting point is justified later on) to 2015, and chose the target articles with the help of the title and the abstract.<sup>2</sup>

As for books, the selection process was more complicated. We first carried out a keyword search in the National Library of China, which has the largest collection of printed books in China, using *yuyan* 语言 ‘language’ and *renzhi* 认知

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1. Theses and dissertations for academic degrees would be another valuable data source. However, such works are dispersed over different schools and some are not even digitized, making it extremely difficult, if not impossible, to access all the works required by the present research.

2. At the time we conducted the survey, the year 2016 still had a few months to go. If we set that time as the upper bound for data collection, the final results would be distorted, especially when statistical analysis is concerned. However, particular articles or books published in 2016 might be quoted on demand for expository purposes.

‘cognition’ as two keywords and again confining the time period of publication to 1988–2015, and then manually picked out those related to CL. We also searched websites of some important linguistic publishers, such as Shanghai Foreign Language Education Press, Foreign Language Teaching and Research Press, China Social Science Press, and The Commercial Press.

To trace the trajectory of the development of CL in China in a more detailed way, we categorized articles and books along several dimensions. One major dimension is the thematic category the article or book can be assigned to, as CL consists of a variety of topics. The following 14 strands of CL are distinguished:

- *Introduction and Survey* (Int\_Sur) gives an overview of the basic tenets of CL.
- *Cognitive grammar* (Cog\_Gra) deals with grammatical phenomena as they are motivated by semantic, conceptual or cognitive factors, such as figure-ground segregation, iconic vs. economic principles, trajector-landmark alignment, and conceptual dependence vs. independence, etc.
- *Cognitive semantics* (Cog\_Sem) is concerned with the meaning of a linguistic unit, defined by such theoretical constructs as image schema, cognitive model, conceptual construal, conceptual reference point, etc.
- *Metaphor and metonymy* (Meta\_Meto) play an important role in human experience and interaction with the world and hence in the semantic extensions of various linguistic units, be they morphemes, words or grammatical constructions.
- *Cognitive pragmatics* (Cog\_Pra) encompasses the study of the cognitive principles and processes involved in the construal of meaning-in-context, focusing especially on the mental states and, to some extent, the mental correlates of the participants of a conversation.
- *Construction grammar* (Con\_Gra), i.e. a set of models of grammar, subscribes to the ideal that knowledge of a language is the structured inventory of conventional units that pair form and meaning.
- *Cognitive poetics* (Cog\_Poet), as a new way of thinking about literature, applies the principles of cognitive linguistics and cognitive psychology to the interpretation and appreciation of literary texts.
- *Mental spaces and conceptual blending* (Men\_Con) is a theory of cognition and meaning construction according to which elements and vital relations form diverse scenarios (i.e. mental spaces) that are “blended” subconsciously, assumed to be ubiquitous in everyday thought and language.
- *Philosophical background* (Phi\_Bac) of cognitive linguistics embraces the embodiment thesis, which states that cognition depends upon the kinds of experience that come from having a body with various sensorimotor capacities;

conceptualization thus relies heavily on the interaction between the human body and the physical world.

- *Cognitive neurolinguistics* (Cog\_Neuro) makes an effort to gain unique insights into the fundamental properties of human language by uncovering the mechanisms and their biological foundations underlying language representation, comprehension and production.
- *Prototype theory of categorization* (Pro\_Cate), standing in sharp contrast to classic theory, claims that conceptual as well as linguistic categories are organized in such a way that different members of a category are not equal in terms of their status such that central members share more features with the prototype than peripherals, and that family resemblance exists between different members.
- *Research methodology* (Res\_Meth) is concerned with the discussion of the method of inquiry for drawing conclusions.
- *Cognitive sociolinguistics* (Cog\_Socio) aims to account for linguistic variations in social and cultural settings under a cognitive explanatory framework.
- All other studies related to CL but not fitting into any of the above strands are labeled as *miscellaneous* (Miscel).

The above classification of different strands of CL is neither exhaustive nor exclusive. For example, metaphor and metonymy might be considered as two important constructs for meaning construction and semantic extension, and thus be categorized as being part of cognitive semantics. In the present study we treat them as a separate category due to their importance in human cognition and the semantics of natural language.

Besides strands, there is another dimension that is important for characterizing the state-of-the-art of CL in China, i.e. the research type that a certain publication could be aligned with. According to the objective of the inquiry, CL studies can be divided into the following seven types:

- *Introduction* (Intro): mere introduction of theories or constructs of a certain strand of CL;
- *Criticism and Improvement* (Cri\_Imp): pinning down problems in or making improvements to existing CL theories, usually on the basis of linguistic facts about Chinese;
- *Ontological Investigation* (Onto\_Inv): using CL theories to explicate linguistic phenomena, especially those of Chinese;
- *Contrastive Analysis* (Con\_Ana): conducting contrastive analyses between Chinese and a foreign language (especially English) within the framework of CL;

- *Language Teaching and Acquisition* (Tea\_Acq): applying the tenets of one specific strand of CL in language teaching and acquisition, be it a second language or the mother tongue;
- *Psycholinguistic Verification* (Psy\_Ver): providing evidence for the psychological reality of the basic tenets and principles of a strand of CL;
- *Other Applications* (Oth\_App): applying the framework of CL to other traditional disciplines, such lexicography, computational linguistics, translation studies, etc.

Needless to say, such a classification of CL research is heuristic rather than orthodox, and other ways of classification are possible.

Theoretically, the dimension of research type is applicable to both journal articles and books. But when we tried to apply this schema to annotate books, it turned out that many books, including monographs as well as collections, are a hybrid of many types. If we continue with the annotation of book types anyway, inconsistency and inaccuracy would be inevitable, which would jeopardize the validity of the present research. As a result, we abandoned annotating the books according to research types.

## 2.2 The general tendency

As an important index for evaluating the development of CL, we calculated the number of articles and books published from 1988 to 2015 (see Table 1 and Figure 1).

Judging by the numbers in Table 1 and the curves in Figure 1, it might be concluded that over the past few decades CL has gone through a period of continuous increase in China. This indicates that the basic tenets and principles of CL have been accepted by more and more Chinese scholars. In spite of this, there are several noteworthy points where major fluctuations occurred for both articles and books.

The number of journal articles showed a leap around the year 2000 when it jumped from 9 to 20. The next two turning points appeared in 2004 and 2012 when the development of CL in China suffered two major setbacks as indicated by the continual decline in the number of journal articles. Before these two turning points, CL in China had undergone a relatively long period of rapid expansion, which makes the two downfalls more like two major breaks after a period of continuous growth. On the whole, China's CL enterprise, as demonstrated by journal articles, has been moving ahead in a spiral fashion.

As for books, the situation is somewhat different from journal articles. In general, books echo journal articles when going through a giant leap (i.e. from 2 to 9) at the beginning of the new millennium, especially in the year 2004.

Table 1. Articles and books published from 1988 to 2015

Year	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Articles	1	1	1	2	3	5	8	9	4	9	7	9	20	22	37
Books	0	0	0	0	1	0	1	0	0	0	2	2	0	4	3
Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total	
Articles	37	29	26	25	29	30	37	41	54	50	35	39	38	608	
Books	2	9	10	15	13	24	37	39	43	43	47	51	58	404	



Figure 1. Articles and books published from 1988 to 2015

### 2.3 Two stages of expansion

To a certain extent, the rapid expansion of CL in China at the beginning of the new millennium might be attributed to the wide-spread availability of high-speed Internet connections, which coincides with the expansion of CL. Easier and faster Internet connections provide Chinese linguists with a powerful tool to become aware of new trends in linguistics outside China. Access to the latest articles and books outside China is no longer limited to a privileged few. As a result, the first few years of the new millennium witnessed an upsurge of introductory and review articles, especially in 2000 and 2003, when the number of introductory and review articles increased from 3 to 9 and from 9 to 23, respectively. Moreover, research types also diversified gradually around the year 2000. Before 2000, studies other than introductions were barely seen. After 2000, other types of studies gradually appeared, such as ontological investigations, contrastive analyses, criticism and improvement, etc. (see Table 2).

Another indicator supporting the view that the new millennium was the dividing line between two stages of development of CL in China can be seen in the strands that journal articles cover as set out in Table 3.

Table 2. Articles of different research types from 1988 to 2015

Types	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Intro	1	1	1	2	2	5	7	6	3	8	3	3	9	9	23
Onto_Inv	0	0	0	0	0	0	1	2	0	1	2	5	5	11	10
Cri_Imp	0	0	0	0	0	0	0	1	0	0	0	1	2	1	2
Con_Ana	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0
Tea_Acq	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
Psy_Ve	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Öth_App	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1
<b>Total</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>8</b>	<b>9</b>	<b>4</b>	<b>9</b>	<b>7</b>	<b>9</b>	<b>20</b>	<b>22</b>	<b>37</b>

Types	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Intro	14	12	15	8	10	7	10	9	21	16	14	11	12	242
Onto_Inv	15	11	7	9	12	17	18	23	22	25	16	22	16	250
Cri_Imp	1	2	2	3	4	3	4	2	4	6	2	2	4	46
Con_Ana	2	3	0	2	2	2	3	2	4	3	0	2	3	31
Tea_Acq	2	0	1	1	0	1	1	3	3	0	3	1	2	20
Psy_Ve	1	0	1	0	0	0	1	0	0	0	0	1	1	7
Öth_App	2	1	0	2	1	0	0	2	0	0	0	0	0	11
<b>Total</b>	<b>37</b>	<b>29</b>	<b>26</b>	<b>25</b>	<b>29</b>	<b>30</b>	<b>37</b>	<b>41</b>	<b>54</b>	<b>50</b>	<b>35</b>	<b>39</b>	<b>38</b>	<b>607</b>

Table 3. Articles of different strands from 1988 to 2015

Strand	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Cog_Sem	0	1	0	0	0	0	3	2	1	2	0	2	4	8	6
Meta_Meto	0	0	0	0	0	1	1	2	0	2	4	2	7	2	7
Cog_Gra	1	0	1	1	0	1	1	1	1	1	0	1	3	1	3
Con_Gra	0	0	0	0	0	0	1	0	0	0	0	1	3	1	3
Int_Sur	0	0	0	1	0	2	0	0	1	0	0	1	1	2	6
Cog_Pra	0	0	0	0	1	1	1	2	0	3	2	1	1	3	4
Cog_Neuro	0	0	0	0	0	0	0	0	1	0	0	1	1	1	5
Pro_Cate	0	0	0	0	0	0	0	2	0	0	1	0	0	0	1
Men_Con	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
Cog_Poet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phi_Bac	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Cog_Socio	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Res_Meth	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miscel	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0
Total	1	1	1	2	2	5	8	9	4	9	7	9	20	22	37



Table 3. (continued)

Strand	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Cog_Sem	15	6	5	7	10	7	11	15	15	19	9	14	13	175
Meta_Meto	6	5	5	3	3	4	8	6	5	5	6	7	7	98
Cog_Gra	6	5	7	3	1	5	5	4	6	4	2	6	2	72
Con_Gra	2	2	0	2	6	3	3	3	12	7	3	7	5	64
Int_Sur	0	4	2	2	2	4	4	4	4	2	6	1	4	53
Cog_Pra	5	0	1	4	1	0	1	0	3	1	1	0	3	39
Cog_Neuro	1	3	0	1	2	0	1	1	3	2	2	0	1	26
Pro_Cate	1	1	2	0	2	3	1	3	2	3	1	1	0	24
Men_Con	1	0	1	1	1	1	1	0	0	0	1	1	1	12
Cog_Poet	0	2	0	1	0	2	1	0	1	2	1	0	0	10
Phi_Bac	0	0	3	1	0	1	0	0	1	1	0	0	1	10
Cog_Socio	0	0	0	0	0	0	1	1	0	2	1	1	0	7
Res_Meth	0	0	0	0	0	0	0	1	0	1	1	0	0	3
Miscel	0	1	0	0	1	0	0	3	2	1	1	1	1	14
Total	37	29	26	25	29	30	37	41	54	50	35	39	38	607

As indicated by the high frequency of zeroes in Table 3 before 1999, journal articles covered no more than five areas of CL. However, in 1999 the number of strands expanded significantly, increasing from 3 to 7, and has continued to grow.

All in all, the beginning of the new millennium ushered in a new era in China's work on CL. The first period, i.e. from 1988 until the new millennium, when the majority of articles were introductory in nature and few applicational studies appeared, can be characterized as a phase of initial introduction and limited application. In contrast, the second period (post-millennium) is a phase of rapid expansion, massive application and in-depth reflection, when not only the basic principles and tenets were accepted by an increasingly large number of Chinese scholars and applied to a variety of areas (such as ontological investigations, contrastive analysis, language acquisition, etc.). At the same time critical assessments of the CL paradigm were put forward on the basis of linguistic facts from Chinese as well as other languages. We now turn to a description of these two stages in more detail.

### 2.3.1 *Stage one: Initial introduction and limited application*

The beginning of work on CL in China was marked by the translation and publication of articles written by the Taiwan-born linguist James H-Y. Tai (1988, 1990, 1991) who had studied and taught in American universities from 1967 to 1995. Tai was among the first linguists to scrutinize Chinese grammar from the cognitive perspective (Lu and Guo 1998). Tai's two articles "Temporal sequence and Chinese word order" (1985) and "Toward a cognition-based functional grammar of Chinese" (1989) were translated and published in *Linguistics Abroad* (now known as *Contemporary Linguistics*). In these articles, Tai took the non-objectivist position that "grammatical structures arise from the symbolization of reality" (1989: 189) and constructed a cognition-based functional grammar capable of revealing the underlying conceptual principles unique to the Chinese language, including temporal sequence principles, the whole-part relation, the salience principle and the principle involving the notion of information center.

It can be said that the first wave of Chinese CL studies began with the translation of Tai's papers. After that, CL studies began to appear in leading linguistic journals in China. The major articles published during the first stage include book reviews and survey articles, most of which are introductory in nature, and ontological investigations of Chinese grammar drawing on CL tenets.

The books reviewed are all cornerstone works in the history of CL, including George Lakoff and Mark Johnson's *Metaphors We Live By* (1980), Lakoff's *Women, Fire, and Dangerous Things* (1987), Ronald Langacker's *The Foundations of Cognitive Grammar* (1987). Chinese linguists have also written survey articles picturing the overall landscape of cognitive linguistics abroad. For instance, Shu

(1996) wrote about the methodology and the objectives of metaphorical studies; Lin (1997) surveyed western metaphorical studies; Wen (1999) gave a brief account of western CL studies; Shen (2000) explicated the generality of cognitive grammar; Zhao (2000) explained the theoretical foundation and evolution of cognitive linguistics. Book reviews and survey articles introduced a new perspective on linguistic studies that was completely different from the structural tradition prevalent in Chinese linguistic studies at the time, focusing on topics like metaphor in the lexicon and grammar, the general relationship between language and cognition, time, imagery and space as reflected in Chinese.

The application of CL frameworks to Chinese grammatical analysis started from the early days. Two typical examples are Liu (1994) and Yuan (1994). These two articles are mainly about how to apply cognitive constructs such as family resemblance, prototype theory and iconicity to Chinese grammatical analysis of, for example, noun phrases and word classes. The cognitive perspective was seen to offer systematic explanations for some notorious problems unresolvable within the structural framework, such as word order, word classes and irregular constructions. In this regard, Shen (1995) demonstrated convincingly how the notions of boundedness and unboundedness could be used systematically to account for noun-verb and noun-adjective collocations, syntactic constraints on nominal quantifiers, verbal markers, adjectival modifiers and the division of word classes.

### 2.3.2 *Stage two: Rapid expansion, massive application and in-depth reflection*

The second stage of expansion of CL in China is characterized not only by the rapid increase of the number of publications, as has been stated previously, but also by the number of non-introductory studies, including criticism and improvement, ontological investigation, contrastive analysis, language teaching and acquisition, and experimental verification.

As indicated in Table 4 and Figure 2, before 1998, there were more introductory papers than non-introductory ones, and, in some extreme cases, there were none except some introductions in the early days of CL, i.e. from 1988 to 1993. Since 1998, more descriptive studies have gradually outnumbered the introductory ones, although introductory studies surged temporarily in 2002 and 2005. As all non-introductory studies, be it criticism and improvement, ontological investigation, contrastive analysis, language teaching and acquisition, or psychological verification, indicate a more sophisticated linguistic inquiry than pure introductions, the heavier role played by non-introductories in this stage means that Chinese linguists were not content with just introducing CL theories into China. Instead, they aimed higher, i.e. indigenizing CL, either by using CL frameworks to address language facts concerning Chinese or by adjusting them against Chinese facts.

Table 4. Introductory and non-introductory articles from 1988 to 2015

Types	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Intro	1	1	1	2	2	5	7	6	3	8	3	3	9	9
Non-intro	0	0	0	0	0	0	1	3	1	1	4	6	9	13
Types	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Intro	23	14	12	15	8	10	7	10	9	21	16	14	11	12
Non-intro	13	16	11	15	18	23	27	30	33	34	21	28	26	21

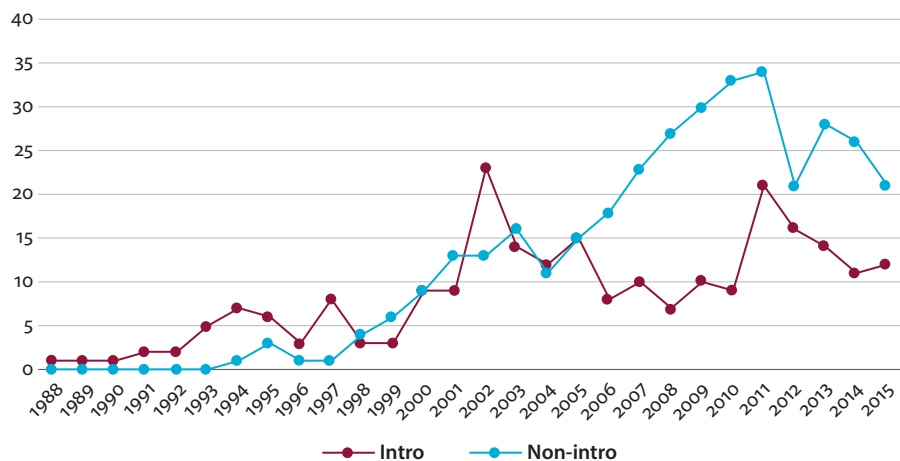


Figure 2. Introductory and non-introductory articles from 1988 to 2015

For example, Shen (1999a) pointed out that the Chinese *X-de* 的 construction, where a supposedly modifying structure designates its omitted nominal head, in its very essence, is just a grammatical manifestation of conceptual metonymy and only the salient components of its Idealized Cognitive Model (ICM) can be referred to by this construction. In another enlightening paper addressing the generation of the notoriously troublesome sentence *wanmian si-le fuqin* 王冕死了父亲, Shen (2006a) argued that the generation of this kind of sentence involves blending of constructions, with one construction providing the syntactic skeleton of the construction meaning, and the other the semantic content. He further claimed (Shen 2006b) that blending, which is attested to be psychologically real, is an important means in Chinese not only for word formation but also for phrase and sentence generation.

Another area where different strands find their respective places is the contrastive analysis of Chinese and English. Shi (2004a) claimed that the major difference between Chinese and English ditransitive constructions lies in the directionality of transfer, i.e., the Chinese ditransitive construction is bi-directional while the English construction is mono-directional. This difference, as argued by Shi, is rooted in different ways of conceptualizing the same scene by Chinese and English speakers, which manifests itself in the lexicalization of some transfer verbs in the two languages, such as the bi-directional *jie* 借 'borrow, lend' in Chinese and the mono-directional *borrow/lend* in English.

CL-based approaches are also adopted by researchers working on language teaching and acquisition, for second language and mother tongue alike. In a CL approach to the acquisition of English prepositions by Chinese EFL learners, Li and Cai (2008) found that Chinese learners of English differed significantly from native speakers in the prototypicality of the polysemous networks of English

prepositions and that negative transfer from Chinese conceptual systems were identified to be responsible for the deficiency in the use of English prepositions. Zhang and Wang (2011) conducted a case study of native Chinese children's development of subjectivization markers and found that a 4-year-old subject had developed cognitive abilities such as narrowing, broadening, optimistic inferring and contextual subsuming to acquire subjectivization meanings and the corresponding markers, which shows that subjectivization, as an interaction between speakers in oral communication, is one of the motivations underlying children's syntactic development. This research represents another kind of indigenization of CL, as such studies address relevant issues within the broader social and cultural context of the Chinese language community.

As interest in CL studies continues to grow, a new trend of critical reflections on CL appeared, reflecting Chinese linguists' efforts to improve the theory and integrate it with other linguistic approaches so as to accommodate CL to Chinese situations. For instance, in a critical evaluation of CL, Shi (2004b) listed CL's pros and cons as compared with the traditional structuralist approach, especially formalist approaches to linguistics. Deng and Shi (2007) also questioned the definition of "construction" as "any pairs of form and meaning", and discussed advantages as well as limitations of construction grammar. They pointed out that the improper extension of the term "construction" obscures the distinction between word formation and syntax, rendering grammatical analysis unnecessarily complicated, leaving unresolved the reasons for the ambiguity of constructions, failing to identify the resources of the meaning of a construction, and restricting constructional theory itself to account for only a limited group of constructions. In a similar vein, Liu (2006) probed theoretical defects of cognitive linguistics from the perspectives of mental representation and psychological reality, embodiment and image schema, and metaphor, although he still held that despite the aforementioned defects, CL remains a discipline full of theoretical charm.

Another perspective on the expansion of the CL enterprise in China during the second stage is to look at various academic activities. The most noteworthy event was the China National Conference on Cognitive Linguistics (CNCCL), initiated in 2001 and held bi-annually. This conference has grown into the largest gathering of Chinese CL practitioners. The China Cognitive Linguistics Association (CCLA) has been sponsoring the conference since its beginning and has been exerting an ever stronger influence on CL's development in China, attracting such internationally renowned scholars as Chris Sinha, Marker Turner, Gilles Fauconnier, Ronald Langacker and Eva Dąbrowska, just to name a few. Suffice it to say, CCLA, founded in 2006, has been playing an increasingly important role in the growth of CL in China. It sponsors, with the cooperation of different colleges, three major CL conferences in China, namely CNCCL since 2006, the International Cognitive

Semantics Conference (ICSC) since 2006, and the China National Conference on Cognitive Linguistics and Second Language Acquisition (CNCCL and SLA) since 2008. Moreover, it organizes a series of training workshops where prestigious cognitive linguists from home and abroad are invited to give series of lectures on different topics in CL. Besides CCLA, other organizations also work hard to popularize CL theories and thinking among Chinese linguists. The most typical of these is the School of Foreign Languages, Beihang University, which, in cooperation with foreign language schools of other universities in Beijing, has been annually inviting one internationally established CL linguist to give ten lectures on specialized topics. All these academic activities, together with journal articles and books, not only contribute substantially to popularize CL principles and tenets among Chinese linguists, but also play an important role in making the Chinese CL community more tightly connected to the international agenda of CL as well as in making known Chinese linguists' efforts to the outside world. In this regard, the efforts paid off when the 11th International Cognitive Linguistics Conference was held July 11–17, 2011, in the historic city of Xi'an, China.

### 3. The hottest CL strands

In the previous section, we sketched an overall picture of CL's expansion in China. Informative as it might be, it is no more than the skeleton of a person, meaning blood and flesh are needed to produce a living person. One way of adding blood and flesh to the skeleton of China's CL enterprise is to zoom in on the hottest strands that Chinese linguists favor and how these strands feature in CL's development. This is what we are going to do next, again relying on data mainly from journal articles.

As indicated in Table 3, journal articles are not evenly distributed over different strands of CL, though a variety of strands are covered. Of the thirteen strands (excluding the miscellaneous) we proposed, the most favored is cognitive semantics, followed by metaphor and metonymy, cognitive grammar and construction grammar, while research methodology, cognitive sociolinguistics, philosophical background and cognitive poetics are among the least favored, all occurring no more than ten times during the past decade. Another indication of some strands not being preferred is the scarcity of practitioners. For example, of the ten philosophical background articles, four are by Yi Wang (2002, 2005, 2006, 2012). Thus, it might be concluded that Chinese cognitive linguists are more concerned with traditional issues, i.e. semantics and grammar, albeit from totally new perspectives. That being the case, we choose the top four strands, i.e. cognitive semantics, metaphor and metonymy, cognitive grammar and construction grammar for further explication.

As can be seen in Table 5 and Figure 3, the four hottest strands fall into two groups in terms of their development over the past nearly 30 years, especially since the new millennium. On the one hand, cognitive semantics and construction grammar show some kind of congruence. Their curves reach the peak around 2002 or 2003, fall in 2005, then a minor upsurge in 2007, and a major upsurge again in 2011 or 2012. On the other hand, the contours of metaphor and metonymy and cognitive grammar are steadier and show no signs of major fluctuations.

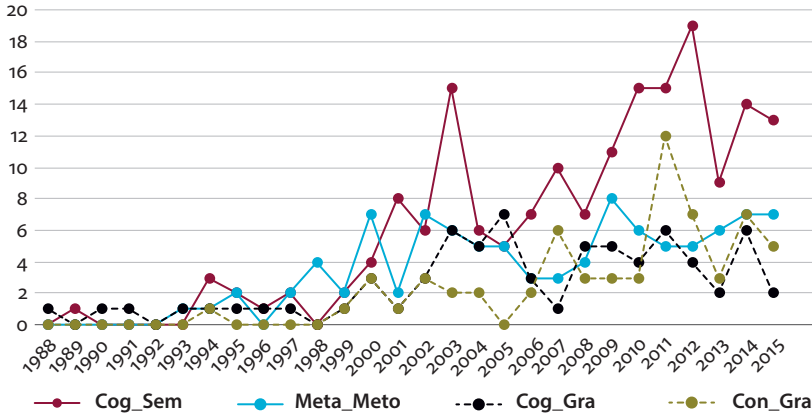


Figure 3. Articles of the four hottest strands from 1988 to 2015

The situation is different when it comes to research types each of the four strands covers (see Figure 4)

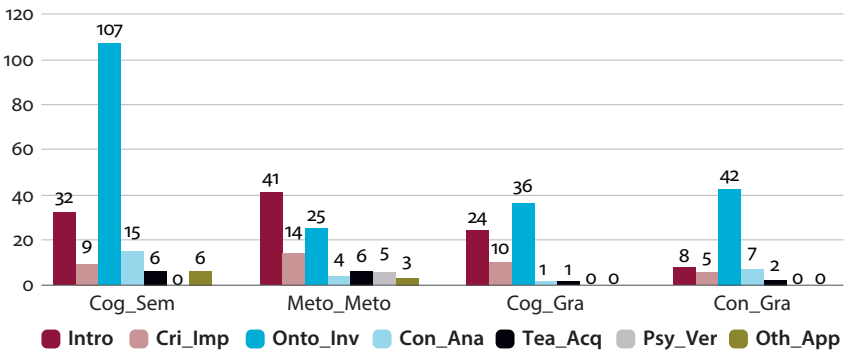


Figure 4. Research types of the four hottest strands

The columns for each research type show clearly that the four hottest Chinese CL strands have a high degree of congruence, with ontological investigations ranking first and introductions second, except that for metaphor and metonymy the order is reversed. Considering the nature of other non-introductory research types, it might be concluded that Chinese CL linguists go beyond the elementary



Table 5. Articles of the four hottest strands from 1988 to 2015

Strand	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Cog_Sem	0	1	0	0	0	0	3	2	1	2	0	2	4	8	6
Meta_Meto	0	0	0	0	0	1	1	2	0	2	4	2	7	2	7
Cog_Gra	1	0	1	1	0	1	1	1	1	1	0	1	3	1	3
Con_Gra	0	0	0	0	0	0	1	0	0	0	0	1	3	1	3
Strand	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	total	
Cog_Sem	15	6	5	7	10	7	11	15	15	19	9	14	13	175	
Meta_Meto	6	5	5	3	3	4	8	6	5	5	6	7	7	98	
Cog_Gra	6	5	7	3	1	5	5	4	6	4	2	6	2	72	
Con_Gra	2	2	0	2	6	3	3	3	12	7	3	7	5	64	

introduction to CL theories, i.e. they are trying to do more, either applying CL tenets and principles to tackle practical linguistic problems and to facilitate language teaching and acquisition, or seeking experimental evidence for the psychological reality of its concepts. The rest of this sub-section is devoted to outlining the major research types of the four hottest strands one by one, focusing on non-introductory studies.

### 3.1 Cognitive semantics

As can be seen from Figure 4, of all the articles addressing semantic issues from the cognitive perspective, more than half, 107 to be exact, are devoted to specific linguistic problems. For example, Xiao and Shen (2009), under the framework of three conceptual domains as put forward in Sweetser (1990) and Shen (2003), proposed that the semantics of the sentence-final particle *le* 了 ‘perfective’ is to indicate “emergence of a new situation”, which is further divided into “emergence of a new acting situation”, “emergence of a new knowing situation” and “emergence of a new speaking situation”. One important and useful domain for various constructs of cognitive semantics is the discrimination of Chinese synonymous words. Xie (2009) proposed that the behavioral difference between the two Chinese adverbs *gang* 刚 ‘just now’ and *gangcai* 刚才 ‘just now’ is motivated by the semantic difference, with the latter denoting an absolute temporal concept, while the former denotes a temporal relation.

Another area where basic tenets of cognitive semantics are widely applied is contrastive analysis. For example, Fang (2000) stated that the difference between the Chinese and English tense system is just a reflection of the difference between the construal of time by Chinese and English native speakers. Besides ontological investigations and contrastive analysis, there are also several studies targeting language teaching and acquisition. An interesting case in point is a study by Li and Cao (2013), in which the authors investigated how Talmy’s notion of motion events might be expressed by high proficiency EFL learners’ co-verbal gestures. They found that path information is most conveniently denoted by co-verbal gestures while manner information is hard to encode gesturally.

As for studies dedicated to criticism and improvements of CL, two examples should suffice. One is Zhang (2009), in which the author explicates the flexibility of the concept of boundedness. The author argues that the flexibility of boundedness is a function of a conceptualizer adjusting the inherent properties of a profile and its relation with its immediate scope, which is made possible through the interacting factors of conceptual construal, the rich conceptual potential of lexical meaning, and the symbolic value of constructional schemas. In another paper addressing the strengths and weaknesses of Langacker’s theory of subjectivity,

Huang (2016) claims that it faces such theory-internal challenges as the non-formal representation of subjectivity, the vagueness and sparsity of parameters for subjectivity, as well as a clear distinction between subjectivity and objectivity in different (components of) expressions. Moreover, a pre-linguistic, i.e. cognitive conception of subjectivity neglects its embeddedness in conceptual content. Moreover, as a side effect, according to Huang, Langacker neglects the importance of language intuition.

### 3.2 Metaphor and metonymy

As shown in Figure 3, metaphor and metonymy, as one of the earliest strands of CL, has been undergoing a relatively smooth development ever since the beginning of the new millennium, indicating that Chinese scholars are interested in this area although without much enthusiasm. Although metaphor and metonymy is the only strand where introductions outrank all other types of research, it still ranks the highest in terms of research types, covering all seven research types that we proposed.

The area where metaphor and metonymy is most widely attested is ontological investigation, in which Chinese facts are explicated more adequately. For example, Lan (1999), using authentic data, explores the metaphorical extensions of the Chinese spatial words *shang* 上 ‘up’ and *xia* 下 ‘down’ and detects that although *shang* 上 and *xia* 下 could both be extended to express abstract notions, they differ in that the former shows a preference for positivity while the latter for negativity. In the discussion of a grammatical freak like *chi shitang* 吃食堂 ‘eat (in) the dining hall’, where a transitive verb is followed by a locative indicating where the action takes place, Wang (2000) proposed that the locative is neither the locative object nor the manner object; rather it is the metonymic extension of the recipient object.

Probing similarities and differences between Chinese and English from the perspective of metaphor and metonymy is also a major concern of Chinese CL linguistics. For example, Xiang and Wang (2009), after a thorough investigation of 36 animal metaphors of Chinese and English, concluded that although animal metaphors in English and Chinese are similar to a certain extent, they nonetheless feature culture-specific elements. Studies devoted to language teaching and acquisition might be exemplified by Zhong and Chen (2015), where the authors discovered that EFL student studies are strong in the use of nominalization while weak in utilizing conceptual metaphor and metaphor of verbalization and modality.

Although studies dedicated to the exploration of psychological reality of metaphor and metonymy are small in number, they are the most enlightening. For example, in a study investigating the nature of metaphorical representation, Zhou (2002), by means of an interfering study task and eye-tracking, discovered

that the projection of one conceptual domain onto another is processed automatically and no additional cognitive resources are required and the metaphorical representation thus established belongs to preexisting patterns rather than being constructed *ad hoc*.

As for studies that are innovative in some respects, Xu (2011) is among the most noteworthy. The author claims that there exists a logical foundation for metonymy. He contends that truth conditions are a small but essential part of metonymic meaning. In another paper, Liu (2002) contradicts the commonly accepted distinction between metaphor and metonymy; rather, he claims that metaphor and metonymy occupy two extreme poles on a continuum.

### 3.3 Cognitive grammar

Ontological investigations take up one half of all the studies pertaining to cognitive grammar and all of them account for grammatical phenomena in terms of cognitive and conceptual-pragmatic factors. For example, Jia (2015) discovered that in Chinese relative clauses the extraction of arguments from complex noun phrases, subject clauses, genitive constructions and adjunct clauses is determined largely by one property of information structure, namely the backgroundedness of these constructions, and that the relativization of Chinese sentence components is guided by the Noun Accessibility Hierarchy, another property of information structure, as proposed by Keenan and Comrie (1977).

Liu (2008, 2015, 2016) elucidated the notion of boundary movement, whereby such grammatical phenomena as grammaticalization and lexicalization are better explained. For example, Liu (2016) claimed that lexicalization is a process of structural innovation in language change motivated by the human cognitive ability to assign structural boundaries. In another innovative paper, Shen (2006b) further divided the integration of concepts and expressions into two types, i.e. blending and haplogy, with the former being associated with metaphor and the latter with metonymy.

There are only two applications of cognitive grammar to contrastive analysis and language teaching, respectively. In his contrastive study, Shen (1996) offers tentative cognitive explanations for the similarities and differences between Chinese and English in three case studies, namely, meaning biases of neutral words, differences in the order of attribute and head, and constraints on relativization. With an applied perspective, Yuan, Zhan and Shi (2014) explore the interactive lexicon-construction model of grammatical description for its pedagogical implications.

### 3.4 Construction grammar

As can be seen in Figures 3 and 4, with regard to journal articles, construction grammar shows an interesting parallel with cognitive semantics in two ways. One is the contour of the curve of articles published from 1988 to 2015, as has been pointed out previously. Another similarity between the two is the high percentage of ontological studies. A case in point for construction grammar is Shen (1999b). The author, taking *zai* 在 ‘at’ construction and *ba* 把 ‘taking’ construction as examples, argues that different orderings of constituents lead to different constructions, and a construction, as a structural gestalt, has its own meaning, which makes it feasible to formulate generalizations with regard to various grammatical phenomena. Two structures with similar formal representations can be conveniently compared under the constructional perspective. For example, Wang (2010) argues convincingly that the constructional meanings of *sui* 谁 + *shi* 是 + NP and NP + *shi* 是 + *sui* 谁 differ considerably, depending on whether the NP is a proper noun, which is extension-prominent, or a common noun, which is connotation-prominent.

Another important area of application of construction grammar is contrastive analysis. One construction that features prominently in this regard is the double object construction. There are altogether three papers that compare similarities and differences between Chinese and English double object constructions, i.e. Shi (2004a), Zhang (2006) and Xiong (2007). While the former two reached the consensus that the construction in both languages is capable of denoting intentional transfer, they differ drastically in terms of directionality of the transfer, with Chinese being bi-directional and English mono-directional; the latter focuses on one aspect of commonality between the two, i.e. the high constructional effect resulting from the abnormal matches between form and content within a low-prototypical ditransitive construction, whereby constructions are able to temporarily adjust the sense, use and argument structure of the principal verb.

Of the five criticism and improvements articles, four were targeted at the defects of current construction theories. Echoing Deng and Shi (2007), mentioned previously, Lu (2016) claims that although it is useful in grammatical description and explanation, construction grammar cannot resolve all linguistic problems and needs to be supplemented by other theories, e.g. “chunk” theory, which has its origins in corpus linguistics. Lu’s point is echoed in the two pedagogical papers by Su and Lu (2010) and Su (2011), in which the authors put forward the construction-chunk approach for syntactic analysis and second language pedagogy in an attempt to revolutionize the traditional “subject-predicate-object” and “agent-verb-patient” methods.

## 4. Characteristics of CL's expansion in China

In previous sections, we have provided a broad overview of the development of CL in China, drawing on both quantitative data and qualitative descriptions. It might be concluded that the acceptance of CL theories by Chinese scholars has been rapid and enthusiastic, as is evident from the great number and high coverage of CL-oriented articles and books, although the existence of some repetitive and thus redundant introductory studies seems a little noisy. It is now time to sum up the characteristics of CL's development, taking into consideration the tradition of Chinese linguistic inquiry and the features of the Chinese language.

### 4.1 Direct borrowing and application rather than a “revolution”

Sampson (1980: 130) once commented, “Any linguist today measures his/her intellectual position with reference to that of Noam Chomsky”. This is especially true of CL, a theoretical paradigm that is highly critical of formal linguistics. The major hypotheses guiding the CL approach to language (i.e. language is not an autonomous cognitive faculty; grammar is conceptualization; knowledge of language emerges from language use) represent a response by the pioneering figures in Cognitive Linguistics to the dominant approaches to syntax and semantics at the time, namely, generative grammar and truth-conditional (logical) semantics (Croft and Cruse 2004: 1). In a similar vein, Geeraerts and Cuyckens (2007: 7) observe:

Because of the shift in the type of knowledge that cognitive approaches focus on in contrast with Generative Grammar, and specifically because of the experientialist nature of CL, it is sometimes said that CL belongs to the ‘second cognitive revolution’, whereas Generative Grammar belongs to the ‘first cognitive revolution’ of the 1950s.

In China, CL has developed from a completely different theoretical background. Though Chomsky's 1957 book *Syntactic Structures* was translated and introduced in the late 1970s, it never achieved the dominance in China as it did in the West. In China, CL was initially introduced as a new perspective to solve the problems that linguists encountered when they analyzed Chinese within a traditional structural framework.

From the advent of *Ma's Grammar* 《马氏文通》, most Chinese linguistic works until 1940s were done in light of the Indo-European language system. Then came the first wave of Chinese grammatical studies when scholars such as Li Wang (王力), Shuxiang Lü (吕叔湘), and Mingkai Gao (高名凯) analyzed Chinese in depth under the influence of European linguists like Otto Jespersen, Ferdinand Brunot and Joseph Vendryes. Since the late 1940s when Yuanren

Zhao(赵元任) wrote *Introduction to Spoken Chinese* in 1948, structuralism and descriptive linguistics began to influence linguistic studies in China. The trend gained momentum in the following decades and reached its climax in the 1980s, when scholars influenced by descriptive linguistics and structuralism grew into the mainstream power of Chinese grammatical research. They greatly boosted inquiries into both Chinese linguistic facts and analytical methods (Lu and Shen 2004). Lu (2007) points out that the overall trend of Chinese linguistic study since the 1970s had focused on “feature” studies, such as phonological feature analysis, semantic feature analysis and complex feature analysis.

From roughly 1990 onwards, a new trend to link grammar more closely to contextual aspects of language use has emerged in China. Chinese researchers began to look for psychological, cognitive and social factors that motivate language facts. Taking as their point of departure a “three-plane system” (i.e. syntax, semantics and pragmatics) and cognitive linguistics (Lu and Shen 2004), they moved beyond structuralist approaches, incorporating conceptual-pragmatic factors that take context and speakers’ construal into account in the construction of meaning. This re-emphasis on context is different from the Western pragmatic tradition and is closer to a re-contextualization of CL. Thus in some sense, China’s CL grew out of the difficulties arising within structural and descriptive frameworks as applied in the study of mostly Indo-European languages, which Chinese linguistics came to view as inadequate for the description and explanation of Chinese language phenomena.

#### 4.1.1 *Searching for ways out of the structuralism dilemma*

Chinese grammarians rely heavily on western grammatical theories as tools to explicate Chinese linguistic facts and they usually analyze the equivalent English translations of Chinese rather than the Chinese language itself. Thus English grammatical categories and structures are superimposed onto Chinese under the assumption that they are the same for both Chinese and English. It is only when Chinese grammarians are faced with some obvious distinctive characteristics of Chinese grammar that resist a Western method of analysis that they begin to question the validity of the method (Tai 1989: 191). The wholesale application of word class categories (i.e. parts of speech) is a case in point.

The criteria for word class division have long been a topic of debate in the Chinese linguistic community due to its importance in Chinese teaching and information processing. It evoked two rounds of nation-wide discussions in the 1930s and 1950s and is still a field of interest to Chinese scholars. Due to the lack of morphological inflections in Chinese, some modifications had to be made to the western method of distinguishing word classes, and this led Zhu (2001) to put

forward grammatical distribution as one of the defining criteria of Chinese word classes.

Patterns of grammatical distribution is one criterion that is widely accepted in Chinese linguistics. The method proposes to categorize words according to the particular functional words with which they may co-occur, and the grammatical function of a word is held to be the sum of its grammatical positions (Zhu 2001). For instance, adjectives are words that can be modified by *hen* 很 ‘very’, and cannot be followed by objects, as shown in examples (1) and (2).

- (1) 她很善良。  
*Ta hen shanliang.*  
 she very kind  
 ‘She is very kind.’
- (2) \*她美丽山。  
*Ta meili shan.*  
 she beautiful Mountain  
 ‘She beautiful the mountain.’

Most typical adjectives follow the criteria of grammatical distributions as in (1) and (2). However, there are cases like (3) where the adjective is followed by an object.

- (3) a. 红着脸。  
*Hong zhe lian.*  
 red DUR face  
 ‘The face is blushing.’
- b. 红过脸。  
*Hong guo lian.*  
 red PFV face  
 ‘They (had disagreements and) blushed face to each other.’
- c. 红了脸。  
*Hong le lian.*  
 red PST face  
 ‘The face blushed.’ (Yuan 1995)

Grammatical distribution also predicts that nouns cannot be modified by the adverb *hen* 很 ‘very’, but can be used after numerical words and classifiers, as shown in (4).

- (4) *yizhi bi* 一支笔 ‘a piece of pen’  
*yizhong fengqi* 一种风气 ‘a kind of ethos’



Nevertheless, there are cases in which nouns are modified by the adverb *hen* or used after numerical words or classifiers. For example, in (5) the adverb *hen* that is typically distributed with adjectives is used to modify the noun. However, (6) shows that the noun *tiyu* 体育 ‘sports’ cannot be modified by any numerical words or classifiers.

- (5) \**hen xiezi* 很鞋子 ‘very shoes’  
*hen xiaohai* 很小孩 ‘very childish’ [childish?]  
*hen zhongguo* 很中国 ‘full of Chinese characteristics’
- (6) \**yi zhong/ge tiyu* 一种/个体育 ‘a kind of sports’

Chinese scholars with different theoretical backgrounds are accustomed to probing Chinese language data from different perspectives. There are always disagreements that need explanation when new solutions are proposed because counter examples resulting from dichotomous divisions are easily found. A breakthrough was not made until the mid-1990s when the prototype theory of categorization was introduced and applied.

While explicating the continuum between adjectives and prepositions, Langacker (2006: 139) noted:

[I]n addition to their schematic characterizations, the categories have prototypes and thus include both central and more peripheral members. Peripheral members of two categories are often more similar than their prototypes, which tend to be maximally distinct.

Yuan (1995) proposed that Chinese word classes constitute prototypical categories, in which members cluster according to their degree of family resemblance. Thus, prototypical members have a group of distribution features that can be used to define the word classes as references for other categories of members. It is the fuzzy boundaries between word classes and the relatively slight differences between peripheral members that cause problems of classification. He recategorizes Chinese word classes assuming flexible class boundaries and smooth transitions from one category to another.

Yuan’s approach offers an analytical tool that scholars proposing different word class categorizations can use, helping them find reasonable explanations when confronted with counter examples. It is now generally agreed that Chinese word classes exist, but with fuzzy boundaries, and that different word classes form continua with central and peripheral members.

#### 4.1.2 Seeking “*explanatory adequacy*”

The search for reasonable accounts of Chinese grammatical facts and for systematic rather than isolated linguistic evidence are the major pursuits of contemporary of

CL studies in China. Iconicity, prototypicality, stereotypical relations, marked images, imagery, metaphor, salience rule, etc. have offered enlightening solutions to long-standing knotty problems in Chinese grammatical studies (Lu and Guo 1998).

Moreover, the new perspective that CL offers also facilitates the discovery of buried grammatical facts that used to be ignored by other linguistic approaches. For instance, Zhang (1998) employed the concept of distance to explain the *de* 的 construction in Chinese. He proposed that the formal distance caused by the *de* 的 abbreviation is parallel to the conceptual distance between the modifier and the head; thus, distance iconicity motivates the rules of *de* 的 abbreviations and Chinese noun phrases, as shown in (7):

- (7) a. *baizhi* 白纸 ‘white paper’  
       \**bai de zhi* 白的纸 ‘white paper’  
    b. \**xuebai zhi* 雪白纸 ‘snow-white paper’  
       *xuebai de zhi* 雪白的纸 ‘snow-white paper’

As can be seen in the grammatical form in (7a), the conceptual distance between the modifier and the head is shorter than in the grammatical form in (7b). In (7a), *bai* 白 ‘white’ and *zhi* 纸 ‘paper’ express a single generic concept, whereas in (7b) *xuebai* 雪白 ‘snow-white’ is only an accidental feature of *zhi* 纸, which requires the insertion of *de* (Zhang 1998).

The Chinese linguist Jiakuan Shen is one pioneer who introduced and initiated cognitive linguistic research in China. Aiming at adequate explanation and weak prediction, Shen applied modern theories in cognitive linguistics to the analysis of a wide spectrum of unsolved problems in Chinese studies and the investigation of characteristics of Chinese in comparison and contrast with other languages (see Shen 1995, 1999a, 1999b).

Shen’s article “A metonymic model of transferred designation of *de* 的 constructions in Mandarin Chinese” (1999a) set a good example. Noted Chinese linguist Zhu (1983) had explored a wide range of transferred designations made by the VP *de* 的 construction, but failed to explain the conditions motivating its use. Shen resolved the problem by proposing a metonymic model in terms of concepts such as cognitive salience and frames. The metonymic explanation of transferred designation accounts for not only the cognitive motivation of grammaticality, but also predicts related grammatical phenomena. In *Asymmetries and Markedness Theory*, Shen (1999c) explores negation, polarity words, antonyms, asymmetry between subject and object and many other grammatical phenomena in Chinese on the basis of markedness reversal patterns in typological studies, and elaborates cognitive and pragmatic motivations for such patterns. This investigation is of great significance in that the boundaries delimiting morphology, syntax and semantics, the boundaries between parts of speech, and the boundaries between

lexicon and grammar are abandoned to account for grammatical asymmetries. Inspired by Fauconnier and Turner's (2003) Conceptual Integration Theory, Shen (2006b) proposes that conceptual integration is essential for understanding Chinese word formation and sentence generation. In a similar vein, Shen (2006a) shows how conceptual integration offers solutions to the difficulties traditional studies encounter in dealing with constructions like *Wang Mian si-le fuqin* 王冕死了父亲 (lit. 'Wangmian died his father'; i.e. 'Wangmian's father died on him'). The construction is noteworthy due to the unusual collocation of an intransitive verb with an object.

As Lu and Guo (1998: 12) have noted, the focus of Chinese linguistic research has shifted from description to explanation of various linguistic facts, and "the emergence of cognitive linguistics would be beneficial to both explanatory and descriptive approaches in research on Chinese grammar". Lu (2007) explored how construction grammar benefits Chinese grammar studies: (i) it provides a unitary explanation for the flexibility and ambiguity of certain Chinese sentence patterns; (ii) it helps improve the decomposition of sentence meaning: apart from lexical and relational meanings, constructional meaning should also be taken into consideration as part of overall meaning; (iii) it offers plausible explanations for the creation of new constructions with unique grammatical features and communicative functions.

The disambiguation of Chinese sentences has become one of the key issues in information processing. Apart from traditional Chinese methods of analyzing sentences, many western theories were introduced to address task, such as analytic hierarchy models, transformation analysis and semantic feature analysis. However, some unsolved problems remained. For instance, none of these analyses perfectly explains why the Locative+V + *zhe* 着 + NP construction can express either a static or dynamic situation.

- (8) 墙上挂着一幅画。  
*Qiangshang gua Zhe yifu hua.*  
 on the wall hang PROG a picture  
 'A picture hangs on the wall.'
- (9) 台上唱着戏。  
*Taishang chang Zhe xi.*  
 On the stage sing PROG opera  
 '(Someone) is singing on the stage.'

Construction grammar can provide a plausible explanation for such a phenomenon. This is because constructions, like lexical items, can have multiple meanings (i.e., they may be polysemous), or may appear as a single form but have unrelated

meanings (i.e., they may be homonymous). Although (8) and (9) share the same syntactic form *Locative+V + zhe* 着 + NP, one of them has an existential static meaning and the other a dynamic event meaning. That is, (8) is an instantiation of an existence construction while (9) can be seen as an illustration of an event construction. In other words, we can ask: do they instantiate one construction with two meanings, or are they simply a case of constructional homonymy? Lu and Guo (1998) suggest that to make progress on the disambiguation of Chinese sentences, it would be useful to postulate semantic frames, constructional frames and cognitive domains.

#### 4.2 Parataxis and the resemanticization of Chinese grammar

Another important reason for the success of the CL paradigm in China lies in a specific typological characteristic of Chinese, namely, its paratactic rather than hypotactic structure. Parataxis generally refers to constructions of equal status, i.e. the coordination or juxtaposition of constituents. Hypotaxis, on the other hand, describes constructions in terms of a hierarchical structure, with dependent or subordinate constituents, e.g. clauses.

Western formal linguistic paradigms such as transformational-generative grammar have been applied by some Chinese researchers to account for grammatical phenomena in Chinese. However, such attempts have failed to be significantly influential for the following reasons: (i) the formalist tradition is not easily applicable to Chinese, which is a topic-prominent paratactic language; (ii) the analyses of the formalist paradigm are psycholinguistically implausible because postulate too many movement transformations; (iii) the formalist tradition does not consider the impacts of culture, experience, subjectivity or construal on language. For instance, (10) is not acceptable according to formal criteria:

- (10) *chi dawan* 吃大碗 ‘eat (with) large bowls’  
*chi shitang* 吃食堂 ‘eat (in) the dining hall’

Yet the expressions in (10) are common language usages that are accepted by Chinese speakers. Within structural or formal linguistic frameworks, it is hard to explain why containers (‘large bowls’) or locations (‘dining hall’) can be used as the direct object of the verb ‘eat’.

Geeraerts and Cuyckens (2007: 15) aptly observe that cognitive linguistics “embodies resemanticization of grammar by focusing on the interplay between language and conceptualization”. CL recognizes that ways of conceptualization can influence language usage and is thus eminently suited for the analysis of a paratactic language like Chinese. Hence, the examples in (11) can be explained in terms of salience of components within cognitive frames; that is, in a typical

‘dinner’ frame, usually only the salient parts are selected and coded to obtain acceptable expressions.

- (11) a. \*chi wan 吃碗 ‘eat bowl’  
 b. 你吃大碗，我吃小碗。  
*Ni chi dawan, wo chi xiaowan.*  
 you eat big bowl, I eat small bowl  
 ‘You eat the food contained in the larger bowl, I eat the food contained in the smaller bowl.’

In (11a), since ‘bowl’ is a default food container in China, it is unnecessary to mention it explicitly in the expression; whereas in (11b), ‘larger’ and ‘smaller’ bowls are profiled as new information that contrast with each other, and thus can be conjoined with the verb ‘eat’, creating acceptable expressions.

### 4.3 Two Chinese linguistic circles and their different research programs

In China, there are roughly two communities of linguistic research – the Chinese language circle and the foreign language circle. Although they share some interests with regard to CL-based studies, they have distinct aims and foci. To illustrate this, we counted the articles published in three Chinese and three foreign language journals according to their thematic strands and research types, respectively. The results of our analysis appear in Table 6 and Figure 5, and Table 7 and Figure 6.<sup>3</sup>

Table 6 and the pie charts in Figure 5 demonstrate that scholars’ research activities vary thematically, depending on whether they focus on the linguistics of Chinese or the linguistics of foreign languages. Scholars in the foreign language circle extend their interest to all the strands of CL that we have proposed. What’s more, those strands have a relatively more even distribution, with metaphor and metonymy and cognitive semantics taking the lead (around 20%), and cognitive grammar, introduction and survey, cognitive pragmatics, and construction grammar coming next (around 10%). However, scholars in the Chinese language circle show a markedly different pattern of preferences. Not only are their research interests more restricted, having no articles devoted to research methodology, cognitive poetics, and philosophical background, but also their research focus is strongly biased toward cognitive semantics (54%), followed by construction grammar (17%), cognitive grammar (10%), and metaphor and metonymy (8%). All other strands appear only sporadically.

3. We remind the reader that elaborations of abbreviations used in Tables and Figures are found in Section 2.1.

Table 6. Articles according to 14 thematic strands: Chinese vs. foreign language journals

Journals	Int_ Sur	Cog_ Gra	Pro_ Cate	Res_ Meth	Cog_ Socio	Cog_ Sem	Meta_ Meto	Cog_ Pra	Con_ Gra	Cog_ Poet	Men_ Con	Phi_ Bac	Cog_ Neuro	Miscel
Chi_Jour	4	17	2	0	1	89	13	2	28	0	1	0	3	4
For_Jour	43	42	21	2	4	78	82	36	34	10	10	10	12	9

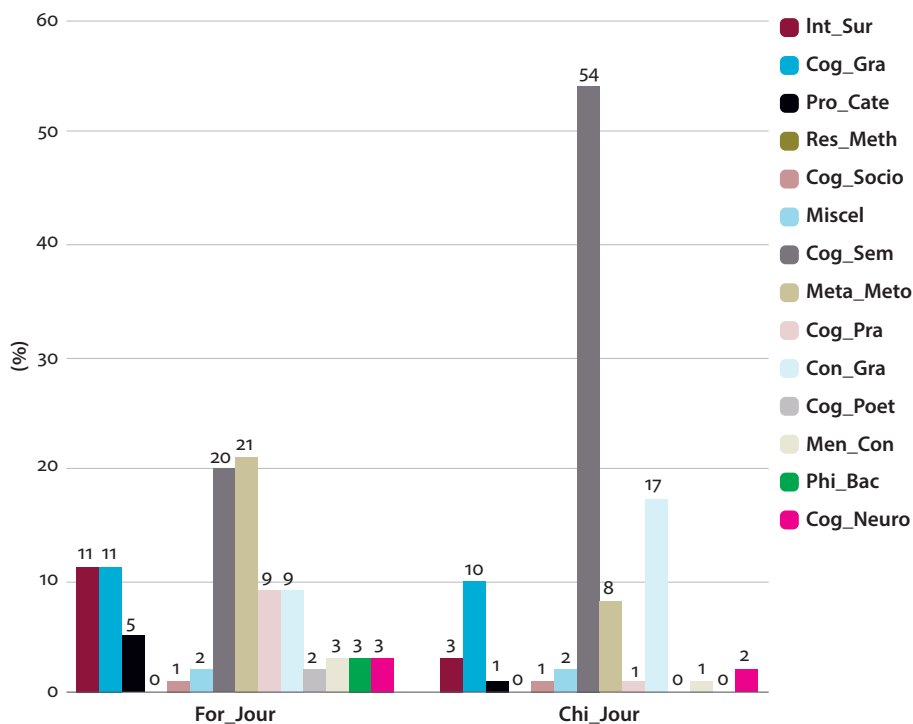


Figure 5. Articles according to 14 thematic strands: Chinese vs. foreign language journals

Table 7. Articles according to 7 research types: Chinese vs. foreign language journals

Journals	Intro	Cri_Imp	Onto_Inv	Con_Ana	Tea_Acq	Psy_Ver	Oth_App
Chi_Jour	10	7	132	4	8	0	3
For_Jour	193	37	109	27	12	7	8

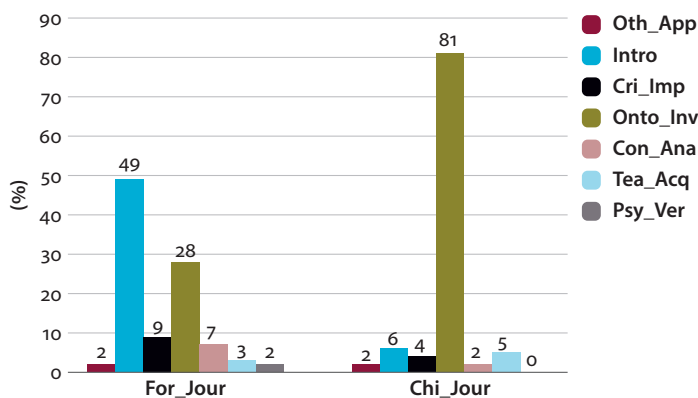


Figure 6. Articles according to 7 research types: Chinese vs. foreign language journals

Table 7 and Figure 6 show that the division of the two research groups is even more clear-cut when examined from the perspective of research types. First, scholars in the foreign language circle care most about introducing CL theories into China, with ontological investigations coming next, whereas for scholars in the Chinese language circle this order is reversed. Second, articles in Chinese journals show a strong bias towards ontological investigations (with the high percentage of 81%), while articles in foreign language journals are more evenly distributed over different research types.

The segregation of the two research circles is a natural result of their distinct backgrounds and research goals. The Chinese language circle, having a long tradition of explicating language facts since the days of structuralism, aim for “depth” of linguistic research, i.e. the “descriptive and explanatory adequacy” of linguistic phenomena, while their relatively low foreign language proficiency (especially in English) in general hinders them from accessing the latest development of CL as well as a versatile array of CL strands. On the other hand, the possession of a high foreign language proficiency (again in English) enables scholars from the foreign language group to gain easy access to the state of the art of CL, and happy to be introducers of CL theories, are more engaged with research “width”, i.e. “motivations and mechanisms behind human languages”, as well as their practical value in foreign ontological investigation, contrastive analysis and language teaching.

## 5. Concluding remarks: Research prospects for CL in China

Cognitive linguistics is gaining ever wider recognition both in the West and in China. We foresee that its growth in Mandarin-based studies and comparative and contrastive studies will continue in the next few decades. Advances are to be made in observational adequacy, descriptive adequacy and explanatory adequacy of Chinese language phenomena from a cognitive perspective. Linguists from both the Chinese research circle and the foreign language research circle will increasingly interact and cooperate in an effort to reveal regularities in human language and communication. In particular, the idiosyncratic properties of Chinese, English and other languages will be investigated increasingly from a comparative and contrastive perspective. Some Chinese linguists insist that what we should study is not linguistics *per se* but language, that is, Chinese scholars will consider language as the proper object of investigation rather than the study of particular linguistic schools and their applications.



Another development in CL that we foresee in China is an increasing interest in research methodology, for example, in corpus-based approaches and experimental studies. A growing number of cognitive science laboratories and research centers have been established in Chinese universities such as The Center for Brain and Cognitive Science at Peking University, The Center for the Study of Language and Cognition at Zhejiang University, The Center for Mind and Cognition at Central China Normal University, and The Laboratory of Cognitive and Psychological Research at Wenzhou University. These research centers will greatly enhance in-depth research on the relationship between language and cognition. Thus, we conclude that the future of Cognitive Linguistics in China is bright.

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PART I

# Morphological, lexical and syntactic constructions



# When constructions meet context

## The polysemy of Mandarin *hai* revisited

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This study investigates the synchronic polysemy of the Mandarin construction *hai*. Drawing on authentic and contextualized examples of spoken language, I propose that *hai* prototypically functions as an indicator that the ensuing proposition refers back to some relevant presupposition in prior discourse, which is either explicitly stated or inferable. With this contrastive alignment of two propositions, the reading of *hai* as ‘temporal continuance’ emerges naturally by way of pragmatic inferencing. In other words, I demonstrate that the various meanings identified in previous studies arise from an interplay between *hai*’s schematic sense and discourse pragmatics. This study presents not only a unified account for the synchronic polysemy of *hai*, but also has significance for the study of constructions in discourse.

**Keywords:** contextualization, discourse pragmatics, presupposition, schematic sense

### 1. Introduction

In the last two decades or so, construction grammar (henceforth CxG) approaches to natural language have come a long way from initial aspirations to account for “oddball” expressions and idiomatic phrases, blossoming into a full-fledged theory of language (cf. Lakoff 1987; Fillmore et al. 1988; Goldberg 1995, 2003, 2005, 2006; Bybee 2001; Michaelis and Lambrecht 1996; Bybee and Scheibman 1999; Barlow and Kemmer 2000; Tomasello 2005; Croft 2001; Fried and Östman 2004; Fried 2005; Östman and Fried 2005, et passim). The mission statement of CxG is ambitious and unequivocal at the outset, aptly summed up by Goldberg (2003: 219): “Constructionist approaches aim to account for the full range of facts about language, without assuming that a particular subset of the data is part of a privileged ‘core’”. While earlier research on CxG was based mostly on self-constructed data,



to make good on that commitment, a growing number of construction grammarians have shifted their attention to how constructions are realized in discourse (see e.g. Östman 2004; Fried and Östman 2005; Goldberg 2005). However, so far few studies have closely examined the interaction between constructions and context as evidenced by actual manifestations of constructions situated in language use.

Inspired mainly by the discourse-constructional approach, this investigation is a foray into the potentially rugged terrain of constructions in language use, or more precisely, spoken discourse, exemplified via a case study of the polysemy of Mandarin *hai*. My choice of *hai*, a grammatical simplex, as the investigative target reflects this study's objective to veer off from the beaten track. While most CxG research has focused on structural patterns beyond words (or lexical items, in the traditional sense) to discover non-compositional meaning, the present inquiry takes a more bottom-up route, zooming in on the lower layer of constructional ecology.

The benefits of such an approach extend both ways. Adopting a CxG framework allows one to reveal how the constructions that *hai* naturally inhabits are largely responsible for its polysemy. Past studies of *hai* adopted either a diachronic or semantically based view to elucidate a seemingly wide array of synchronic uses (with the single exception of Jing-Schmidt and Gries 2009, discussed below), which leave open how *hai* is actually used in authentic discourse. By scrutinizing natural spoken data and proposing a single pragmatic function for *hai*, I show that its diverse interpretations stem systematically from the interplay between its core function, its use in constructions and contextual factors.

## 2. Literature review

The literature abounds in remarks on *hai* in both pedagogical and linguistic works varying in both analytic scope and depth. Often glossed as 'still', *hai* was in general categorized as an adverbial with labels such as 'adverb of time' Chao 1968: 84, 266, Li and Thompson 1981: 334–335, Wang 1992: 275), 'concessive adverbial' (Li et al. 1989: 66) and 'deontic modality adverb' (Chu 1998: 108–112, 115). Several other reference grammars mentioned a few preliminary observations and speculations on the meaning of *hai*, with no thorough explanation as to its polysemy (see e.g. Lu 1980; Lu 1985; Ma 1985; Chu and Ji 1999: 52–53, 57).

However, the recent two decades have witnessed a surge of interest among linguists seeking to come up with a systematic, theoretical account of the polysemy of *hai* from both a diachronic and synchronic perspective.

Yeh (1996, 1998), for example, traced the historical development of *hai* back to its cognate verb *huan* ('go/come back') and showed that its semantic change

confirms Sweetser's (1988) and Traugott's (1989) models of grammaticalization. Yeh's (1998: 239) central contention was that "the historical development of *hai* is critical in order to understand the relatedness among its various senses". Instead of proposing a single core meaning, Yeh (1998: 239–240) argued that since, around the 7th/8th century, *hai*, in addition to the meaning 'again', has developed a 'connective' sense, both of which diverged in subsequent developments, the two functions should be treated separately.

Another related study was conducted by Donazzan (2005), who investigated *hai* as an additive particle with a scalar reading parasitic on an independently ordered domain. She discussed several usages of *hai*, arguing that all of them, except for the additive function, arise from contextual factors.

To date, by far the most comprehensive study on the synchronic sense of *hai* has been undertaken by Liu (2000). Based primarily on Liu (1996), in Liu (2000) the author proposed a unified account of the different uses of *hai*, and I basically sympathize with her underlying claim that "there is a general meaning across all of the uses of *hai*; the various meanings in different contexts are derived from interaction between the basic meaning and contextual factors" (Liu 2000: 48).

The above studies provide new perspectives on the polysemy of *hai*, yet they are not really concerned with the way that the various usages of this lexeme are contextualized in daily interaction. To overcome this deficit, the present study is based on a corpus of spontaneous spoken data in order to demonstrate how *hai* is used in spoken discourse and how the hearer arrives at the correct interpretation of *hai* intended by the speaker in any given context. The context relevant for the interpretation of *hai* is provided for each example.

### 3. Theoretical assumptions

In this section, I introduce the definition of context and some fundamental assumptions in cognitive linguistics to aid the reader in following the arguments.

#### 3.1 Defining 'context'

Since I plan to explore the nuts and bolts of contextual inputs, it is imperative to make explicit what is meant by 'context'. No doubt, the term itself is notoriously vague and murky, subject to various interpretations as well as misinterpretations. In this study, I take 'context' as referring not only to the assumptions and pre-suppositions evoked in the discursive universe constructed in conversation, but also to all their related physical and encyclopedic knowledge (Mey 2001: 39–45,

Croft and Cruse 2004: 102–103, Lu 2016).<sup>1</sup> In other words, the way I use ‘context’ encompasses the verbalized linguistic content and the vast amount of world knowledge humans access and retrieve in the process of language comprehension. From this perspective, discourse processing involves a second-by-second assembly of contextual frames for online processing. As I show in what follows, the meaning of *hai* found in spoken data is in fact inseparable from real-time, closely monitored processing of prior discourse.

### 3.2 Constructionist approaches

At the heart of CxG lies the fundamental hypothesis that there is a uniform representation of all grammatical knowledge in the speaker’s mind (Croft and Cruse 2004: 255). This uniform representation comprises constructions, i.e. symbolic units of form-meaning pairs, that are not fully decomposable into their individual constituents. In other words, constructions have their own semantics and pragmatics (Goldberg 1995). Each construction consists of two connected structural levels, i.e. a semantic component and a syntactic component. Constructions may vary in length and complexity, ranging from single morphemes to formulaic expressions. According to this theoretical framework, the speaker’s linguistic knowledge is essentially a structured inventory of constructions.

This important recognition of meaning-bearing units beyond the lexicon (in the traditional sense) is essential to an accurate analysis of the meanings of *hai*; in most uses, I argue, it is instructive – and even necessary – to look beyond *hai* itself in search of large collocational patterns that function as an integrated whole. In fact, the emphasis of CxG on meaning beyond single words proves pivotal to resolving the mystery surrounding the polysemy of *hai* and distinguishes my approach from all the previous studies. Past investigations tended to attribute each and every minute aspect of meaning to *hai* itself. In contrast, I claim that the meaning and usage of *hai* cannot be fully characterized without considering of its collocational properties and interactions with other lexical items.

### 3.3 Usage-based models

The importance of frequency effects in language use has always been one of the pillars of discourse-functional linguistics (Bybee 2001) and is nicely encapsulated

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1. Similar to my notion of context is Fillmore’s (1982) concept of *frame* and Lakoff’s (1987) *Idealized Cognitive Model*, both of which put a premium on the fact that the understanding of a concept is always relativized to a network of real-world experiences and know-how. Lu’s parsimonious approach to polysemy (2014, 2016, 2017) takes a similar stance.

in Du Bois's (1985: 363) famous dictum: "Grammars code best what speakers do most". Usage-based models appear to have been among the first theories devoted specifically to investigate frequency effects on lexical storage, while conforming to the main principles of CxG. As several studies have convincingly demonstrated, with high type/token frequency in language use, a construction is granted independent lexical storage and activation. For example, Bybee and Scheibman (1999) have shown that the contracted form *don't* in English stems from a frequent collocation of *do* and *not*, with *don't* achieving the status of an independent processing unit rather than being derivative. In my study, both the theoretical concept of construction as well as frequency effects are given due attention to gain a more realistic view of how collocational properties of *hai* hold sway over its usage.

#### 4. Methodology

I contend that invented data, pervading prior research, are at least partially responsible for the foiled efforts to fully capture the usage of *hai*. As Croft (1998) and Sandra (1998) have emphasized, introspective data have limitations on how accurately the analyst can plot the speaker's mental representations. Furthermore, Taylor (2003: 638) points to the lack of criteria in current polysemy research for determining how polysemous meanings are related.

Therefore, in this study, I draw on natural spoken discourse of Mandarin as my data. By relying exclusively on examples gleaned from corpora of spoken language, I hope to produce findings that not only faithfully reflect how *hai* is actually used but also shed light on aspects of the polysemy of *hai* that have formerly gone unnoticed.

My data come from the NTU Spoken Corpus of Mandarin Chinese; more specifically, 52 segments of spoken Mandarin that last approximately 6 hours in total.<sup>2</sup> The time length of each segment ranges from around 3 to 20 minutes; the majority of segments are two-party conversations with there being a small number of multi-party conversational exchanges. The sum total of the data yield 420 tokens of *hai*, with 23 ambiguous tokens excluded from the tally because of truncated intonation units that impede a straightforward judgment of classification. All data are transcribed according to the transcription conventions introduced in Du Bois et al. (1993).<sup>3</sup>

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2. NTU Spoken Corpus of Mandarin Chinese was established and maintained by Prof. Shuanfan Huang and Prof. Lily I-wen Su at the Graduate Institute of Linguistics at National Taiwan University.

3. See Chapter 5 in Chafe (1994) and Du Bois et al. (1993) for a thorough discussion of intonation units, which are relevant to my analysis of the data.

## 5. Findings and discussions

The 420 tokens of *hai* extracted from my spoken data include all of the uses that have been identified in previously studies. In the following, I elaborate my argument that all the different usage categories of *hai* named in past research as well as those that have not yet been identified are manifestations of a single construction driven by the schematic function of *hai*. However, my corpus examples also provide strong evidence for contextual modulations of the meaning of *hai*.

### 5.1 The diachronic basis of the schematic function of *hai*

One of the few things the literature review has shown is that *hai* evolved from the verb *huan* denoting ‘return’ and thus is a quintessential case of grammaticalization (Yeh 1996, 1998, Xing 1999); however, the details of its development are yet to be settled.<sup>4</sup> Synchronically, while the incipient verbal sense of *hai* has been bleached out alongside with phonological changes, its image-schematic structure survived, exerting latent influence on its usage. The conceptual structure of a ‘return’ event is partially based on the CYCLE schema proposed by Johnson (1987: 119–121), with the only difference that the event does not necessarily occur repeatedly. The CYCLE schema embodies the cyclic nature of various dimensions of our daily experiences, such as day and night, the seasons, everyday routines, etc. Conceptually attached to the CYCLE schema, this kind of backward rewinding to an earlier point is, I argue, essentially what underlies the primary present-day function of *hai*. In other words, the schematic function of *hai* proposed here is motivated on both diachronic and conceptual grounds, and it is thus quite different from the arbitrary core senses proposed in the past.

### 5.2 The *hai* construction

The primary function of *hai* cannot be detached from its use in discourse nor its collocational properties. The examination of the spoken corpus reveals that a systematic account of the polysemy of *hai* necessitates going beyond *hai* itself and taking into consideration a larger constructional pattern to which the primary function of *hai* recurrently applies. The constructional pattern can be presented as [*hai* clause]. Although simple and general, this constructional pattern, as is

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4. As for the verbal *huan* denoting ‘give back’ in Modern Mandarin, its meaning seems to reflect a shared CYCLE image-schema with *hai*. Thus, I suspect that, synchronically, *huan* and *hai* are still linked in terms of their cognitive underpinning. However, due to the limitation of space, this issue cannot be addressed in detail here.

shown below, captures the range of functions of *hai* and is sufficiently precise for my goal to account for its usage in natural discourse. Before examining the occurrence of the construction in discourse, I would like first to characterize what I call the *clause component*. The clause component, as the term suggests, consists of a clausal constituent (in the more traditional sense), such as a *shi*-led predicate, an existential/possessive predicate (typically involving *you* ‘have/exist’), a verbal phrase initiated by a modal (e.g. *neng* ‘can’, *hui* ‘will/can’, *yinggai* ‘should’, etc.), to name just a few.

Given this constructional pattern, I contend that the usage of *hai* revolves around a single schematic function: that of referring the proposition of its following clausal constituent backward to some *relevant* assumption (in the sense of Sperber and Wilson 1986; Carston 2002) that is either explicitly stated or contextually inferable from prior discourse. Hence, the perplexing polysemy of *hai* need not be incorporated into the meaning of *hai* per se, since those readings are in fact context-based and pragmatically motivated in the dynamic flow of discourse.

### 5.3 Concessive use

The concessive use of *hai*, also referred to as ‘adversative’, was elaborated by Yeh (1996: 273–274), who noted that it is due to “the incompatibility between the statements conveyed in the two clauses”. It is unclear what Yeh means by ‘incompatibility’. Liu (2000: 72–74) also alluded to this type of use when discussing the ‘counter-to-expectation’ use of *hai*. An illustration of the concessive sense appears in Example (1).

- (1) The speaker is a 40-year-old female marital expert, talking on a radio program.

195 ... *wo han wo xiansheng jiehun sishi nian le huh.*\  
 1SG with 1SG husband married forty year CRS INTERJ

‘My husband and I have been married for forty years’

196 ... *danshi women faxian goutong zhe xiang gongke,*\_  
 but 1PL discover communicate this CLF task

‘But we discovered this task of communication’

197 ... *women hai shi mei tian dou zai xuexi.*\  
 1PL HAI SHI each day all IPFV learn

‘We are still learning every day’

[Marriage]

In (1), the three intonation units (IU) can be roughly translated as ‘Even though my husband and I have been married for forty years, we discovered the task of communication and we are still learning every day’. If the statement ‘my husband and I have been married for forty years’ is incompatible with the statement ‘We are learning every day’, the listener could not have reconciled the two sentences

and made sense of (1). Thus, it is clear that concessive uses of *hai* such as in (1) are simply contextually fine-tuned interpretations.

In natural discourse, context is built up and evolves incrementally, with each incoming proposition adjusting, strengthening or canceling the interlocutors' immediate beliefs and assumptions. In IU 195 of (1), for instance, the speaker talks about having been married for forty years, which, according to our shared world knowledge, naturally evokes a host of assumptions. One of them is that she and her husband must have become very familiar with each other and learned virtually everything marriage has to offer. An assumption is thus prompted that for them there is nothing left to learn (in marriage). Therefore, in IU 197, when *hai*, in accordance with its schematic cognitive function, refers the proposition of its construction 'We are learning every day' back to that evoked assumption, a conflict emerges. As depicted in Figure 1, it is because of this contrastive alignment that a concessive reading surfaces, i.e., even though she and her husband have been married for forty years, they are still learning every day. It is thus evident that *hai* itself does not carry the concessive interpretation, which arises only as a result of our encyclopedic knowledge activated in a given context.

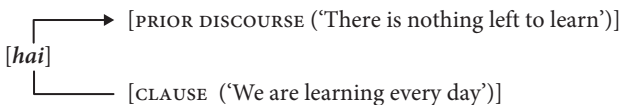


Figure 1. Concessive use of *hai*

Note that the concessive use, along with its connotations of persistence as well as counter-expectation, need not and should not be incorporated into the 'prototypical meaning' of *hai*. Conversely, the meaning in use should be regarded as a contextually derived interpretation. Otherwise, one could not possibly put forth a consistent explanation as to why the concessive interpretation is present in certain instances of *hai* usage, but not in others.

Apart from its concessive use, a reading of 'persistence' can be found in temporal continuance use of *hai*, as exemplified by (2):

- (2) A is a female Ph.D. student; B is a female MA student. They are roommates.  
 10 A: <X na yi fen kuai yao wancheng le X>  
           that one CLF soon will finish CRS  
           'That one is about to be finished'  
 11 .. keshi wo yuji yao yi tian nei ba zhe si fen quanbu  
       but 1SG plan want one day within BA this four CLF all  
       nong wan.\  
       deal complete  
       'But I plan to finish all of these four in one day'

- 12 [ *shengxia liang fen* ] *shi qiyue sanshihao cai yao jiao.*\  
 the rest two CLF SHI July thirtieth till must submit  
 ‘The remaining two won’t have to be handed in until July 30th’
- 13 B: [ @@@@ ]
- 14 *haN.*  
 INTERJ
- 15 .. *ni dao name wan,*\_  
 2SG till that late  
 ‘Even until this late’
- 16 .. *hai you baogao yao jiao oh.*\  
 HAI have report must submit PRT  
 ‘(You) still have reports to hand in’ [SSO14]

As can be seen in IU 15 of the conversational exchange in (2), B appears to be astonished by the fact that even until then (the speech time) A still has reports to submit, i.e., the state of A having reports to turn in persists beyond B’s expectation. Again, context is the hidden hand. In the context of (2), i.e. two students approaching the end of a semester, the phrase ‘until this late’ in IU 15 is motivated by the speaker’s knowledge of students’ academic duties, one of which is that A should have already handed in all her reports. As a result, the occurrence of *hai* in IU 16 triggers a conceptual reference of its ensuing proposition in the construction ‘You have reports to hand in’ back to the pragmatically incompatible statement associated with the foregoing proposition, as shown in Figure 2. Hence, an interpretation of temporal continuance emerges.

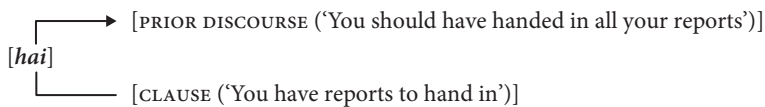


Figure 2. *Hai*’s temporal continuance use

As in the case of the concessive use of *hai*, its temporal continuance reading is shown to be contingent on contextual knowledge; as a result of the temporal reading of IU 15, *hai* adopts an interpretation of continuance and persistence. In other words, given the contrastive alignment triggered by the utterance of *hai*, contextual inputs are chiefly responsible for the diverse interpretations (or uses) proposed in past studies. In contrast, I claim that it is sufficient to assume a single discourse-pragmatic function for *hai*.



#### 5.4 Marginality of *hai*

The meaning of the ‘marginality’ of *hai* was noted by Ma (1985: 62), Liu (1996: 217), and Wang (2002: 72), while Yeh (1996: 264–267) argued that it occurs with “gradable stative situations” and is “an inference which arises in a context with contrastive elements”. More interestingly, all of these authors mention the unacceptability of this use in the case of a socially shared negative value, as exhibited in the contrastive pair in (3).

- (3) a. *zhe liang che hai pianyi*  
 this CLF car HAI cheap  
 ‘This car is still cheap’  
 b. \**zhe liang che hai guei*  
 this CLF car HAI expensive  
 ‘This car is still expensive’<sup>5</sup>

In cases like (3), *hai* carries an implication of a designated state as representing a borderline case within a certain category (cf. Michaelis 1993 and 1996 on *still*). To understand how this property emerges, let us examine (4):

- (4) A is a female graduate student; B is a male office worker.  
 119 A: .. *ni hui bu hui pa lai bu ji.*\  
 2SG will NEG will afraid come NEG on time  
 ‘Are you afraid that we won’t be there on time?’  
 120 B: .. *hui a.*\_  
 will PRT  
 ‘Yeah, I am’  
 121 .. *keshi zhe ge yin hai shi yao lu a.*\_  
 but this CLF voice HAI SHI must record PRT  
 ‘Yet, this recording still has to be done’  
 126 A: [@@@]  
 127 .. *huh = .* \  
 INTERJ  
 128 .. *mei guanxi la.* \  
 NEG relation PRT  
 ‘It’s ok’  
 129 .. *wo juede dao na bian.* \  
 1SG think arrive that place  
 ‘I think when we arrive there,’

5. A sentence like (3b) is impermissible in Mandarin; the English gloss is provided merely for comparative purposes.

130 .. *yinggai hai hao a.*  
 should HAI ok PRT  
 ‘we should get there on time’ [conversation 2]

In (4), though initially worrying about being late, A later comments that they will still be on time, as uttered in IU 130. Past studies would take this use of *hai* as presenting a marginal case of being on time, i.e., they may still get there on time, but at the risk of being late. However, I claim that marginality is pragmatically inferred and does not deviate far from previous discussions of other usages of *hai*.

In the context preceding the occurrence of *hai* in IU 130 of (4), both A and B appear to be aware of the possibility of their late arrival, as evidenced by A’s question in IU 119 and B’s answer in IU 120. Then, *hai* prompts a conceptual reference of the proposition ‘We should get there on time’ back to the assumption of a possible late arrival, as shown in Figure 3 below. By highlighting this contrast, first, the connotation of counter-expectation comes to light, i.e., the proposition in the *hai* clause contradicts the assumption constructed in prior discourse. In addition, the marginality reading then becomes available from A’s guessing that they may eventually arrive there on time, despite already running out of time. To emphasize the marginality quality noted in several previous studies simply amounts to conveying that the result would be not a prototypical case of being on time. However, this marginal characteristic, in my analysis, is merely courtesy of our cultural encyclopedic knowledge of time and appointments.

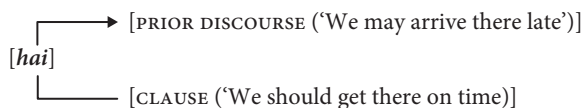


Figure 3. Marginality use of *hai*

Once it is realized what the two uses have in common, it becomes evident that the presumed contrast between the ‘marginality’ use of *hai* and its concessive use does not necessarily exist, because contexts dictate which interpretation is picked out as the more salient one. For example, in (1) above, the proposition ‘We are still learning every day’ in the *hai* clause conveys a positive connotation as a social value. Hence, even though *hai* in (1) undoubtedly is associated with a concessive interpretation, a marginality reading, though perhaps less salient, is not entirely ruled out. Therefore, regarding the description by Yeh (1996: 264–267) quoted above, I believe it should be formulated the other way around: the marginality reading is more salient when *hai* co-occurs with positively evaluated predicates.

5.5 Additive use of *hai*

Another use of *hai* found in my data is the additive use, which Yeh (1996) termed ‘connective marker’. Here, I refrain from using the syntactically oriented label, and prefer to consistently apply semantically based notions in the analysis of the polysemy of *hai*. Moreover, clausal connectives are notoriously difficult to identify given the spontaneity, immediacy, and fragmental nature of spoken discourse, and thus one can neither confidently nor unambiguously determine which occurrences of *hai* qualify as true connective markers. In fact, the examples gleaned from the data do not provide any concrete evidence for how they are inter-clausally connected, as exemplified in (5).

- (5) Both A and B are female graduate students.

30 B: .. *tian* [ *na=* ]

sky PRT

‘Oh, my goodness!’

31 A: [ *ni keyi* ] *zhidao wo chi le duoshao.*\

2SG can know 1SG eat PFV how much

‘You can see how much I ate’

32 .. *ranhou na ge--*

and then that CLF

‘And then (there is) the ...’

33 ... <It *tiramisu* It>,\_

tiramisu

‘tiramisu’

34 .. *ranhou qiaokeli musi.*\

and then chocolate mousse

‘and there is chocolate mousse’

35 .. *bai qiaokeli musi.*\

white chocolate mousse

‘white chocolate mousse’

36 .. *ranhou,*\_

and

‘and’

37 ... *pai.. dangao.*\

pie cake

‘pies and cakes’

38 B: .. *a=* [ *liu koushui* ] *le.*\

PRT drip saliva CRS

‘Aah, my saliva is dripping’

- 39 A: [ *hen duo* ].\
 very many  
 ‘There are many’
- 40 .. *feichang duo*.\
 very many  
 ‘a lot’
- 41 .. *ranhou*,\_  
 and then  
 ‘and then’
- 42 .. *ta hai you*,\_  
 3SG HAI have  
 ‘It even has ...’
- 43 .. *xian zhu yidali mian de <E bar E >* .\
 now cook Italian noodle DE bar  
 ‘a bar serving ready-cooked spaghetti’ [CON1CHI]

In (5), after saying that the restaurant under discussion offers numerous kinds of desserts, by using *hai*, A further adds that the restaurant has a bar serving spaghetti. Thus, one relevant assumption set up in the discourse prior to the occurrence of *hai* is obviously the large number of items mentioned. Likewise, in IU 42, the clausal constituent with the meaning ‘They have a bar serving spaghetti’ following *hai* refers back to that prior assumption. The function of *hai* is to align two propositions resulting in an additive interpretation. That is, after listing many items, A supplies yet another item by using *hai* to mark its relevance to the prior discourse (see Figure 4).

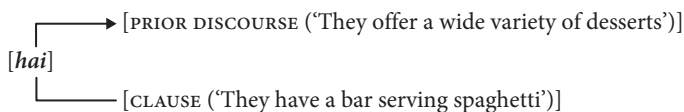


Figure 4. Additive use of *hai*

While this additive function also falls within the realm of function of *hai*, examples such as (5) are somewhat different from all previously discussed uses. The sense of counter-expectation and persistence is almost ‘bleached out’ in this example. More generally, in present-day usage, the additive use of *hai* indicates mostly that a relevant proposition points back to another proposition in prior discourse. An additional peculiarity of this use of *hai* in (5) is that it is followed by the existential/possessive marker *you*. These two characteristics are, of course, not coincidental. Rather, I hypothesize that the ‘bleached out’ phenomenon may be ascribed to the collocation of *hai* with existential *you*, where *you* functions simply to introduce the existence of an event, action or property denoted by its concomitant complement or predicate.

From a usage-based perspective, it is reasonable to assume that if *haiyou* exhibits a relatively high collocational frequency in language use, it must be recognized as an independent construction in the speaker's mental lexicon. To verify the status of *haiyou* as a construction, I searched for the frequency of *hai* immediately followed by *you* in the Academia Sinica Balanced Corpus of Modern Chinese, version 4.0.<sup>6</sup> First, I searched for occurrences of *hai* as an adverbial (to exclude irrelevant tokens of the verbal *huan* 'return', which is also written with same character as *hai*). The 5,000 tokens in the search result were then further filtered for immediate collocation with a following *you*, and the filtered result yielded 1,046 tokens out of 5,000 (over 20%). Hence, it is clear that *haiyou* is a highly frequent unit. Moreover, a statistical examination of the spoken data also shows a strong correlation between *haiyou* and the additive function—65 out of 81 tokens of *haiyou* in my corpus (80.25%) are used in the additive sense. Moreover, (5) contributes additional evidence for my analysis in that *hai* and its collocate *you* occur within the same IU. Since an IU is "a unit of mental and linguistic processing [...] that seems to be exactly the right size to be processed in its entirety with the help of echoic memory" (Chafe 1994: 55), one can be confident that *haiyou* is a gestalt, i.e., it is stored and accessed holistically in the speaker's mental lexicon.

In addition to a nominal, *haiyou* also introduces a verbal predicate, as in (6).

- (6) Both A and B are 24 years old. A is a female graduate student; B is a salesman.
- 177 B: (8.5) *na yi tian mianshi you ji wei a.*\  
 that one day interview have how many CLF PRT  
 'So how many interviewees were there that day?'
- 178 A: ... *wo mei wen ta ye.*\  
 1SG NEG ask 3SG PRT  
 'I didn't ask her about that'
- 179 .. *ta shuo hai you luqu lingwai yi ge.*\  
 3SG say HAI have recruit another one CLF  
 'She said they also recruited another person (besides her)'
- 180 B: ... *quanbu,*\  
 in total  
 'In total'  
 .. *zhi*  
 only  
 'They only recruited two persons, right?' [11SOPHIA]

6. For more information on this corpus, see the following URL: <http://www.sinica.edu.tw/ftms-bin/kiwi1/mkiwi.sh>

In (6), A and B are talking about one of A's friends who has just landed a job in Eastern Taiwan. In IU 177, B asks A about the number of job applicants who went to the company's interview that day. In IUs 178–179, A admits her lack of knowledge but adds that the new company also recruited another person besides her friend. Unlike (5), where the existential predicator *you* heads a nominal predicate, what follows *you* in (6) is a verbal predicate 'recruit another person.' This would appear baffling given the syntactic property of *you*, unless *hai* and *you* are taken as a single coherent unit. In my analysis, cases of the additive use as in (6) hardly imply any contrast with a formerly established assumption, but rather merely attach further information to the ongoing discourse flow. Therefore, the assumption is warranted that a slightly different construction is at work in (6), as diagrammed in Figure 5:

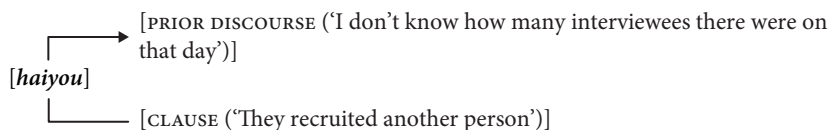


Figure 5. Additive use of *haiyou*

To conclude, several types of evidence indicate that *haiyou* is a constructional unit. In this case, it is no accident that the high collocation frequency of *hai* with *you* 'coerces' modifications of *hai*, whose meaning has to be reconciled with the function of *you* as an existential predicator. Achieving a meaningful contrastive alignment with an existential proposition requires another proposition of the same kind. Also, given an existential proposition, the degree of contrast mediated by *hai* is mitigated to some extent, if not downplayed. The holistic form *haiyou* thus appears to drift towards functioning as an indicator of an ongoing topic in conversation.

## 5.6 Comparative use of *hai*

A rather unique use of *hai* is its occurrence in the comparative construction marked by *bi*. This use has been mentioned in several previous studies as well (Yeh 1998: 268–270, Liu 2000: 62–65). Yet, none have really discussed the interaction of *hai* with the comparative construction, as seen in (7):

- (7) A is the hostess of a radio program; B is an invited male guest.

433 A: [*unh*],\

umh

'Umh'

434 B: [*yinwei*],\_

because

'Because'

435 .. *yingbang bi meijin hai da ma.*\  
 pound PRT dollar HAI big PRT  
 ‘Pounds have an even higher value than dollars’ [TE4CAGE]

In (7), B comments in IU 435 that ‘Pounds have an even higher value than dollars’ and uses *hai* to strengthen the rhetorical force of the comparison. Structurally, the Mandarin comparative construction conforms to the Principle of Temporal Sequence (Tai 1985: 55); that is, the result of a comparison is available only after the comparison event, and thus the sequential order is [X *bi* Y Z].<sup>7</sup> Based on Tai’s argument, it follows that the predicative Z is related to X and takes X as its subject.

Instances as in (7) showcase a phenomenon that sheds light on how different constructions, when combined, may interact with each other, i.e. mutually adjust to each other. While the Mandarin comparative construction does not include *hai*, the occurrence of *hai* supplies an important presuppositional element. As evidenced in (7), the utterance of IU 435, aside from making a comparison between the relative values of pounds and dollars, crucially presupposes that both currencies are of high value.

As I have demonstrated for other uses, *hai* brings about a contrastive alignment of its ensuing proposition and a foregoing assumption. The foregoing assumption in IU 435 of (7) would be, as always, determined by the context: here, the shared encyclopedic knowledge associated with dollars and pounds, which are highly valued currencies in present-day international finance. On the other hand, the proposition expressed by the clausal constituent that follows *hai* is naturally the attributive predicate plus the implied subject X, as represented in Figure 6.

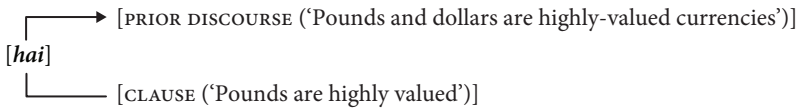


Figure 6. Comparative use of *hai*

As a result, we encounter a case of ‘coercing’ a presupposition by another construction. In this comparative use, as pounds have higher value than dollars, which are themselves high in value, the underlying presupposition is that both pounds and dollars are high in value.

Similar to what holds for the additive use, a search in the Academia Sinica Balanced Corpus of Modern Chinese produces a salient collocational pattern, [X *bi* Y *hai* (*yao*) Z].<sup>8</sup> Varying manifestations of this construction include cases where

7. X stands for the compared item, Y for the yardstick for comparison and Z for the relevant attribute or property in the comparison.

8. 233 tokens are found in my corpus search, and 25 of them include *yao* between *hai* and Z.

Z takes such adverbial modifiers as *geng* ‘even’ and examples in which the subject X is understood due to topic continuity.<sup>9</sup> Hence, there is robust evidence for this comparative construction including *hai*, and the construction-specific meaning is motivated by the function of *hai*.

### 5.7 Alternative use of *hai*

A final noteworthy use of *hai* co-occurs with the predicator *shi* in alternative interrogatives, which I call the ‘alternative’ use. Shao (2002: 131–132) explicitly names *haishi* as one of the typical devices in Mandarin for forming alternative questions. Example (8) drawn from our data provides a clear illustration of this use:

- (8) B is a female singer interviewed on a radio show; D is a male calling into the show.

218 D: ... *wo jide yiqian haoxiang you yi ge=*  
 1SG remember past seem to be have one CLF  
 ‘I remember in the past there seemed to be a ...’

219 .. *wutaiju dui bu dui?*\  
 stage play right NEG right  
 ‘stage play, right?’

220 B: ... *dui = .*\  
 right  
 ‘Right’

221 D: ... *uhhuh.*\  
 INTERJ  
 ‘Uh huh’

222 ... *nimen hai hui zai canjia xiang-.*\  
 2PL HAI will again participate in like  
 ‘Will you participate again in (activities) like ...?’

223 .. *leisi zhe yangzi.*\  
 similar this kind  
 ‘like this kind’

224 .. *yi ge= man.*\  
 one CLF quite  
 ‘a quite ...’

9. For the majority of the tokens in my corpus search, Z is an adjectival predicate; only a handful of them contain a clausal Z. For example:

*Ta bi erzi hai bu neng jieshou lihuen de shishi*  
 3SG PRT SON HAI NEG able accept divorce DE fact  
 ‘Compared to her son, she is even less able to accept the fact of divorce’



- 225 .. *man fei shangye de dongxi*,\  
quite non commercial DE thing  
'quite non-commercial thing'
- 226 .. *zhe zhong changpian ma?*\  
this CLF album PRT  
'this kind of album?'
- 227 .. *hai hui zai zhizuo zhe yang de dongxi ma?*\  
HAI will again produce this kind DE thing PRT  
'Will (you) come up with this kind of production any more?'
- 228 B: ... *ni shi zhi= wutaiju hai shi zhi changpian?*\  
2SG SHI refer stage play HAI SHI refer album  
'Are you referring to (participation in) stage plays or (releasing)  
albums?' [RS004]

As seen in (8), *hai* occurs in the interrogative IU 228, with B inquiring whether D is referring to participation in stage plays or releasing albums. Especially intriguing about Mandarin alternative interrogatives is their frequent lack of the final question particle *ma*, which is the most typical marker of an interrogative in Mandarin. In other words, structurally, Mandarin alternative interrogatives resemble ordinary declaratives, except for the fact that *hai* links two juxtaposed propositions. The interrogative in (8) syntactically conflates two propositions, both of which are predicated by *shi*. Given the basic function of *hai* and both of D's prior mentioning and the alignment of the two propositions, the interpretation of IU 228 narrows down to a choice-making task. Again, *hai* works hand in hand with its foregoing context, effectively guiding the hearer towards an adequate interpretation of the speaker's communicative intention.

In this example, as is the case with the additive use, neither the concessive nor the marginality interpretation applies to *hai*. One reason may pertain to illocutionary force: the alternative use of *hai* involves not an information-supplying statement but an information-seeking interrogative. A second reason has to do with the constructional profile of *hai*, which has a typical pattern of [(S) X *haishi* Y] where *haishi* resembles the previously discussed *haiyou* in forming a prefabricated unit.<sup>10</sup> The strong collocation of *hai* and *shi* as a constructional composite can be witnessed in several examples in my data, such as in Example (9):

- (9) Both A and B are female graduate students.  
205 B: .. *nan nu=,*  
male female  
'Males and females'

10. Depending on its clausal type, the former X predication may or may not require a predicator *shi*, whereas *shi* is syntactically obligatory in the latter Y predication.

- 206 .. *nan nu sheme,*<sub>—</sub>  
 male female what  
 ‘Something about males and females ...’
- 207 .. *duihua zhijian de chayi.*<sub>—</sub>  
 converse between de difference  
 ‘Their differences when having conversation’
- 208 A: .. *umh.*<sub>—</sub>  
 umh  
 ‘Umh’
- 209 B: (0) *keshi wo zhende juede,*<sub>—</sub>  
 but 1SG really think  
 ‘But I really think ...’
- 210 .. *wo xiu yi xiu,*<sub>—</sub>  
 1SG attend (class) one attend (class)  
 ‘after I attended a couple of classes’
- 211 ... *xiu jici wo jiu juede shuo,*<sub>—</sub>  
 attend (class) a few times 1SG PRT think COMP  
 ‘after I attended the class for a few times, I think ...’
- 212 .. *ta meici zhengyi de huati jiu shi,*<sub>—</sub>  
 3SG every time dispute DE issue PRT SHI  
 ‘Every time, the issues she disputed over was ...’
- 213 .. *zhe zhong* (tsk),<sub>—</sub>  
 this CLF  
 ‘this kind of ...’
- 214 ... *zhe zhong nan nu chayi daodi shi xiantian,*<sub>—</sub>  
 this CLF male female difference really SHI by nature  
 ‘whether differences between males and females are decided by nature’
- 215 ... *hai shi shuo* [ *houtian* ],<sub>—</sub>  
 HAI SHI COMP by nurture  
 ‘or by nurture’ [Courses]

In (9), B describes to A a class he once attended, and how he felt bored by the repeated debates in class. Notably, the emergent complementizer *shuo* in Mandarin discourse (Biq 2001; Wang 2003) appears right between the predicator *shi* and its predicate, thereby creating a disjunction between the two. The possibility of injecting *shuo* is symptomatic of a loosening syntactic relation between *shi* and its predicate, as *shuo* takes over the job of *shi* as the predicate’s head. Accordingly, I argue that the emergence of *haishi* in alternative interrogatives derives basically from a structural reanalysis motivated by high collocation frequency, which can be represented as (10).

(10) {(S) X *hai* [*shi* Y]} > {(S) X *haishi* [Y]}

A constructional representation for Example (8) is given in Figure 7.

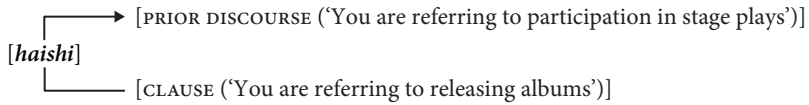


Figure 7. Alternative use of *hai*

To summarize, the syntactic structure of an alternative interrogative consists chiefly of a predication X and a following *hai*, which links X with another predication Y introduced by the predicator *shi*. I contend that owing to, on the one hand, recurrent collocation along with fixed adjacency, and, on the other hand, to Y's varied manifestations, *shi* gradually loosens its bondage with its licensed predication Y, 'fusing' with *hai* into an integrated whole.

## 6. Where do different interpretations of *hai* come from?

As I have repeatedly emphasized in this chapter, the seemingly numerous uses of *hai* postulated in previous studies result in a "polysemy fallacy" (Sandra 1998; Lu 2014, 2016, 2017), a proliferation of senses that has long plagued past research restricted to decontextualized examples. Using authentic examples of spoken language in context, I have shown that each and every one of the purported usages of *hai* boils down to contextually guided preferred interpretations. The schematic function of *hai* is that it connects the ensuing proposition back to a previous (often conflicting) proposition. The different types of interpretation I have suggested are essentially contextually derived, i.e. they are based on the linguistic context, the extralinguistic situation and world knowledge.

It should also be noted that recurring readings of relatively high frequency in everyday language use are more and more conventionalized over time, i.e., they become entrenched linguistic knowledge below the level of consciousness (Traugott 1989). I have demonstrated that 'persistence' (see Liu 2000) is one (but not the only) recurrently emergent sense of *hai* in context. However, that specific property does not come out of nowhere but has a discourse-pragmatic underpinning. Still, the reading of 'persistence' is considerably weakened, if not canceled, when *hai* is jointly activated with other lexical items within a prefabricated constructional unit.

The above considerations have also brought to the fore the collocational behavior of *hai*, in particular, constructions in which *hai* bonds with another adjoining lexical item. The bonding is not in any sense trivial but impacts the meaning of

*hai*. For instance, both *haiyou* and *haishi* impose a certain adaptation pressure on *hai*, which needs to accommodate the structural demands of *you* and *shi*. This collocational pressure has the effect of ‘bleaching’ the original meanings of *hai*, such as ‘persistence’ and ‘counter-expectation’. Moreover, the units that *hai* collocates with display their own idiosyncratic semantic-pragmatic properties that are not necessarily inherited from *hai*. As a result of all the above-mentioned factors, new constructions come into existence.

To conclude, the often complex interpretations I have postulated can be derived from an interaction of the schematic discourse-pragmatic function of *hai* with co-occurring constructions and contextual knowledge.

## 7. Conclusion

In this study, I have shown that numerous senses of *hai* in actual communication are contextually guided, i.e. derivable from one single cognitive-discursive function of *hai*. By separating what varies contextually from what remains stable throughout the usage of *hai*, I have painted a semantically parsimonious but pragmatically rich picture of the functioning of *hai* in natural language use.

There is no need to assume multiple senses built into *hai* per se since they form a *contextualization pattern* (Taylor 2003). One implication of this tenet is that the quest for multiple senses loaded into a single grammatical morpheme may well turn out to be a futile enterprise (see e.g. Lee 1999; Oh 2003). Language users constantly align themselves with their local immediate context to narrow down possible interpretations, with function words working as linguistic cues for the hearer to reconstruct the speaker’s conceptualization (e.g. Levinson 2000).

In this study, I have made a case for how constructions and context interact to produce meaning, especially on the discursive level. Only through the integration of contextual particularities can insights be gained into the real-time comprehension of discourse as it unfolds. My study of Mandarin *hai* has shown that the focus on the interaction between grammatical words, constructions and the discourse context is methodologically and theoretically of relevance for CxG (Östman and Fried 2005). The most important message to CxG is this: it has the theoretical apparatus to tackle the intricacies of meaning in context (see also Fried and Östman 2005), but it needs to formally allocate a more significant role to discourse-pragmatics than it has in the past, in order to rise to the challenge.

For CxG inspired approaches, two possible solutions are in order: either the definition of meaning is considerably broadened to include context-prompted interpretations, or CxG restricts itself (unnecessarily) to constructions with highly schematic meanings. Once the issue is properly addressed, I believe that CxG will

be better equipped to cope with and even help illuminate the multidimensionality of discourse dynamics, such as talk-in-interaction (e.g. Sacks et al. 1974; Schegloff et al. 1977; Ono and Thompson 1995), discourse flow and segmentation (Chafe 1994), information structure (Lambrecht 1994; Östman and Virtanen 1999; Gundel et al. 2003), preferred argument structure and socio-cultural mores. In addition, I believe that the functions of *hai* can also be studied from a contrastive-CxG point of view (Boas 2012), with the use of multiple parallel texts (MultiParT, as in Lu and Verhagen 2016; Lu, Verhagen and Su 2018, Lu 2019) as a potentially useful method.

Finally, among the findings that may have implications for CxG research are the ‘coercion’ of meaning and other semantic adjustments in the formation of new constructions (see also Biq 2004). As shown in this chapter, *haiyou* and *haishi* are composites that inherit and yet also diverge from *hai* in crucial respects. However, my analysis has exposed what is perhaps just the tip of the iceberg, and it remains to be discovered as to what is actually negotiated and compromised to merge multiple constructions into a new one, which, I believe, is a fundamental future research topic for CxG.

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# On the partial productivity of constructions

## Creativity and semantic constraints on the Chinese *zhe* existential construction

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The productive schema of a grammatical construction allows speakers to produce creative utterances. However, the fact that constructions tend to be partially but not fully productive has puzzled scholars for decades. This chapter analyzes the partial productivity of a highly productive construction – the Chinese *zhe* Existential Construction, in particular the collostructional strength (Stefanowitsch and Gries 2003) between verbs and this construction. Findings suggest that there is a blending of scenes in the use of transitive verbs in this construction and the semantic constraints limiting new instances lie in the relative salience of the following participant roles in verb semantics – theme, patient and location. Verbs with the profiled role of agent or experiencer are not compatible with this construction.

**Keywords:** collostructional strength, participant roles, salience

### 1. Introduction

Widely discussed in constructional analyses (Bybee, Perkins and Pagliuca 1994; Bybee 2003; Langacker 2005; Trousdale 2008, 2010) are productivity, schematicity and compositionality. Among these three major factors, productivity has sparked intense interest among researchers (Braine 1971; Bowerman 1990; Pinker 1989; Yang and Montrul 2017; Barak and Goldberg 2017; Goldberg 2019) because constructions tend to be partially rather than fully productive. The partial productivity of constructions stems from their idiosyncrasies, which are manifested either by their non-predictable formal aspects or their non-compositional meanings. Examples provided by Hilpert (2014: 19) illustrate constraints that affect English constructions.

- (1) a. Mary is a smarter lawyer than John.  
 b. \*Mary is the smarter lawyer than John.
- (2) a. I have long known your father.  
 b. \*I have long read this book.

The sentences in (1a) and (1b) reveal that there is a constraint with regard to definiteness on a degree marker construction since, in the latter, (1b), the definite article is unacceptable. The unacceptability of (2b) also shows that the structure ‘I have long V-ed NP’ is not a simple paraphrase of ‘I have V-ed NP for a long time’ since it is governed by specific constraints.

In studies of partial productivity, relations between verbs and constructions have long been a focus of attention (Goldberg 1995, 2006; Boas 2005; Barðdal 2008; Suttle and Goldberg 2011; Yun et al. 2011; Perek 2015). The complex semantic relations and interactions between verbs and constructions make it difficult to determine the limit of a construction’s productive capacity, much less figure out the motivations for creative new instances. This chapter addresses these issues in the investigation of a highly productive construction in Chinese – namely, the *zhe* Existential Construction (CEC for short). The investigation covers the following aspects: (i) the statistical distributions of verbs and CEC, which includes the frequencies of verbs, CEC and verbs-in-CEC; (ii) the ways in which verbs and CEC are semantically compatible; (iii) the motivations for the use of atypical verbs in CEC.

The Chinese Existential Construction can be defined as a construction with the form ‘NP<sub>L</sub> (postposition) + V + le + NP<sub>E</sub>’ (NP<sub>L</sub> refers to a locative NP; NP<sub>E</sub> stands for an NP referring to entities) and with the meaning ‘Something exists (in a certain manner) at some place’, as illustrated in (3).

- (3) 加利福尼亚有着 广阔的未开垦的处女地。  
 California have-DUR vast uncultivated virgin land  
 ‘There are vast expanses of virgin land in California’

For decades, the semantic relations between verbs and the CEC have been the focus of attention in discussions of this construction. The meanings of many verbs seem to be bleached and coerced by CEC’s constructional meaning, i.e., transitive action verbs co-occurring with this construction deviate from their conventional meanings and are compelled to take on an existential meaning. For instance, 放 (‘put’) in (4), rather than referring to the action of putting or placing, describes the static existential presence of the boxes. The verb ‘put’ is not an isolated example. As illustrated by (5) and (6), many other transitive verbs are observed in CEC and behave in the same way. A plausible explanation is needed to account for the function of these transitive verbs and their compatibility with CEC. As Lei (1993: 49) points out, ‘A verb is not the semantic focus of an Existential Sentence,

yet it lies in the center of the structure. What gives rise to the discrepancy between the semantic and syntactic structure of these sentences?”

- (4) 架上 放着 几只 小 木 箱。  
shelf-top put-DUR several-CLF small wooden box  
'There are several small wooden boxes lying on the shelf'
- (5) 顶端 刻着 “十七 世纪” 四个 字。  
top-end carve-DUR seventeen century four-CLF character  
'There were carved the words 'seventeenth century' on the top of it'
- (6) 身上 穿着 一件 破 衣裳。  
body-on wear-DUR one-CLF ragged clothes  
'(Somebody) is wearing ragged clothes'

Over the past decades, researchers have sought answers to the above question by analyzing verb-argument relations, the internal semantic structures of verbs and the influence of the durative marker on verb meanings (see e.g. Fan 1963; Zhu 1981; Song 1982; Li 1986; Nie 1989; Li 1990; Lu 1991; Gu 1997; Qi 1998; Qian 2000; Han 2001; Tang 2005). In these approaches, dynamic interpretations of a verb are ignored and verbs are supposed to have an inherent semantic structure that remains relatively constant. Even if the puzzle of the unusual behavior of verbs in this construction can be resolved by analyzing each verb individually, the systematic behavioral pattern of more than six hundred verbs still needs a more general explanation. In this vein, researchers (e.g. Yang and Pan 2001; Lu 2006, 2008; Yuan 2004; Shi 2004; Wang and Xu 2010) have begun to view such sentences as instances of an existential construction that has a coercive effect on verb meaning. This approach does offer an insightful view on the verb-construction relations. However, assuming a coercive effect on verb meaning is not sufficient since it does not account for the fact that many transitive verbs are not compatible with CEC. As is shown by (7) and (8), it is unacceptable for some transitive verbs (e.g. 'push' and 'pick') to appear in CEC.

- (7) \*山上 推着 一架 小 车。  
mountain-on push-DUR one-CLF small wheelbarrow  
'A small wheel barrow is being pushed on the mountain'
- (8) \*树上 摘着 苹果。  
tree-on pick-DUR apple  
'Apples are being picked from the tree'

Thus, it is evident that further research is needed to account for the partial productivity of the CEC. In this chapter, Section 2 presents the statistical distribution of verbs in CEC and works out their collostructional strength by adopting the

approach developed by Gries and Stefanowitsch (2004); Gries et al. (2005) and Gries et al. (2010). In Section 3, verbs are classified into different categories based on their semantic features and a blending effect is analyzed regarding the uses of transitive verbs in CEC. Section 4 offers a detailed discussion of the semantic compatibility between verbs and CEC, and investigates the semantic constraints of the construction. Section 5 concludes this chapter.

## 2. Collostructional strength of verbs and the CEC

### 2.1 Collostructional analysis

Collostructional analysis, proposed by Stefanowitsch and Gries (2003), aims to calculate the collostructional strength holding between a lexeme and a construction, based on an analysis of corpus data. Evaluating collocation strength among words has become an established practice in corpus linguistics and includes the calculation of the degree of correlation of a certain construction and the words appearing in its syntactic slots.

Stefanowitsch and Gries (2003) argue that the greatest advantage of collostructional analysis is its sensitivity to different levels of language structure. It is assumed that grammar consists of symbols (or form-meaning pairs), which are not intrinsically different from words. Collostructional analysis can be applied to linguistic expressions with different degrees of complexity and abstractness, such as words, semi-fixed phrases, argument structures, tense, aspect and mood. By analyzing lexeme distribution in a construction and its distribution in the whole corpus, this approach has the advantage of identifying relative degrees of attraction or repulsion for lexemes to appear in certain slots of the construction. Slots exist in language structures on different levels of abstraction. There are four slots in a ditransitive construction, corresponding to the grammatical functions of subject, predicate, direct object and indirect object. A lexeme attracted to a slot of a construction is called a 'collexeme' of that construction while the construction is called a 'collostruct' of the lexeme. Collostructional analysis is also known as 'collexeme analysis' (Stefanowitsch and Gries 2003: 214–215).

Data collection is critical to collostructional analysis. Four frequencies are needed to calculate the collostructional strength (CsS) of a construction C and a lexeme L: (i) the frequency of L in C; (ii) the frequency of L in other constructions; (iii) the frequency of co-occurrence of C and all the other lexemes other than L; and (iv) the frequency of other constructions that do not occur with L. The resulting data can easily be listed in a 2-by-2 table and computed using a Fisher exact test. Such a frequency array is depicted in Table 1.

**Table 1.** Frequency array for a collexeme analysis

	Word L of class W	Other words of class W	Total
Construction C of Class S	W(L) Frequency in S(C)C	W(¬L) frequency in S(C)	Total S(C) frequency
Other Class S Constructions	W(L) frequency in S(¬C)	W(¬L) frequency in S(¬C)	Total S(¬C) frequency
Total	Total W(L) frequency	Total W(¬L) frequency	Total S frequency

Gries, Hampe and Schönefeld (2005) point out that the meanings of verbs strongly correlated with a construction reflect the constructional meaning to some extent. Verbs that are highly correlated with CEC are, unsurprisingly, existential verbs. However, further study exploring the complex interactions of verbs and CEC, their semantics and compatibility with CEC yield interesting results.

## 2.2 Data resource and collection

The data analyzed in this study are retrieved from the Chinese National Corpus (CNC), compiled by the Chinese Language Committee in 1998 and consisting of 100 million words, twenty million of which are available online. The words are tagged for part of speech. Our study uses the online corpus of the CNC for the following reasons: (i) The corpus has a wide range of genres and a strict control of their proportional presence; (ii) the part-of-speech tags help provide better understanding of word usage, and enable accurate and effective searches for words and constructions; (iii) word frequency lists that provide information about the classification of words are helpful in calculating the total number of constructions in the corpus.

The Chinese Existential Constructions include several sub-constructions, e.g. the *zhe* (着), *le* (了) and *zai* (在) existential constructions and those lacking predicates. Since the form of a construction is important for corpus concordance, this chapter investigates a subtype of the existential construction – the *zhe* Existential Construction. This construction is chosen not simply for its typicality. The auxiliary *zhe*, which is a salient grammatical unit, serves as the keyword in a concordance, which allows an accurate and exhaustive search for the construction. During the process of retrieving data, I used *zhe* as the keyword and searched for the structure NP<sub>L</sub> + V + *zhe* + NP<sub>E</sub>. To ensure the accuracy of this search, I manually checked all the instances to rule out possible mistakes. A total of 4720 instances of the Existential *zhe* Construction were found in the corpus and 627 verbs co-occurring with it.

### 2.3 Verb distributions and their collocation strength with the CEC

After obtaining all the instances of the *zhe* CEC from the corpus and listing all the co-occurring verbs, the next step was to determine the frequencies of each verb in order to work out the collocation strength of the verb and CEC. The frequencies include: (i) the total frequency of a verb in CEC; (ii) the total frequency of a verb in the corpus; (iii) the total frequency of all the verbs in the corpus. Since the frequency list of words in the corpus includes only words appearing over 50 times in it, the number of verbs considered in this study has been reduced from 627 to 396. Based on this list, 2,299,556 verb tokens have been retrieved from the corpus. Table 2, by way of example lists, some verbs that appear in the CEC with a high frequency.

**Table 2.** Data for several highly frequent verbs

Verbs	Frequency of the verb in CEC	Total frequency of the verb	Total frequency of all verbs
'exist'	574	4881	2,299,556
'hang'	217	820	2,299,556
'write'	216	3738	2,299,556
'place'	157	3290	2,299,556

To work out the collocation strength of verbs and the construction, three types of frequencies are needed for each verb. To exemplify, the data for the verb 'write' is arranged in Table 3.

**Table 3.** Data for the verb 'write'

	'write'	¬'write'	Total
CEC	216	4145	4361
¬CEC	3522	2291673	2,295,195
Total	3738	2295818	2,299,556

The p-value for the verb 'write' is 7.54E-237, which is smaller than the least significant difference. That means the verb 'write' is closely associated with CEC. Following the above procedure, I calculated the p-value for all the existential verbs and ranked them according to their collocation strength (from high to low). It turned out that 237 verbs have a strong correlation ( $P < 0.05$ ) with CEC. Table 4 shows the 30 verbs ranked highest in terms of their collocation strength with CEC, their frequency of co-occurrence with CEC and the p-value representing their collocation strength.

Table 4. Highest-ranking 30 verbs correlated with the CEC

Verb	Frequency	P-value	Verb	Frequency	P-value
exist	574	0*	spread	36	3.08E-53
hang	217	0	paste	39	9.05E-52
write	216	7.54E-237	carve	33	2.20E-48
place	157	2.61E-159	sparkle	39	4.54E-48
arrange	89	2.83E-119	include	42	7.32E-48
grow	92	2.23E-114	circulate	31	4.24E-43
sit	101	7.41E-88	hide	36	5.77E-43
load	69	4.20E-83	display	23	3.25E-42
stand	74	2.64E-66	print	30	2.09E-41
be full of	58	1.06E-64	set	25	7.49E-41
contain	35	1.27E-64	lie	37	1.13E-40
pile	37	6.73E-59	wear	36	3.80E-39
be mixed up with	29	7.92E-59	wrap	32	7.87E-38
cover	36	1.07E-54	insert	30	3.39E-36
hold	67	9.68E-54	live	52	6.47E-36

\*P = 0 shows the number is too small to be computed by the computer. Gries, in a letter responding to the author in 2011, wrote that P = 0 indicates the verb has a high degree of association with the construction: “Yes, it means the result is smaller than the computer can calculate and the verb has the closest connection with the construction”.

Table 4 reveals a variety of semantic differences among the verbs correlated with CEC. Including typical existential verbs such as ‘exist’ and ‘have’, these verbs can be classified into two major types: verbs describing states and those denoting events. The verbs describing states include mainly verbs of configuration such as 充满 (‘be full of’) and 夹杂 (‘be mixed up with’) as illustrated in (9) and (10). These types of verbs usually describe distribution patterns of entities.<sup>1</sup>

(9) 每一米都充满着嶙峋的怪石和丛生的荆棘。  
 every one meter all be full-DUR rugged rocks and overgrown thorns  
 ‘Every meter is full of the rugged rocks and overgrown with thorns’

(10) 浓烟中夹杂着刺耳的爆炸声。  
 heavy smoke in mix up-DUR piercing explosive sound  
 ‘The heavy smoke is mixed up with a piercing explosive sound’

It is to be expected that verbs denoting states are semantically compatible with CEC since the construction is used to describe mainly existential states of entities.

1. Note that the grammatical morpheme 着 (*zhe*) is glossed throughout CEC examples as DUR.



What is unexpected in the data is the strong attraction between CEC and some action verbs. Three out of the top five strongly attracted verbs fall into this category. A closer analysis reveals that the action verbs can be classified into several different semantic types, e.g. placement verbs, creation verbs, verbs of holding, verbs of wearing, etc. These verbs can be said to denote the state of an entity after its having been affected by external forces such as actions of placing and creating. As well, details such as the position and texture of the entity can be specified with the aid of these verbs. For instance, the relative positions of ‘sunlamp’ and ‘the head of the club’ is specified by the placement verb ‘hang’ in (11).

- (11) 杆 头 挂着 一堆 白光炙人的 太阳灯。  
 pole top hang-DUR one-CLF scorching sunlamp  
 ‘On the head of the club hang a pile of scorching sunlamps’

A detailed classification of existential verbs is proposed in the following section.

### 3. Motivations for the variety of transitive verbs in the CEC

#### 3.1 Verb categories and distributions

Various studies have offered a systematic and detailed description of verb meaning in the Chinese Existential Construction (see e.g. Fan 1963; Zhu 1981; Li 1986; Nie 1989; Song 1989; Lu 1991; Qi 1998). Based on previous classifications of existential verbs and my observations of their instantiations in the corpus, I divide verbs found in CEC into thirteen categories. The data show that verbs belonging to different semantic categories have different distributions in CEC. Ranking different verb types based on their frequencies facilitates the investigation of semantic compatibility of verbs and CEC. Since the frequency of each verb is different, two types of data were collected: the frequency of verb types and that of verb tokens. These frequencies are listed in Table 5 and Table 6.

Table 5 shows that of all verb types, placement verbs are the most frequently co-occurring with CEC, constituting nearly one third (27.8%) of all the existential verbs in the study. This finding suggests that placement verbs are the most widely used verbs in CEC and are highly correlated with it. Verbs of configuration take the second place, comprising almost one fifth of all existential verbs. The verbs that follow range in ranking from dynamic verbs, verbs of holding, creation verbs, etc. to typical existential verbs. It is important to note that the category ‘typical existential verbs’ contains only two types, but as Table 6 reveals, in terms of tokens, typical existential verbs are highly frequent. Therefore, in order to gain an overall

picture of the correlation between verbs and CEC, it is important to consider not only their type but also their token frequency.

**Table 5.** Semantic categories of verb types

Verbs	Frequency of co-occurrence	Percentage
Placement Verbs	66	27.8%
Verbs of Configuration	46	19.4%
Dynamic Verbs	33	13.9%
Verbs of Holding	22	9.3%
Creation Verbs	18	7.6%
Posture Verbs	8	3.4%
Verbs of Leaving Behind	8	3.4%
Verbs of Purpose	8	3.4%
Other Static Verbs*	8	3.4%
Verbs of Growing	7	3.0%
Verbs of Sparkling	6	2.5%
Verbs of Wearing	5	2.1%
Typical Existential Verbs	2	0.8%
Total	237	100.0%

\*Though difficult to classify, these verbs describe mainly static situations and include ‘stop’, ‘reflect’ and ‘reveal’.

**Table 6.** Semantic categories of verb tokens

Verb	Frequency of co-occurrence	Percentage
Placement Verbs	1265	30.4%
Typical Existential Verbs	634	15.2%
Verbs of Configuration	493	11.8%
Creation Verbs	425	10.2%
Posture Verbs	261	6.3%
Verbs of Holding	257	6.2%
Verbs of Growing	188	4.5%
Dynamic Verbs	165	4.0%
Verbs of Leaving Behind	131	3.1%
Verbs of Purpose	104	2.5%
Verbs of Sparkling	102	2.5%
Verbs of Wearing	77	1.8%
Other Static Verbs	61	1.5%
Total	4163	100.0%

In comparing Table 5 and Table 6, we see that placement verbs rank first in both tables and therefore enjoy a strong correlation with the construction. This finding is helpful for explaining the semantic compatibility of verbs and CEC. Verbs of configuration and creation are also highly frequent in both tables. It is noteworthy, from Table 5 to Table 6, the ranks of some verb groups change. As noted above, typical existential verbs exhibit a high token frequency. They take second place in Table 6. Dynamic verbs have a low overall frequency. Although many dynamic verb types appear in CEC, their token frequency is relatively low; i.e., dynamic verbs are but sparsely represented in the construction.

To sum up, apart from typical existential verbs, many types of verbs, such as placement verbs, verbs of configuration and creation verbs, are also closely related to CEC. These findings can help us better understand the various semantic relations between verbs and CEC.

### 3.2 Semantic relations between verbs and the CEC

In order to grasp the meaning of a verb, it is crucial to consider the conceptual frames they evoke. Different verbs in a construction can add details to its schematic event frame. Goldberg (1995) maintains that verbs and constructions interact in the construction of meaning. Goldberg (1997) further specifies four relations between them: elaborations, force-dynamic relations, preconditions and co-occurring activities. Following this line of thought, in this section, I examine the semantic relations between verbs and CEC in terms of these four relations.

- i. *Elaborations*. Some existential verbs are compatible with CEC in that their meaning enriches the constructional meaning. The meanings of these verbs usually extend the meaning of CEC by adding details to it. Verbs of configuration fall into this category.

(12) 眼前 矗立着 一道黑糊糊的高高的 围墙。  
 eye front stand-DUR a-CLF dark tall enclosing wall  
 'In front of my eyes stands a blackened high wall'

With no semantic conflict with the construction, the verb 矗立 ('stand') adds details to the constructional meaning by describing the height and appearance of the wall.

- ii. *Force-dynamic relations*. Most of the transitive verbs in the CEC fall into this category. In this case, the action described by the verb has given rise to the ultimate state of the entity. Therefore, there is a causal relation between the action and the entity's state of existence. Placement verbs, creation verbs and verbs of wearing indicate such relations. By way of example, consider (13):

- (13) 店堂摆着 一个 大炉灶。  
store place-DUR one-CLF big stove  
'There is a big stove put in the store'

In (13), the action 摆 ('place') has exerted an external force on the entities, thus resulting in its final state. However, not all the verbs that describe this kind of causal relation can enter this construction. As mentioned in connection with (7), the verb 'push' cannot be used in the CEC to describe the final state of an entity. This shows that whether the meaning of the verb is coherent with the meaning of the construction is also determined by the participant roles the verbal meaning profiles.

- iii. *Necessary conditions.* For some verbs, although the actions described by them also exert external forces on some entity, the state of the entity described by the construction has to be maintained by means of these forces. That is to say, if the external force disappears, the state of the entity has to come to an end. Posture verbs, verbs of holding and growing belong to this category.

- (14) 竹 椅 上坐着 一个 中年 人。  
bamboo chair on sit-DUR one-CLF middle-aged person  
'On the bamboo chair sits a middle-aged man'

In (14), the action expressed by the verb 'sit' describes not only the specific state of the entity, but also conveys the precondition to keep the state constant.

- iv. *Co-occurring activities.* In this case, the action expressed by the verb and the state expressed by the construction are not causally related – they just happen at the same time. The time of the action overlaps within a period when these entities exist; i.e., they have no decisive influence on the existence of the entities. Dynamic verbs, verbs of purpose and sparkling belong to this category.

- (15) 竹 林 里 晃动着 两个 人 影儿。  
bamboo forest in move about-DUR two-CLF person shadow  
'Two figures are moving about in a bamboo grove'

### 3.3 Motivations in the use of transitive verbs in the CEC

The world is full of changes. And ever-present change has provoked ceaseless argument among philosophers for centuries. The Greek philosopher Heraclitus (c.500 BC) believed change to be the fundamental essence of the universe. As his famous maxim puts it, "No one ever steps in the same river twice". In the process of changing, events and states alternate in succession. Shui (2011: 243) reflects on events from the perspective of changing states and argues "[an] event is a continuous

transition from one state to another”. This perspective of change is depicted in Figure 1, which shows the difference phases of an event. The phases potentially repeat themselves in endless cycles with imperceptible boundaries between them.

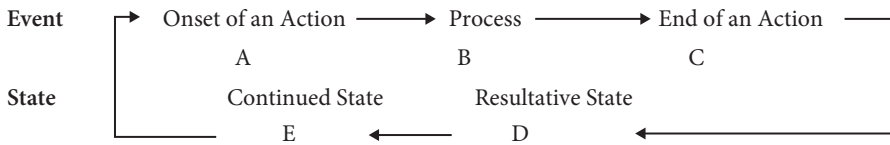


Figure 1. Phases in the state-event continuum

Although existential verbs evoke various event frames, they are inextricably linked in terms of the temporal structure of their corresponding events/states. To be more specific, existential verbs relate to different phases, as diagrammed in Figure 1: the typical existential verbs, verbs of configuration, posture verbs, verbs of holding, verbs of wearing and verbs of growing correspond to phase E; placement verbs, creation verbs and verbs of leaving behind correspond to phase D; and dynamic verbs correspond to phase B. Due to the semantic constraints imposed by the durative marker *zhe*, no verb in CEC corresponds to phase A and C. Such verbs can appear in another subtype of the Chinese Existential Construction, i.e. the *le* Existential Construction.

The main function of existential verbs is to describe the state of an entity. It follows naturally that typical existential verbs correspond to phase E. The high degree of compatibility between verbs of configuration and CEC can be attributed to the corresponding event types of these verbs. These findings are hardly disputable. However, a problem that has been controversially discussed for decades is the possible co-occurrence of transitive verbs and CEC.

The corpus data provided in previous sections reveal that there are a great number of transitive verbs in CEC. Among these verbs, placement verbs and creation verbs are most densely distributed in CEC. In terms of Figure 1, both verb types correspond to phase D, which is adjacent to phase E. The adjacency of corresponding events in time makes it conceptually effortless to code these phases by means of these transitive verbs.

A diachronic study of Chinese Existential Constructions reveals that transitive verbs are relatively new in the history of the construction (Chu et al. 1997: 14): the early existential verb is 有 ('have'), which can be traced back to the Western Zhou Dynasty (1109–771 BC), while the CEC with transitive verbs appears only during the Tang Dynasty (618–907 AD). The motivation for its appearance may lie in a need for more vivid descriptions, as it provides more details and allows for the co-occurrence with adverbs (Chu et al. 1997: 19–20). For instance, in (16) the creation verb 写 ('write') specifies not only such details of the entity as its texture

and function, but also collocates with the adverb 明明 ('obviously'), which adopts the narrator's perspective by expressing surprise.

- (16) 物料单上 明明 写着 白银 一 千 两。  
 store list-on clearly write-DUR silver one thousand liang  
 'On the store list is clearly written: 50 kilograms of silver'

The function of transitive verbs in CEC is not confined to providing additional detail to an entity's manner of existence. Their presence may induce a blending of two scenes – an action and its resultative state. Although the agent indicated by a transitive verb is not supposed to be present in the scene depicted by CEC, it is relevant in the comprehension of a larger event in which states depicted by CEC are components. In other words, transitive verbs activate a larger semantic frame, from which many inferences can be drawn. As an example, consider (17):

- (17) 盆里 养着 一只 乌龟。  
 basin-in raise-DUR one-CLF turtle  
 'There is a turtle raised in the basin'

In (17), the verb 养 ('raise') not only provides a specific description of the turtle's current state, but it also offers some implicit information, such as the existence of an owner who takes care of it, regular change of water, regular feeding, and the container as its habitat. In this sense, the use of a transitive verb can activate a broad semantic frame of which the existential state is but a part. This activated frame can be represented as in Figure 2 where the thick-lined square stands for the state of the patient (as an argument of the transitive verb); the arrow denotes the action expressed by the transitive verb; the dashed circle represents the implicit agent; and the dashed outer rectangle corresponds to the whole schematic frame activated by a transitive verb. Typical existential verbs and verbs of configuration activate the frame represented by the square, whereas transitive verbs activate a frame represented by the dashed rectangle.

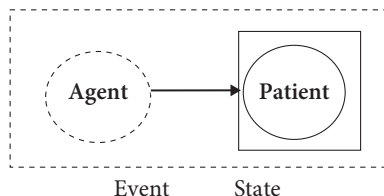


Figure 2. Activation of a larger frame by a transitive verb in the CEC

## 4. Verb-construction compatibility and the partial productivity of the CEC

### 4.1 Constructional meaning of the CEC

To better understand the verb-construction compatibility, it is necessary to pin down the constructional meaning of CEC. In usage-based approaches, it is held that generalizations emerge on the basis of patterns of usage (e.g. Langacker 1988; Barlow and Kemmer 2000; Tomasello 2003; Goldberg 2006; Bybee 2010). The actual usages of a construction have an impact on its prototypical meaning, i.e., the extension of a construction to novel uses may gradually change its constructional meaning. Furthermore, Goldberg (1995: 31) claimed that constructions can be polysemous, i.e., constructions may have a group of related meanings rather than a single fixed meaning.

For such a highly productive construction as CEC, some scholars (e.g. Song 1982, 1989) proposed that there exist two subtypes: static CEC and dynamic CEC. In this chapter, verbs describing an entity's motions are referred to as dynamic verbs, such as 荡漾 ('popple'), 漂 ('drift'), 扩展 ('diffuse'). All other verbs, such as typical existential verbs, placement verbs, verbs of configuration and creation verbs, are classified as static verbs, describing an entity's static existence. The following examples show this difference—(18) depicts a dynamic scene, while (19) describes a static scene.

- (18) 海面上浮动着 亿万 颗白色 的小圆球。  
 sea surface on float-DUR hundreds of millions-CLF white small round ball  
 'On the surface of the sea are floating millions upon millions of small round balls'
- (19) 月亮门 中央 镶嵌着 一副 红色的原子图案。  
 moon door center embed-DUR one-CLF red atom design  
 'The center of the moon-shaped door is set with a decorative pattern of red atoms'

Table 7 shows that the majority of instances of CEC co-occur with static verbs, while dynamic verbs can be found only in a small percentage of instances.

**Table 7.** Comparison of percentages of static and dynamic verbs

	Static verbs	Dynamic verbs	Total
Frequency	3896	267	4163
Percentage	94%	6%	100%

Furthermore, recall that Table 4 shows that among the top 30 verbs there are only two dynamic verbs. Apart from these two verbs, all the other dynamic verbs rank beyond 100. These data show that although the CECs are divided into two subtypes – static and dynamic CECs, dynamic verbs have but a weak correlation with this construction. Therefore, taking the prototypical constructional meaning of CEC as ‘an entity stays in some place in a certain manner’, we can postulate that the meaning of the dynamic CEC is an extension of the prototypical meaning of CEC.

#### 4.2 Partial productivity of the CEC

Despite its high productivity, CEC is only partially productive. As examples (7) and (8) show, verbs like ‘push’ and ‘pick’ cannot co-occur with CEC. These verbs are not isolated examples. A close analysis reveals that CEC is not compatible with similar action verbs, e.g. verbs of pulling, such as 拉 (‘pull’), 扯 (‘pull/tear’), 拽 (‘drag’), and verbs of separation, such as 掰 (‘break’), 卸 (‘unload’) and 拔 (‘pull out’). A comparison of these transitive verbs with those that co-occur with CEC reveals that their incompatibility with CEC is due to the specific event frames they evoke.

- (20) a. \*车里 卸着 稻草。  
 truck-in unload-DUR straw  
 ‘Straw is being unloaded from the truck’  
 b. 车里 装着 稻草。  
 truck-in load-DUR straw  
 ‘There is straw loaded in the truck’
- (21) a. \*山上 拉着 一架 小 车。  
 mountain-on pull-DUR one-CLF small wheelbarrow  
 ‘A small wheel barrow is being pulled on the mountain’  
 b. 山上 架着 几尊 大炮。  
 mountain-on erect-DUR several-CLF big cannon  
 ‘There are several big cannons set up on the mountain’

The only difference between sentences (20a) and (20b) pertains to the event frames corresponding to the verbs 卸 (‘unload’) and 装 (‘load’), respectively. The two frames are nearly identical except in the direction of the action path: in (20a), the truck is at the end of a path (i.e. is the ‘patient’ of a prior dynamic action of an agent), while in (20b) the truck is located at its beginning. This difference also holds for other verbs of separation such as 掰 (‘break’) and 拔 (‘pull out’). The examples demonstrate one of CEC’s semantic constraints on verbs – if the verb involves a movement of the final NP, then the initial NP should be the end of the path rather than its starting point. As for the verbs of pulling, since the exertion of an external force is the precondition for the movement, the agent (as the source of the force)



remains cognitively salient in the verb meaning. Therefore, it is unacceptable to have it deleted in CEC, as in (21a). In contrast, the verb 架 ('set up') in (21b) does not require the presence of the external force the whole time – non-coding of the agent is acceptable as long as the cannons are in position. Hence, CEC's second semantic constraint on verbs is the following: the external force is not required to be present, i.e. does not need to be overtly expressed, throughout the whole event described by the verb.

In addition to the above action verbs, there are many other verbs that are not allowed in CEC. They can be classified into the following four categories:

1. **Perception/cognition verbs**, such as 看 ('look'), 听 ('listen'), 感觉 ('feel'), 认为 ('think'), 知道 ('know').
2. **Mental verbs**, such as 爱 ('love'), 恨 ('hate'), 怕 ('fear'), 想 ('miss'), 喜欢 ('like').
3. **Abstract action verbs**, such as 批评 ('criticize'), 宣传 ('publicize'), 保卫 ('defend'), 学习 ('learn').
4. **Modal verbs**, such as 能 ('can'), 会 ('will'), 愿意 ('be willing'), 敢 ('dare'), 应该 ('should'), 要 ('want').

Thus, the following examples are not acceptable:

(22) \*窗 外 听 着 机 器 的 轰 鸣 声。  
 window out listen-DUR (of) machine roar  
 'There was heard the roar of machines outside the window'

(23) \*走 廊 上 批 评 着 同 学。  
 hallway-on criticize-DUR student  
 'Students are being criticized on the hallway'

Although the above verbs have different types of semantic frames, they are all governed by a general principle. Further analysis of the semantic constraints of CEC is provided in the following section.

### 4.3 Semantic compatibility and its limits for verbs and the CEC

Lin and Wang (2013) study the compatibility of a construction and its constituents in terms of their forms and meanings. These authors claim that the statistical measure of collocation strength corresponds to the semantic compatibility of verbs and constructions. In what follows, the degree of semantic compatibility of a CEC and its verb is analyzed and accounted for.

As already pointed out, the prototypical constructional meaning for CEC is posited as 'an entity stays in some place in a certain manner'. As discussed in Section 4.1, CEC describes mainly static situations that do not involve external

forces. The event semantics of CEC conceptualizes only participant roles such as location and theme. If forces are components of the verb meaning, the agent role will definitely be highlighted. Hence, such verbs do not tend to describe static scenes. Based on the findings in Section 4.2 and observations of empirical data, the semantic constraints on verbs of the CEC can be summarized as follows:

- i. If a transitive verb involves a movement of the patient role, then CEC requires that in mapping the verb's participant roles onto CEC's argument roles, the role of location in CEC must be the end of the path rather than its starting point.
- ii. If an external force is involved in a verb's event frame, it should never be required to be present throughout the whole event; but there is no such requirement on the internal force.
- iii. The more salient the roles of location and theme are in verb semantics, the more strongly correlated the verb is with CEC.
- iv. Verbs involving the role of experiencer are not compatible with CEC due to the difficulty in tracing the specific states of the experienced thing, which remain usually unaffected by the action denoted by the verb.

The first factor works more specifically on verbs of separation, while the second is more general and is systematically observable in the corpus data. (i) Verbs of configuration describe mainly the static distribution of entities in certain locations, and do not involve the exertion of forces. Therefore, the event type they denote is highly compatible with that of the CEC. Tables 5 and 6 show that these verbs are widely used in this construction and closely associated with it. (ii) Placement verbs and creation verbs involve the exertion of forces, focusing on the changes undergone by entities as a result of these forces. However, the forces need not be overtly expressed to identify the events that have taken place. Therefore, among the action verbs, these two types of verbs are also highly correlated with the construction. (iii) Posture verbs and verbs of holding involve external forces that can maintain the specific existential state of entities. That is to say, the forces must coexist with the specific existential states of the entities from beginning to end. Since forces are preconditions of and necessary to maintain the specific state, these verbs are less closely related to the CEC. (iv) Dynamic verbs and verbs of sparkling also involve the exertion of external forces that must last and maintain the motion of the entity. According to the data, these verbs have a weak correlation with the construction.

The third factor, regarding profiling of the elements in event frames, is also very important in accounting for verb-construction compatibilities. Goldberg (1995: 44) argues that the meaning of the verb can determine which part of its semantic frame is profiled, i.e. which components in the event can become focal points. This idea also reflects the concept of perspective in Fillmore's (1982) frame semantics. Since the roles of location and theme are highlighted in the event

described by the CEC, I propose that the more salient these two roles are in verb semantics, the more closely correlated they are with the construction.

This assumption is consistent with our data in the following respects. (i) Since typical existential verbs and verbs of configuration express event types similar to those signified by the construction, they highlight the same participant roles. It is therefore to be expected that they be strongly correlated with CEC. (ii) The role of location is an indispensable feature in the semantics of the verb, and its absence leads to the ungrammaticality of sentences with placement verbs. Moreover, since the patient's motion stays in the focus for such verbs, the role of the patient is also highlighted. As a result, placement verbs are closely associated with CEC. (iii) Like placement verbs, creation verbs focus on the result of an action – the final state of the entity. The role of the patient is highly salient. On some occasions, the role of location is also the focus of the meaning of creation verbs. However, since the event types described by these verbs focus mainly on the entity's change of quality rather than location, comparatively speaking, the role of the location in verbs of creation is not as salient as it is in the meaning of placement verbs. Therefore, creation verbs are conceptually not as closely related to the construction as placement verbs. (iv) Dynamic verbs and verbs of sparkling focus on the action of the entity; thus, only the role of the agent is highlighted in their verb semantics and the role of the location is not salient. Therefore, these verbs are not closely associated with the construction.

The fourth factor pertains to the affectedness of the patient or theme in the verb's event structure. The perception verbs, mental verbs and modal verbs that are unacceptable in CEC focus on the experiencer's subjective judgment, determination or feeling. Their unacceptability resides mainly in the fact that what is experienced remains usually unaffected by these verbs. For instance, the experienced entity 花 ('flower') as in 我看见了一朵花 ('I saw a flower') does not involve any change. What has changed here is the experiencer. Therefore, what is highlighted in the verb's event frame is the role of the experiencer rather than that of the experienced.

The last constraint is different from English *there*-existential constructions, which can co-occur with perception verbs. For instance, such verbs as *hear* or *watch* can be used in this construction as in *From the top of the hill there was heard a sudden, piercing scream*. In this sentence, not only the location of the scream is specified, the position of the speaker is also implied. In other words, the existence of a scream is described from the speaker's perspective. In contrast, it is impossible for the speaker to be implied in CEC, which indicates that only an objective perspective can be adopted in CEC. The role of experiencer (which, like the role of agent, can function as the subject of a sentence) is most salient in the event

frame, while the role of experienced is not highlighted and the role of location is not necessarily present.

A more general pattern emerges concerning the semantic constraints governing CEC and the verbs compatible with it. The profiling of participant roles in verb semantics is highly correlated with the semantic compatibility of verbs and CEC: the more profiled the role of agent/experiencer, the less compatible the verb with CEC; the more profiled the role of patient/theme, the more compatible the verb with CEC. Perceptual, mental verbs and modal verbs profile mainly the role of experiencer as they focus on sensory perceptions, mental attitudes and feelings of the experiencer, and the experienced entity remains unaffected. For verbs of pushing, the role of agent is also more salient than the role of patient, as the force exerted by the agent has to be present throughout the event. For dynamic verbs, the role of theme is more salient since they are usually intransitive verbs that involve agents exerting forces on themselves. For placement and creation verbs, the role of patient is more salient, since these verbs specify the changes on patients rather than the manner of action. Typical existential verbs and verbs of configuration do not involve agents; the most salient role is the theme. The effect of profiled (salient) participant roles on the compatibility of verb meaning and constructional CEC meaning is represented in Figure 3.

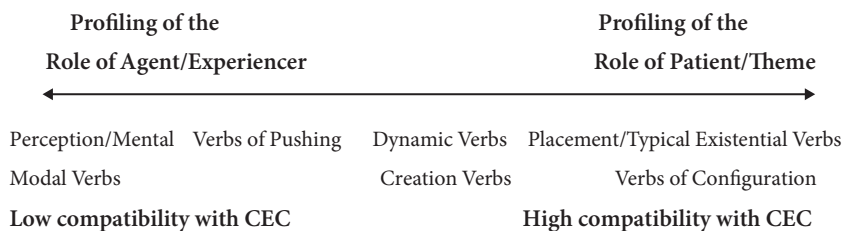


Figure 3. Continuum of profiling of agent/experiencer vs. patient/theme

## 5. Conclusion

Over the years, the partial productivity of constructions has sparked, and continues to spark heated discussions in cognitive linguistics. This chapter has investigated the partial productivity of a highly productive construction – the Chinese *zhe* Existential Construction by examining the collostructional strength between this construction and various existential verbs. Based on the classification and distribution of the existential verbs, my study has found that these verbs are inextricably linked in terms of the temporal structure of their corresponding events/states, and that the use of transitive verbs activates a larger semantic frame, from which many

pragmatic inferences can be drawn. It is found that the compatibility of verbs and CEC depends on the relative salience of the participant roles of theme, patient and location licensed by the verb. Verbs with the profiled role of agent or experiencer are not compatible with the Chinese *zhe* Existential Construction. Finally, this study has shown that a collocation analysis is helpful in deepening our understanding of the partial productivity of constructions.

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# A corpus-based study of subjectification and the *disposal* construction in modern Mandarin

## The BA construction vs. the BA-GE construction

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The BA construction, also known as the ‘disposal’ construction, is a morphosyntactic phenomenon unique to the Chinese language. Based on the findings of a collexeme analysis of corpus data and in line with subjectification proposed by Langacker, we provide evidence that the BA-pattern and the BA-GE-pattern constitute different constructions and we uncover the dynamic processes of meaning change regarding the concept of ‘disposal’ in the two constructions. The BA construction does indeed focus on the description of disposal events, whereas, in the BA-GE construction, the objective meaning of ‘disposal’ is backgrounded and the speaker’s subjective perspective becomes foregrounded. Such changes in conceptual construal demonstrate the importance of subjectification, a crucial cognitive tool in the construction of meaning and syntactic structure.

**Keywords:** collexeme analysis, construal, meaning change

### 1. Introduction

The BA construction has been one of the most popular objects of inquiry of Chinese grammarians since the 1940s (Wang 1943/1985; Wang 1985; Lü 1944/1984; Xue 1987; Zhang 1991; Cui 1995; Jin 1997; Fan 2001; Shen 2002; Ye and Pan 2012). Li and Thompson (1989: 468) quoted the Chinese grammarian Wang Li, who referred to the BA construction as the “disposal” form and characterized it as follows: “The disposal form states how a person is handled, manipulated, or dealt with; how something is disposed of; of how an affair is conducted” (English translation by Li 1974: 201–202). In the same spirit, Li and Thompson (1989: 468) characterized the notion of disposal more succinctly as “disposal has to do with what *happens* to the direct object”.



Studies on the BA construction range from focusing on its syntactic features to transformation rules relating the BA construction to other sentence patterns, such as the Verb-Object construction and the Patient-Subject construction (Zhan 1985; Rao 1990; Shen 1997). The BA construction with indefinite objects encompasses two major subtypes, namely, the BA-GE construction and the BA-YI-GE construction. In this chapter, the syntactic properties of these two constructions are compared, especially with regard to the type of information conveyed by the nominals following the quantifier GE.

It remains controversial whether the BA pattern and the BA-GE pattern constitute two different constructions. In fact, the constructional properties of the BA-GE pattern and its semantics have not yet been clearly demarcated, although there have been attempts in the previous literature to describe it from a diachronic perspective. Tao and Zhang (2000) observed that the BA-GE construction was widely used in the late period of Modern Chinese, but its use has decreased in present-day Chinese. Relying on a substantial amount of corpus data, Zhang (2005a,b) concluded that the BA-GE construction exhibits a number of syntactic and semantic differences from the BA construction. Research on the priming effects of GE by Sugimura (2002) offered important psycholinguistic insights into the BA-GE construction.

In formal terms, the BA-GE construction differs from the BA construction in four respects: (i) the BA-GE construction is used more frequently than the BA construction with zero subjects; (ii) the BA-GE construction favors volitional verbs, such as *gao*, *nong*, *xia*, *jiao* (all meaning 'do/make') as predicates; (iii) in the BA-GE construction, the nominal elements after BA are mainly indefinite objects; (iv) in the BA-GE construction, resultative DE complements are pervasive. In semantic and functional terms, by means of the BA-GE construction the speaker conveys that some event is unexpected and expresses an attitude of disappointment or dissatisfaction toward the event. To see the difference between the meaning of the BA construction and the BA-GE construction, compare (1a) and (1b):

- (1) a. 你 为什么 把 工作 辞了?  
 2SG why BA job quit.PFV  
 'Why did you quit this job?'  
 b. 你 为什么 把个 工作 给 辞了?  
 2SG why BAGE job AUX quit.PFV  
 'How could you quit this job!'

The BA construction in (1a) functions as a request by the speaker to be informed about the hearer's motivation to quit her job. In contrast, in (1b), the BA-GE construction conveys the speaker's belief that the hearer's action of leaving her job is both unexpected and disappointing. Thus, in the BA-GE construction (1b), the

speaker's emotion is highlighted and therefore leaves the typical meaning of the BA construction in (1a) offstage.

The objective of the present study is to gain a deeper understanding of the syntactic and semantic differences between the BA construction and the BA-GE construction by using data from the CCL Corpus and explaining our findings in terms of Langacker's cognitive linguistic approach to *subjectification*.<sup>1</sup>

In the remainder of this chapter, the abbreviations BA<sub>0</sub> and BA<sub>1</sub> are used to refer to the BA construction and the BA-GE construction, respectively.

## 2. Research methodology and theoretical background

Using data retrieved from the CCL Corpus, this study undertook to reveal, by means of collexeme analysis, how BA<sub>0</sub> and BA<sub>1</sub> vary syntactically. More specifically, these two constructions were searched in the corpus for valid observation sentences (BA<sub>0</sub>: n = 1997, BA<sub>1</sub>: n = 365). A collexeme analysis was applied to identify the collostructional strength for each verb in the predicate slot (as V in both [SUBJECT BA NP V] and [SUBJECT BA GE NP V]) with these two constructions respectively. These verbs were further ranked in accordance with the degree of their collocational strength from high to low, and the top 20 verbs were subsequently examined to uncover the differences between the two constructions by clustered partitioning. A collostructional analysis (Gries 2001; Gries and Stefanowitsch 2004a,b; Stefanowitsch and Gries 2003) was applied to examine the meaning of the construction by means of probability statistics. This method is developed on the basic assumptions of Construction Grammar (see Lakoff 1987; Goldberg 1995). A Fisher exact test was used to calculate a given collexeme's strength of association (p-value) with a given construction in a 4-by-4 table, which is illustrated in the following section. Moreover, it is claimed (Hu and Zhang 2012) that the Fisher exact p-value is more precise than that of other distributional statistics, such as z-score, t-score and chi-square.

After the differences in semantic clustering of verbs in these two constructions are observed, the concept of subjectification is employed to explain these changes of constructional meaning. The version of subjectification adopted here is that developed by Langacker (1987, 1990, 1991, 2002, 2006, 2015), in which the construal imposed by an expression is regarded as the viewing arrangement between the conceptualizer and the conceptualized object. Subjectification is a cognitive ability that allows re-adjustment of conceptualization to bring about semantic changes, which

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1. The CCL Corpus has been established by the Center for Chinese Linguistics at Peking University.

are reflected in syntactic changes. As for the semantics of the BA construction, the meaning ‘disposal’ is a widely accepted interpretation (Wang 1943/1985; Shen 2002; Sun 1996). This study aims to show how subjectification transforms the viewing arrangement in the conceptual structure with the result that the “disposal event” becomes offstage and the speaker’s attitude, which we refer to as *speaker’s modality*, becomes onstage, resulting in changes of construal as well as sentence structure.

### 3. BA<sub>0</sub> and BA<sub>1</sub> as near-synonymous constructions

#### 3.1 Results of the collocation analysis

There are two meaning components that are relevant to the interpretation of BA<sub>0</sub>. First, the subject disposes of the object in a certain manner (see Wang 1943/1985; Shen 2002); and, second, the object is deeply affected by this disposal act. In (2), the morpheme BA indicates that the subject has not only been eating the soup but has eaten it *up*. Given however that the eater did not finish the soup, the BA construction is not appropriate in (2). To express the incompleteness of the action of eating, the SOV pattern in (3) must be used:

- (2) \*\*他把汤喝了，可是没喝完。  
 3SG BA soup drink. PFV but NEG drink.COMP  
 ‘\*He has eaten the soup up, but he did not finish it’
- (3) 他喝了汤了，可是没喝完。  
 3SG drink. PFV soup.MOD but NEG drink.COMP  
 ‘He ate the soup, but he did not eat it up’ (Sun 1996: 55)

Example (2) shows that BA<sub>0</sub> co-occurs with transitive verbs that depict actual activity and require the semantic roles of agent and patient. From our corpus, we retrieved 788 types of verbs out of 1997 sentences that instantiated the BA<sub>0</sub> construction. Table 1 lists the top 20 verbs that are most strongly attracted to the BA<sub>0</sub> construction.

With respect to their transitivity and thematic position, Mandarin Chinese verbs can be divided into four types, namely, absolute verbs, ergative verbs, transitive verbs and intransitive verb (Jin and Wang 2014). It can be seen that the verbs in Table 1 fall under the transitive type requiring an agent and a patient, in fixed thematic positions. Furthermore, in terms of their internal temporal structure, these verbs can be categorized into two sub-types: (i) linking verbs, such as *zuo-wei*, *kanzuo*, *dangzuo*, *kancheng* and *shiwei*, which express the equipollent meaning ‘regard (as)’. To illustrate, in (4), *ying-zi* (‘shadow’) and *linghun de xiangzheng* (‘symbol of soul’) are considered as equipollent things. Cognitively speaking, we

**Table 1.** Collexemes most strongly attracted to the BA<sub>0</sub> in the V slot (n = observed frequency)

Collexeme (n)	Collostruction strength	Collexeme (n)	Collostruction strength
<i>zuwei</i> ‘regard’ (57)	366.927401	<i>fang</i> ‘put’ (52)	337.132788
<i>song</i> ‘send’ (36)	238.849009	<i>kanzuo</i> ‘regard’ (20)	231.977561
<i>dangzuo</i> ‘regard’ (21)	218.95685	<i>dangcheng</i> ‘regard’ (19)	215.946073
<i>fangzai</i> ‘put on’ (22)	191.632868	<i>tie</i> ‘paste’ (24)	191.40372
<i>jiehe</i> ‘join’ (28)	180.325061	<i>kancheng</i> ‘regard’ (15)	159.726155
<i>gao</i> ‘make’ (22)	134.085885	<i>tuixiang</i> ‘push to’ (11)	130.39283
<i>dai</i> ‘bring’ (24)	122.260058	<i>naru</i> ‘bring into’ (12)	101.718612
<i>jiaogei</i> ‘give to’ (12)	98.319101	<i>shiwei</i> ‘regard’ (11)	96.171315
<i>tui</i> ‘push’ (14)	95.604878	<i>la</i> ‘pull’ (16)	92.179846
<i>gaosu</i> ‘tell’ (15)	79.474893	<i>reng</i> ‘throw’ (9)	77.214579

can say that the linking schema is the conceptualization of correlative attributes shared by two images (Zhang 2007). In contrast are: (ii) motion verbs, such as *fang* (‘put’), *song* (‘send’), *tie* (‘paste’), *jiehe* (‘join’), *tui* (‘push’), *dai* (‘bring’), *jiaogei* (‘give’), *la* (‘pull’) and *reng* (‘throw’), which combine with directional verbs to form V + V patterns as in *fangzai* (‘put on’), *songdao* (‘send to’), *tiezai* (‘paste on’) and the like. The V + V pattern in (5) expresses caused motion, which is based on a force dynamic schema (Gao 2004).

- (4) 云南 少数民族 就是 通常 把 影子 作为 灵魂的 象征。  
 Yunan minorities AUX normally BA shadow regard soul POSS symbol  
 ‘The minorities in Yunan normally regard the shadow as the symbol of the soul’
- (5) 人们 把她 从 低矮的 房梁 上 放 下来。  
 people.ALL BA 3SG from low REL house-beam LOC put down.COMP  
 ‘People got her down from the low beam of the house’

These two sub-types of transitive verbs, linking and motion verbs, have a strong association with BA<sub>0</sub> and realize their arguments in an *agent-act-patient-result* pattern, which is syntactically ideal for the expression of ‘disposal’.

For the BA<sub>1</sub> construction, we have found 48 types of verbs in 365 sentences. Consider Table 2, which shows the 20 verbs most strongly attracted to the V slot of BA<sub>1</sub> construction.

**Table 2.** Collexemes most strongly attracted to the BA<sub>1</sub> in the V slot (n = observed frequency)

Collexeme (n)	Collostruction strength	Collexeme (n)	Collostruction strength
<i>nong</i> ‘make’ (25)	198.635112	<i>xia</i> ‘terrify’ (19)	169.200002
<i>nao</i> ‘make’ (11)	95.287009	<i>jiao</i> ‘make’ (6)	55.57656
<i>gao</i> ‘make’ (11)	52.92299	<i>ji</i> ‘squeeze’ (4)	37.846235
<i>diu</i> ‘lose’ (4)	22.870333	<i>wei</i> ‘surround’ (4)	22.738226
<i>yan</i> ‘act’ (4)	22.323985	<i>da</i> ‘beat’ (8)	21.507749
<i>ma</i> ‘scold’ (4)	19.901409	<i>shoushi</i> ‘clean’ (3)	18.302961
<i>danwu</i> ‘delay’ (2)	14.07057	<i>hong</i> ‘comfort’ (2)	13.634304
<i>zhen</i> ‘shake’ (2)	12.604101	<i>bao</i> ‘hug’ (3)	12.358975
<i>sai</i> ‘insert’ (2)	11.846456	<i>daban</i> ‘make up’ (2)	11.754609
<i>peng</i> ‘hold’ (2)	11.474641	<i>xie</i> ‘write’ (2)	11.250084

The verbs in Table 2 differ markedly from those in Table 1. First, there are 11 ergative verbs, namely, *nong* (‘make’), *xia* (‘terrify’), *jiao* (‘make’), *gao* (‘make’), *diu* (‘lose’), *yan* (‘act’), *shoushi* (‘clean’), *danwu* (‘delay’), *sai* (‘insert’), *xie* (‘write’), that do not require semantically restricted agents. And when an ergator is absent, the absoluter can be prepositioned (Jin and Wang 2014), as in (6):

- (6) 家里的一切 都由她 操持, 把个 9平方米 的小  
 domestic everything all AUX 3SG manage BAGE 9 square-meters POSS small  
 平房收拾得 干干净净。  
 flat tidy RES clean  
 ‘She runs the household so well that everything in this 9-square-meter flat is clean and neat’

If *ba* is removed from (6) and the object is fronted, the resulting sentence *xiao pingfang shoushi de ganganjingjing* (‘this small flat is clean and neat’) is still acceptable. Moreover, the pairs in (7a),(b) and (8a),(b), and the acceptability of (7b) and (8b) confirm that ergative verbs like *shoudao* (‘receive’) and *sheng* (‘give birth’) are more attracted to BA<sub>1</sub> than to BA<sub>0</sub>.

- (7) a. ??父亲把儿子的信收到了。  
 father BA son POSS letter receive PFV  
 ‘? The father has received a letter from the son’  
 b. 父亲把儿子的信给收到了。  
 father BAGE son POSS letter AUX receive PFV  
 ‘The father has received his son’s letter’

- (8) a. ??她把孩子生了。  
 3SG BA baby deliver PFV  
 ‘?She had (/delivered) her baby’
- b. 她把个孩子生在了家里。  
 3SG BAGE baby deliver at PFV home  
 ‘She had her baby at home’

Previous studies have attributed this difference to the natural sequential arrangement of an event, in which the referent of the object is conceptualized as the result of the action denoted by the verb. It is common sense knowledge that a subject cannot dispose of something that has not yet been actualized. We have found support for our thesis by means of a collocation analysis of these verbs. The results revealed that *fuqin* (‘father’) and *ta* (‘she’), as ergators of the ergative verbs *shoudao* (‘receive’) and *sheng* (‘deliver’), are not typical agents in the sense that they can pressure the patients to actualize these events. Thus, these verbs are repelled by the BA<sub>0</sub> construction.

Furthermore, the transitive verbs attracted to BA<sub>0</sub> and BA<sub>1</sub> differ semantically and syntactically. There are nine transitive verbs in Table 2, *ji* (‘squeeze’), *wei* (‘surround’), *da* (‘hit’), *ma* (‘scold’), *hong* (‘comfort’), *zhen* (‘shake’), *bao* (‘hug’), *daban* (‘dress up’) and *peng* (‘hold’), all of which depict a process or an action and its influence on the patient, but no change in location or any other property of the patient is caused by means of the actions denoted by these verbs. In addition, these verbs can co-occur with DE-complements that indicate properties of the event, as in (9):

- (9) 汪永富先出了一期关于林阿五的大字报  
 wangyongfu first make PFV one.CLF about Lin A-wu POSS big poster  
 一排边拉过去十多米，把个林阿五骂得  
 one.CLF row pull COMP ten more meters BAGE LinA-wu curse RES  
 狗血喷头。  
 dog-blood-spurt-head  
 ‘Wang Yong-fu made a poster with big characters about Lin A-wu at first ...  
 which extends out more than ten meters in length and describes Lin as an  
 underdog with very harsh words’

Specifically, the object in (9), *Lin A-wu*, who has experienced the action of being insulted, does not undergo any changes as a result of this event. The DE-complement in this sentence codes the way the insulting event unfolds.

Finally, verbs in the two constructions tend to display different levels of granularity. The BA<sub>0</sub> construction employs specific action verbs, while verbs in BA<sub>1</sub> construction are mostly general verbs (or light verbs) such as *nong*, *nao*, *gao*, *jiao* (all meaning ‘make’) that do not provide specific information about an

action and sometimes are even interchangeable, as illustrated in (10) and (11). If we replace *nao* and *gao* with *nong* and *jiao*, these two sentences still have nearly synonymous meanings.

- (10) 她的话说不下去了，不得不扭过头来捂上眼睛，  
 3SG POSS word say NEG COMP PFV AUX turn head COMP cover eye  
 把个志如闹(弄)得也掉下泪来。  
 BAGE Zhiru make COMPL ADV fall tear COMP  
 ‘She could not continue her words, so she turned her head around and covered her eyes, which made Zhiru shed tears with her’
- (11) 如此往复，恶性循环，把个大好河山，搞(搅)得  
 such back-and-forth vicious circle BAGE grand river-mountain do (stir) RES  
 支离破碎。  
 broken  
 ‘Such contradictory activities unsettled the great country’

The verbs most strongly attracted to the BA<sub>1</sub> construction, i.e. ergative verbs, intransitive verbs and verbs of action, are less restricted than the BA<sub>0</sub> construction with regard to the selection of an ergator argument. Hence, they usually pattern as *action-patient-modality* (‘result’), which is not a suitable pattern to convey the meaning of disposal.

### 3.2 BA<sub>0</sub> and BA<sub>1</sub>: From subjective disposal to subjective assessment

According to Langacker (2006: 18), “an entity is **subjectively construed** to the extent that it remains ‘offstage’ as an implicit, unselfconscious subject of conception”. The asymmetry between the conceptualizer and what is conceptualized is “maximal when the subject of conception lacks all self-awareness, being totally absorbed in apprehending the onstage situation, and the object of conception is salient, well-delimited and apprehended with great acuity” (ibid.). The measurement for this semantic reduction decomposes into four parameters: (i) a change in status (from actual to potential, from specific to generic), (ii) a change in focus (the extent to which particular elements stand out as focus of attention), (iii) a shift in domain (from a physical interaction to a social or experiential one (the evolution of modals), and (iv) a change in the locus of activity or potency (from a focused onstage trajectory to an offstage addressee) (Langacker 1999: 155–156).

The verbs in the disposal construction are mostly simple verbs, and the construction can be transformed into the SVO construction (Shen 2002). When the speaker describes a disposal event, there has to be a subjective perspective on the participants, the process or the result of this event, as in (12) and (13), from Shen:

- (12) 这是书误了他可惜他也把书糟蹋了。  
 DET PRED book delay PFV 3SG pity 3SG ADV BA book waste PFV  
 ‘This book wasted him. Unfortunately, he also wasted this book’
- (13) 你拆了我这楼也罢了，怎么将这  
 2SG demolish PFV 1SG DET building ADV ignore PFV how JIANG det  
 御书 牌额也打碎了？  
 imperial-calligraphy plaque adv hit break PFV  
 ‘I don’t mind your demolishing my house, but how could you break the  
 imperial plaque?’

The first parts of both (12) and (13) are VO constructions, and the second parts are disposal constructions. The speaker in (12) pities the *shu* (‘book’) to show his empathy. In (13) the phrase *ye-ba-le* (‘after all’) manifests that the speaker empathizes with the *yushupai* (‘imperial plague’) rather than with the house.

Shen (2002) proposed that the grammatical meaning of the BA<sub>0</sub> construction can be characterized as ‘subjective disposal’, which focuses on the volition of the speaker. However, this subjective disposal is rooted in an objective fact. Even in cases in which subjectivity plays an important role in the disposal construction, its objective meaning is still dominant.

In perspectivizing some event, the speaker often expresses a certain attitude or feeling toward it, especially when the truth of the propositional content is doubtful or a special meaning is contextually triggered. In such cases, the subjective assessment meaning replaces the disposal meaning and becomes the focus in the construal. Hence, a variant of the disposal construction emerges, i.e. BA<sub>1</sub>, as in (14) and (15):

- (14) 我名义上孤军作战，把个家族安全责任揽  
 1SG name LOC single army fight BAGE family security responsibility take  
 上身，实际上，比在香港时还要优游自在。  
 LOC body fact LOC compare at Hongkong time ADV free-free  
 ‘It seems that I now shoulder responsibility and protect the whole family by  
 myself, but in fact am more relaxed and freer than I was in Hong Kong’
- (15) 他溜到灯跟前看见玉梅的课本封面上的名字  
 3SG slip to lamp front see Yumei POSS textbook cover LOC POSS name  
 写得歪歪扭扭的，便说：“玉梅！你怎么把个‘梅’字  
 write RES wiggle REL AUX say Yumei 2SG how BAGE Mei character  
 写得睡了觉了？”  
 write RES sleep PFV sleep MOD



‘He sneaked in the front of the lamp, looking at Yumei’s name that she scribbled on the cover of her text book, and said: “Yuemei! How wiggly the character ‘mei’ looks!’

The speaker in (14) is not inclined to assume the responsibility of taking care of his family, an inference that can be drawn from the second part of this sentence. In his utterance, the speaker shifts his focus from the event of taking responsibility to his unwillingness to act in a responsible way. This kind of shifting from objective to subjective can also be observed in (15). An objective description of the writing event turns into a subjective assessment of this event.

We have seen that the disposal construction has undergone a process of subjectification through a shift of construal, or vantage point, thus bleaching the objective disposal meaning and profiling the meaning of evaluation. We graphically represent the arrangement and movement of viewing in Figures 1a and 1b for objective and subjective construals, respectively. The meaning of the disposal construction is construed objectively in Figure 1a, i.e., the conceptualizer is subjectively involved. In Figure 1b, the conceptualizer is represented as being onstage (i.e. having immediate scope) and making his subjective assessment of the object of conception; in other words, the object is not objectively construed and the conceptualizer is less subjectively involved.

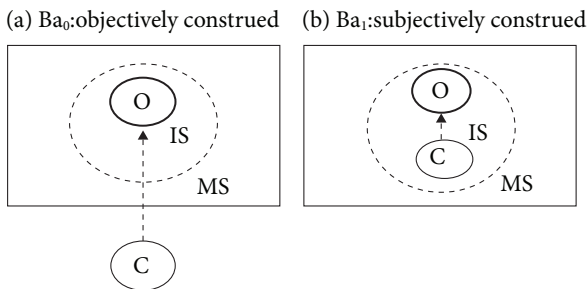


Figure 1. Objective and subjective construals of the disposal construction

#### 4. Subjectification and the semantic and syntactic adjustment of $BA_1$

As a consequence of the process of subjectification, construction  $BA_1$  is no longer a suitable linguistic device to express a typical disposal event. This claim is supported by the data analyzed in the subsequent sections.

#### 4.1 Emphasis on modality by means of V-DE

To begin with, we investigate the distribution of the verb *gao* ('make') (see Tables 1 and 2). The results of our quantitative analysis represented in Figure 2 show that it co-occurs with directional verbs to form a  $V_1V_2$  pattern in 81.8% of the sentences instantiating the  $BA_0$  construction, such as *gao shangqu* ('improve') and *gao wan* ('finish'). In the  $BA_1$  construction, however, all the predicates consisting of a kernel verb *gao* appear in the form V-DE-ADJ, where, in most cases, *gao* does not describe any specific action.

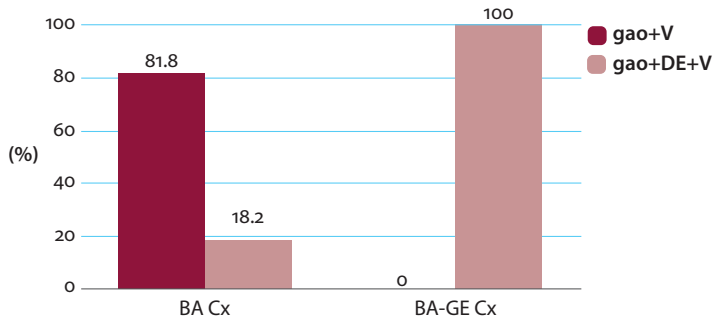


Figure 2. Frequencies of verb *gao* in both constructions

To illustrate, consider (16) and (17):

- (16) 试想，如果把广州正常的生产、工作、生活  
 imagine if BA Guangzhou normal REL production work life  
 秩序搞乱了，把交通搞瘫痪了，这会对谁  
 order make chaotic PFV BA traffic make paralyze PFV DET AUX to who  
 有利呢？  
 beneficiary Q  
 'Will it benefit anyone if normal production, work and life order, and even  
 traffic in Guangzhou are all mixed up?'

- (17) 这灵活机的一招一式，把个单调的玻璃生产  
 DET flexible REL one-motion-one-move BAGE boring glass production  
 搞得好戏连台。  
 make RES good-opera-show-succession-stage  
 'Every flexible movement brings a lot of (fantastic) vitality to the  
 monotonous production of glass'

The verb *gao* ('do') in (16) describes a specific action implying traffic chaos as the consequence of the action. The form *gao* cannot be replaced by other causative verbs. In contrast, the same verb *gao* in (17) can be replaced by other verbs, e.g. *nong* ('make'), because here it functions as a light verb, which may be replaced by

another light verb. Moreover, rather than representing the result of the event objectively, the evaluative term *hao-xi-lian-tai* ('fantastic') at the end of the sentence expresses the speaker's subjective point of view.

Based on these findings, we investigated BA<sub>0</sub> and BA<sub>1</sub> with the aim of retrieving the 10 most frequent verbs functioning as predicates in each construction (with N<sub>BA0</sub> = 293, N<sub>BA1</sub> = 95). We focused on the following three syntactic categories: subjects (NP<sub>SUBJ</sub>), objects (NP<sub>OBJ</sub>) and verb phrases (VP). The results show that in BA<sub>0</sub> there are very few cases, i.e. only 1%, in which the predicate verb is followed by a complement marker DE to form a V-DE structure, whereas this syntactic configuration is very common in BA<sub>1</sub> (67%). Furthermore, as can be seen in Figure 4, the predicational structure V<sub>1</sub>V<sub>2</sub> or V-LE is predominant in BA<sub>0</sub> (99%), but not commonly attested in BA<sub>1</sub> (33%).

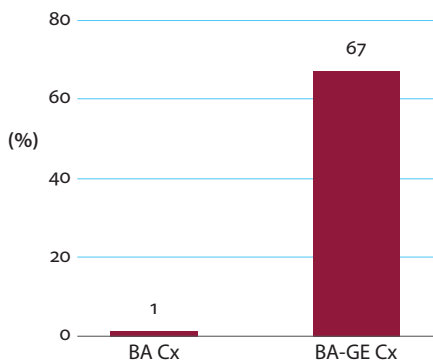


Figure 3. Frequencies of V-DE in both constructions

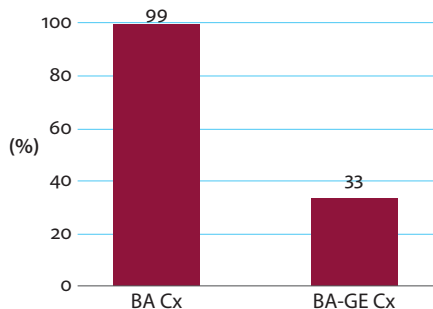


Figure 4. Frequencies of VV/V-LE in both constructions

In the predicational structure V<sub>1</sub>V<sub>2</sub>, V<sub>2</sub> is used mainly as an aspectual marker to express the perfectivity, i.e. completedness, of the action conveyed by V<sub>1</sub>. Therefore, the verbs in BA<sub>0</sub> have to be those capable of expressing the boundedness of an action (Liu and Cui 2005). Consider (18) and (19):

(18) 把我的名字写下/进去。  
 BA 1SG POSS name write COMP/COMP  
 ‘Write down my name’

(19) \*\*把我的名字写。  
 BA 1SG POSS name write  
 ‘Write my name’ (Liu and Cui 2005)

In (18) the reading of the VP *xie xiaqu* (‘write down’) implies that the action of writing has been completed. Sentence (19), a BA<sub>0</sub> construction, is not acceptable because the single verb *xie* (‘write’) suggests a certain phase of a possibly ongoing process of writing (i.e. is not bounded).

Apart from the form V<sub>1</sub>V<sub>2</sub>, another form that the VP commonly exhibits in BA<sub>0</sub> is V-LE. LE is an aspectual marker that is used to express the completion/perfectivity of an action; therefore V-LE is often used to emphasize the result of an action, as in (20) and (21):

(20) 他一边点头一边笑说, “我当时年轻气盛, 把父亲留下的钱办了大学。”  
 3SG ADV nod ADV smile say 1SG when young impulsive BA father left  
 POSS money make PFV university  
 ‘He said with a smile while nodding his head, “I was so impulsive when I was young that I spent all the money my father had left to build up this university”’

(21) 他们用肥皂水从上到下把钢瓶刷了好几遍, 也没有找到漏气点。  
 3PL use soap water from-top-to-bottom BA steel glass brush PFV ADV  
 several time ADV NEG find leak gas point  
 ‘They couldn’t find where gas is leaking even after brushing the steel glass all over several times with soapy water’

In (20) *daxue* (‘university’) is the result of the action achieved by the verb *ban* (‘build up’); and in (21) *haojibian* (‘repeatedly’) expresses the frequency of the action *shua* (‘brush’). In both cases, the V-LE structure of the predicates highlights the result of the respective action.

In a comparative study of V-DE and V-LE, Zhang (2005b) concludes that the former expresses not only the result of an action but also the speaker’s evaluation of the action, as in (22) and (23):

(22) 你看, 她把个贾瑞弄得死而无怨, 至死不悟。  
 2SG look 3SG BAGE Jiarui do RES die unregretful die unaware  
 ‘Look, Jiarui is so attracted to her that he would even die for her with no regret’

- (23) 村长 被他感动了, 第二天 就领着 人马来  
 village head PASS 1SG move PFV second-day AUX lead PROG team come  
 了, 修门的 修门, 垒墙的 垒墙, 刷屋的 刷  
 PFV fix door REL fix door build wall REL build wall paint house REL paint  
 屋, 把个 破 家 料治得 停停当当。  
 house BAGE shabby house manage RES stable-steady  
 ‘Moved by him, the village head brought a team over to his place, fixing the  
 door, building up the wall, and painting the house. The shabby house was  
 very tidy and clean’

In (22), the complement *si-er-wu-yuan* (‘without regret’) emphasizes the mental state of the NP<sub>OBJ</sub> *Jia Rui* rather than describing the result brought about by the action coded by the verb *nong* (‘do/make’). The discourse marker *ni-kan* (‘look’) in (22) conveys the speaker’s view on the NP<sub>OBJ</sub>. In (23), the complement *ting-ting-dang-dang* (‘in order’) might indirectly convey the speaker’s view that he did not necessarily expect the house to be tidy.

#### 4.2 The attenuation of properties of the proto-agent role and the meaning of ‘disposal’

We now consider how the *semantic roles* of arguments may relate to the meaning of disposal expressed in the BA<sub>0</sub> construction. Langacker (1991) put forward the concept of ‘action chain/energy flow’, which involves semantic roles such as, for example, agent, patient and experiencer. By definition, the term ‘action chain’ conveys that there is a flow of energy when two objects interact, and the one that emits energy is the energy source. Energy is passed onto and consumed by the other object. A typical disposal event manifests itself by a process of energy flow from agent to patient, and the patient will undergo changes of state, e.g. in terms of physical movement or change of inherent properties.

For the analysis of the disposal construction, the notions of proto-agent and proto-patient, as first proposed by Dowty (1991), are also relevant (see also Chen 1994; Cheng 1995; Zhang 2000). A proto-agent role is defined by four properties: (i) volitional involvement in the event or state, (ii) sentience (and/or perception), (iii) causing an event or change of state in another participant and (iv) movement (relative to the position of another participant). The properties of a proto-patient role include: (i) undergoing a change of state, (ii) incremental theme, (iii) being causally affected by another participant, and (iv) being stationary relative to the movement of another participant (Dowty 1991). If any of these properties is missing, the construction of a prototypical disposal event fails.

The results of our collocation analysis of both constructions in Section 3.1 show that there are two types of verbs that are strongly attracted to BA<sub>0</sub>: linking verbs and motion verbs, both of which have high transitivity and require the co-occurrence of the two semantic roles of agent and patient. Therefore, they are the best verbal candidates for the expression of a disposal event. In contrast, verbs that are strongly attracted to BA<sub>1</sub> belong mainly to two other categories: ergative verbs and phrasal verbs, neither of which is not suitable for the expression of a disposal event because the agent role is not obligatory in the argument structure. In Figure 5, the results of our statistical analysis show that the most common type of NP<sub>SUBJ</sub> in both constructions is coded by nouns denoting persons (BA<sub>0</sub> = 79%, BA<sub>1</sub> = 51.5%) because humans are often considered as an energy source that passes energy on to other less energetic objects. What is also noticeable is the use of event nouns as NP<sub>SUBJ</sub> in both constructions, which is infrequent in BA<sub>0</sub> (3.3%) but not uncommon in BA<sub>1</sub> (35.7%).

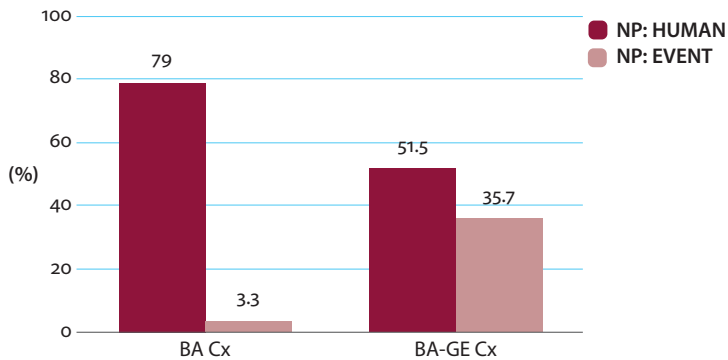


Figure 5. Two types of NP<sub>SUBJ</sub> in both constructions

Event-like nouns do not have the property of volition and thus are not suitable to express a disposal event when used as the sentence subject, as in (24) and (25):

- (24) 就 这样 上行下效, 把个 禅宗 搞得 徒具虚名,  
 AUX DET up-run-down-follow BAGE Tantra make COMPL bare-have-fame  
 一团污糟, 宁不痛惜!

one-CLF-mess AUX-NEG-pity

'Such a way of working from top down jeopardized the reputation of Zen.  
 What a pity!'

- (25) 史更新 这 几 句话, 把个 侯俊杰 吓 得 连  
 Shi Gengxin DET several CLF words BAGE Hou Junjie frighten RES even  
 头发梢儿都 哆嗦 起来 了!

hair tip ADV shiver stand-up PFV

'Hou Junjie sits up at the vividness of terror in Shi Gengxin's words'

In (24) and (25), energy sources that act on the sentence objects are not mentioned. Both sentences convey the speaker's view or attitude concerning what has happened.

#### 4.3 The attenuation of the properties of proto-patient roles and the meaning of 'disposal'

Ren (2005) showed that NPs following verbs in Chinese, more or less, exhibit properties of proto-patients. Based on this finding, Zhang (2000) contended that the NP<sub>OBJ</sub> in BA<sub>0</sub> is not stationary. Since the disposal meaning is attenuated in BA<sub>1</sub>, the semantic roles in BA<sub>1</sub> will be quite different from the ones found in BA<sub>0</sub>. The analysis of the NP<sub>OBJ</sub> in both constructions that collocate most strongly with the 10 verbs listed in Table 1 and Table 2, respectively, shows there are two types of nouns that differ markedly in the semantic roles they typically assume in BA<sub>1</sub> and BA<sub>0</sub>, respectively. These two types of nouns are human nouns and place nouns, represented in Figure 6.

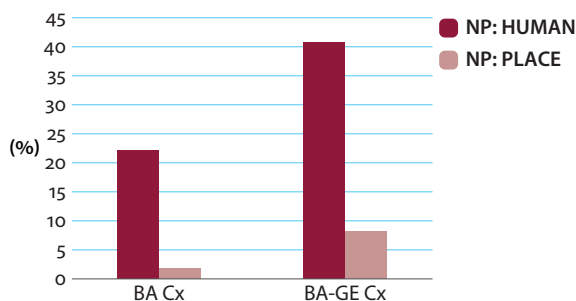


Figure 6. Two types of NP<sub>OBJ</sub> in both constructions

Consider (26) and (27):

- (26) 就 凭 这 一 块 不 起 眼 的 小 山 ， 把 个 平 平 淡 淡 的  
 AUX ADV DET ONE CLF NEG noticeable REL hill BAGE plain REL  
 昆 山 市 烘 托 得 满 目 生 辉。

Kunshan city present RES full-eye-make-glory  
 'It is this hill that makes this city an attraction'

- (27) ...感 情 在 他 心 中 绕 着 圆 圈 ， 把 个 最 简 单 的  
 emotion in 3SG heart LOC round PROG circle BAGE most simple REL  
 人 闹 得 不 知 道 了 东 西 南 北。

person make RES NEG know PFV east - west-south - north  
 'Much on his mind, the simple man was so annoyed that he felt lost'

The NP<sub>OBJ</sub> in (26) refers to a location that is not likely to undergo a disposal event. The focus of the event in this sentence is the speaker's evaluation rather than a disposal event, that is, the *xiaoshan* ('hill') plays a crucial role in decorating the city although it is quite ordinary in appearance. The NP<sub>OBJ</sub> in (27) refers to a man who is overwhelmed by his emotions; i.e., the sentence does not express an action of disposal.

Let us consider the case where NP<sub>OBJ</sub> is realized by a human noun in more detail. Human nouns are characterized by the conceptual feature 'volitional' and hence are ideally suited to assume the role of agent in a sentence rather than that of patient. If the NP<sub>OBJ</sub> is a human noun, then there must be a more powerful agent functioning as the NP<sub>SUBJ</sub> that is capable of performing a disposal action on the patient. For BA<sub>0</sub>, we found that in 85.1% of our data, both NP<sub>SUBJ</sub> and NP<sub>OBJ</sub> denote human beings. However, in the case of BA<sub>1</sub> constructions, NP<sub>SUBJ</sub> includes not only human nouns (52.3%) but also event-like nouns (28.9%).

If, in BA<sub>1</sub>, NP<sub>SUBJ</sub> refers to an event and NP<sub>OBJ</sub> to a human being, a complete action chain cannot be constructed since a prototypical agent is not coded in the sentence. Consequently, examples such as (28) and (29) do not describe specific actions of disposal:

- (28) 她扭着头左顾右盼，指东指西，又蹦又跳，把个  
3SG turn PROG head look-left – right point-east – west hop-jump BAGE  
娃娃颠得嚎啕大哭起来。

baby shake RES loud cry COMPL

'The baby in her arms felt the quake and cried out when she jumped up and down while looking around and pointing here and there'

- (29) 众人都想：金面佛苗人凤身为一代大侠，  
ALL ADV think golden face Buddha Miao Renfeng PRED one CLF hero  
却把个女儿骄纵成这般模样。

AUX BAGE daughter spoil RES DET look

'They all thought the hero Miao Renfeng spoils his daughter badly'

In (28), the NP<sub>SUBJ</sub> *ta* ('she') does not intend to make the NP<sub>OBJ</sub> *wawa* ('baby') cry. What is conveyed in this sentence is an activity rather than a specific event. The sentence in (29) refers to some general behavior of Buddha Miao Renfeng. When the process of an event is offstage, the result is a focus onstage.

Let us now turn to NP<sub>OBJ</sub> with a noun that refers to a place. This type of NP<sub>OBJ</sub> is infrequent in BA<sub>0</sub> (1.8%) and only slightly more common in BA<sub>1</sub> (8.2%). Place nouns are not suitable patients because of their property of being 'stationary'. It is (virtually) impossible for a place to undergo a change of state. Hence, when NP<sub>OBJ</sub>



contains a place noun, it simply signifies the location where an event has happened as in (30) and (31):

- (30) 晚饭以后不是闲聊就是练习乐器,  
 dinner after NEG PRED chat AUX PRED practice musical instrument  
 丝竹盈盈, 琴歌阵阵, 把个许家大院闹得热气腾腾。  
 string-ring music-echo BAGE Xu's yard stir RES delightful  
 'The lofty conversation and delightful music rehearsal after dinner every day brought a vibrant atmosphere to Xu's house'
- (31) 这一阵暴风骤雨, 把个苏州城打得落英缤纷,  
 DET one CLF sudden wind and rain BAGE Suzhou city whip RES flower fall  
 吓得苏州公园里的花工也不敢种花。  
 frighten RES Suzhou park LOC POSS gardener too NEG dare grow flower  
 'The sudden wind and rain whipped Suzhou city and flowers fell piece by piece. Gardeners from city parks even had no confidence to grow flowers'

The two sentences in (30) and (31) describe what has been done to the places from the speakers' points of view. In (30), the agent and the patient of the verb *nao* ('stir') are 'human beings' and the 'atmosphere of the place', respectively, but neither of which are given; rather, the syntactic object *xujiadayuan* ('Xu's house') is not a prototypical patient but the place where the event has happened. In (31), the semantic role of the patient of the verb *da* ('hit') is the plants rather than Suzhou City. Using event-like nouns as the subjects, both sentences emphasize the result of an event rather than the process itself.

What can be concluded from all of these observations is that  $BA_1$  is not the ideal construction for coding a complete action chain of a disposal event. Rather, in this construction, the focus shifts from an objective rendition of an activity to the speaker's subjective evaluation of the activity. That is to say, the concept of disposal has undergone subjectification, with the result that the speaker's attitude toward the event becomes more and more foregrounded. Thus, the increased subjectivity in construing a disposal event contributes some new features to the constructional meaning of  $BA_1$ .

## 5. $BA_1$ : Focusing on speaker's modality

We have seen that  $BA_1$  highlights the subjective evaluation of the speaker. This chapter further explores the pragmatic function of the  $BA_1$  construction, focusing on three aspects, taken in turn in this section.

## 5.1 Expression of speaker's belief

Sugimura (2002) and Zhang (2005a,b) noticed that there exists an abnormal relation between the NP and the VC in most examples of the BA<sub>1</sub> construction. It is the speaker's belief that the result of the event is unexpected, as e.g. in (32) and (33):

- (32) 减少 社会 交往, 平心静气 读 帖 练  
 reduce social activity calm-heart-calm-mood study calligraphy practice  
 字, 把个 脑血栓 养好了 居然 奇迹 般 恢复  
 calligraphy BAGE cerebral thrombosis cure PFV ADV miracle AUX recover  
 了 健康。  
 PFV health  
 'With less social activity, he started to study and practice calligraphy with a peaceful and calm mind. It turned out that his cerebral thrombosis was cured and even his health was restored like a miracle' (Zhang 2005b)
- (33) 她 要是 发 起 虎威 来, 准能 把个 许家大院 闹得  
 3SG COND start CVB tiger temper COMPL surely BAGE Xu house stir RES  
 翻天覆地。  
 upside down  
 'If she lost her temper and showed her might, then Xu's house would surely come into chaos'

It is a common belief in China that cerebral thrombosis is hard to cure, i.e., the probability of being able to "dispose" of it is low. Thus, in (32), the speaker assesses the recovery of the man in question as unexpected, and this modality is echoed by the adverb *juran* ('unexpectedly'). Sentence (33) depicts the hypothetical (counterfactual), i.e. not expected situation *ta faqi huwei lai* ('lose one's temper and show one's might') that would *zhunneng* ('highly likely') cause chaos in Xu's family, which is normally stable and not easily disrupted.

In BA<sub>1</sub>, the morpheme GE turns the object into an entity with generic reference. The speaker mentally assigns the attributes of a definite individual referent to a group of referents sharing those attributes, which leads to a reconceptualization of the object. In this way, a strong contrast between the predicate and the object is created by means of which a pragmatic effect of unexpectedness is achieved, as, for example, in (34) and (35):

- (34) 党中央、国务院 如此重视 一个  
The Party Central Committee The State Council ADV value one CLF  
普通 老农 的意见，把个 庞 老汉 激动得 直 抹  
ordinary old-peasant POSS opinion BAGE Pang old-man move RES ADV wipe  
眼泪。

tears

‘The idea that the Central Party Committee and the State Council set such great store by an old farmer’s opinion moved Old Pang to tears’

- (35) 遇上她 高兴时，她能 把个 凡人 化成  
meet 3SG happy moment 3SG can BAGE ordinary person turn RES  
毛阿敏；遇上她 不 高兴，她能 把个 新娘子 化成  
Mao-Amin meet 3sg NEG happy 3SG can BAGE bride turn RES  
江青。

Jiang-Qing

‘When she’s happy, she can turn an average girl into Mao Amin, a glamorous singer; when she’s not, she turns even a bride into Jiang Qing, a sulky woman’

Semantically, the object *Pang laohan* (‘Old Pang’) in (34) refers only to the old man himself. By means of GE, the individual denoted by the object is generalized to a type, and this generalization activates the listener’s knowledge of *laohan* (‘old’) as a type: being old, experienced, not easily moved and so on. The same generalization holds for indefinite referents. The two objects *fanren* (‘normal person’) and *xinniangzi* (‘bride’) in (35) shift from referring to an individual to denoting a type, respectively.

When the speaker thinks that the listener does not understand something or in cases of divergence between the speaker’s and the listener’s understanding, the speaker may encode his/her understanding through a modified component, such as in (36) and (37):

- (36) 透过 那 一大片 茶色的 玻璃，望 出 窗外，原来 竟 下  
through DET one big CLF tawny REL glass look out window ADV ADV fall  
着 雨，把个 明丽的 香江，罩 在 一片 朦胧 中。  
PROG rain BAGE bright REL Xiang-river cover one CLF haze LOC  
‘Looking out through the big dark brown window, he found it was raining,  
much to his surprise, leaving the gorgeous Xiangjiang River shrouded in  
mist’

- (37) 把个 冷冰冰的 煤 写得 如人 一般, 既 描绘 出  
 BAGE cold REL coal write RES like human ADV CONJ describe ADV  
 煤 的 特点 和 功用, 又 表达 出了 作者 的 处世  
 coal POSS properties CONJ function CONJ express ADV PFV author POSS life  
 哲学。

philosophy

‘The cold and hard coal came alive under his pen, just like human beings.  
 His writing not only did full justice to its characteristics and utilities, but  
 also reflected his philosophy of life’

## 5.2 Expression of speaker’s perspective

The BA<sub>1</sub> construction always reflects the speaker’s view of the object. Shen (2002) observed that different perspectives may result in different evaluations of some objectively given large quantity, large size, high degree, etc. This phenomenon can be seen in (38) and (39):

- (38) 一 家 人 勤 勤 恳 恳, 起 早 摸 黑, 把 个 10 多  
 one CLF household work hard get up early knock off late BAGE 10 more  
 亩 庄 稼 经 管 得 人 见 人 爱。

acre crop maintain RES all-see-all-admire

‘The whole family plodded on their 10-acre field, day and night, turning it  
 into an admirable piece of work’

- (39) 一 场 痛 快 淋 漓 的 旅 游 开 发 潮, 把 个 桂 林 旅 游 业 直  
 one CLF enjoyable REL tourism building spree BAGE Guilin tourist industry  
 掀 得 如 火 如 茶!

ADV turn RES like-wildfire

‘A building spree of sightseeing spots set tourism development in Guilin into  
 full swing’

The respective speakers in (38) and (39) subjectively view *shi-duo-mu zhuangjia* (‘more than ten acres of crops’) and *Guilin lvyouye* (‘tourism industry in Guilin’) as ‘large quantities’. Therefore, it takes considerable effort to manage them well, and the speaker’s positive assessment is indicated by attributes such as *renjianrenai* (‘admirable’) in (38) and *ruhuorutu* (‘into full swing’) in (39).

Subjective interpretations of the object are also observed in the case of other objective characteristics, as in (40) and (41):

- (40) 光 想 割(革) 人家的 命, 人家 不想 割(革) 你的  
 only want cut (revolt) other POSS life other NEG want cut (revolt) 2SG POSS  
 命 吗? 光 自 把 个 小 命 儿 也 割(革) 了!  
 life Q ADV BAGE small life too cut (revolt) PFV  
 ‘You just want to bring others down taking it for granted that no one wants  
 to bring you down. In the end, you would lose your life for it’
- (41) 天 冷 了, 必 头 戴 帽子, 脖子 尤其 不识 时 务, 把 个  
 weather cold PFV must head wear hat neck ADV ignorant BAGE  
 小 头 小 脸 高 高 顶 起, 让 帽 沿 一 箍, 活 脱 脱  
 small-head-small-face high-high jack COMP AUX hat brim one hoop vividly  
 一 朵 洋 菇!  
 one CLF mushroom  
 ‘When it gets cold, wear a hat. But the uncooperative neck still holds your  
 head and your tiny little face high and above, which, when fastened under  
 the brim, looks all the more like a mushroom’

In colloquial Mandarin Chinese, adjective modifiers such as *da* (‘big’) and *xiao* (‘small’) are normally used to express the speaker’s subjective evaluation as illustrated in the noun phrases in (40) and (41).

Apart from the object, the complements in BA<sub>1</sub> denote mostly subjective notions of quantity, expressing how the speaker perceives the objective event in his/her mind.

- (42) 每 当 秋 风 乍 起, 枫 红 谷 黄 之 际,  
 when autumn wind sudden start maple-red-grain-yellow POSS time  
 虫 儿 们 纷 纷 横 刀 立 马, 南 征 北 伐, 把 个  
 insect.all all lift-knife-stand-horse north-campaign-south-fight BAGE  
 金 秋 杀 得 烽 烟 滚 滚。  
 golden autumn kill RES flame-rage  
 ‘Every time when the autumn wind kicks in, maple leaves turn red and  
 grain yellow, large armies of insects fly south or north, inflaming the golden  
 season all the more’
- (43) 她 要 是 发 起 虎 威 来, 准 能 把 个 许 家 大 院 闹 得  
 3SG COND start CONV tiger temper COMPL surely BAGE Xu house stir RES  
 翻 天 覆 地。  
 upside down  
 ‘If she lost her temper and showed her might, Xu’s house would surely come  
 into chaos’

In (42) and (43), *feng-yan-gun-gun* (‘inflamm’) and *fan-tian-fu-di* (‘turn the world upside down’) are not the results of an event, but mental images created through

mental processing of the observed event. For the same situation, different people will experience different mental images.

### 5.3 Expression of speaker's preference

Another type of subjectification is the expression of the speaker's preference vis-à-vis some objectively given event. In (44) and (45), *hao-bu-jin-qing* ('enjoyable') and *yao-qi-shi-zu* ('heretical') encode speakers' likes and dislikes, respectively:

- (44) 两排立壁 相接的 仿古 建筑, 从我的  
two CLF upright-wall connect POSS archaistic building from 1SG POSS  
两肩 之 侧 擦掠而过, 把个 大红大绿 涂抹得  
two shoulder POSS side slide-CONJ-go BAGE red-green paint COMPL  
好不尽情。  
ADV-NEG-enjoyable  
'Two rows of retro-looking buildings, through which I narrowly passed,  
shoulders against the wall, stand there back to back in a riot of colors'
- (45) 把个 大好 密宗 弄得 妖气十足。  
BAGE ADV good Esoteric-Buddhism make RES strangeness-full  
'The grand Esoteric Buddhism becomes heretical at last'

Similarly, the speaker can subjectively express disapproval of some state-of-affairs or event by means of the BA<sub>1</sub> construction as, for example, in (46) and (47):

- (46) 把个 闺女 培养成 这样还 以自己的 福气 呢,  
BAGE daughter nurture COMPL such ADV think REFL POSS fortune Q  
怎么!  
ADV  
'It is unbelievable that you consider it as a blessing to raise your daughter  
like this'
- (47) 谁 听说过 把个 抱来的 闺女 娇惯得 像个 娘娘  
who hear PST BAGE adopt POSS daughter spoil RES like CLF empress  
似的。  
ADV  
'No one has ever expected that someone would spoil an adopted child like  
that!' (Shen 2002)

In (46), the modal word *zenme* ('how can this be') at the end of the sentence expresses the speaker's disapproval of the event *ba guinv peiyang cheng zheyang* ('the way of raising a daughter'), while in (47) *shui tingshuo guo* ('it is unexpected to all') represents the speaker's disapproval of the subsequent event.

## 6. Conclusion

The BA construction, a unique syntactic phenomenon of Chinese, conveys basically a concept of disposal, as characterized in Section 1. From this pattern a new construction, the BA-GE construction, has emerged that has undergone a cognitive process of subjectification, in Langacker's sense: the objectively construed meaning has been attenuated and subjectively construed components have become immanent in the conceptualization. Different speaker perspectives lead to corresponding changes in the construal mode and are reflected in syntactic structure. The BA construction and the BA-GE construction convey contrasting processes of construal of the same objective event. On the basis of a large amount of corpus data that we have subjected to a collexeme analysis, we have been able to find empirical support for our conceptual analysis of the two constructions.

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# Types of negatives and the noun-verb distinction in English and Chinese

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In this study, it is claimed that, unlike in Chinese, the most important division of negatives in English is between the negation of nouns and that of verbs, but not between indicative and non-indicative negation, nor between the negation of *there is* and *is*. In Chinese the most important division of negatives is between indicative and non-indicative negation, or between the negation of *you* 有 ‘has/there is’ and the negation of *shi* 是 ‘is’, but not between noun and verb negation. This difference supports the thesis that, while in English nouns and verbs occupy two separate grammatical categories, nouns in Chinese constitute a super-noun category with the verb included, and thus a noun-verb division in Chinese should not be overstated.

**Keywords:** grammatical category, indicative negation, non-indicative negation

To be, or not to be: that is the question.

Shakespeare, *Hamlet*

If non-having turns into having, having becomes non-having.

Xueqin Cao, *A Dream of Red Mansions*

Is that all there is? Is that all there is?

Peggy Lee, *Is that all there is?*

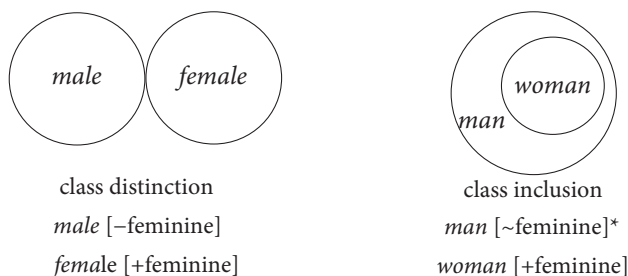
This you can have. This I really haven't.

Benshan Zhao, *Not Short of Money*

## 1. Introduction

It is commonly assumed in both structural and Cognitive Linguistics that categories are not isolated entities but are organized in conceptual networks, i.e. entertain various relations with one another. Two such relations, which are of special interest in this chapter, are known as ‘class distinction’ and ‘class inclusion’ (see Lyons (1977: 156). In the former, the two categories exclude each other, such as *nanren* 男人 ‘male’ and *nüren* 女人 ‘female’ in Chinese, while in the latter one category

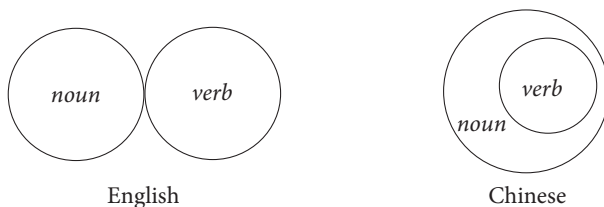
constitutes a sub-category of the other, such as *man*, in the generic sense ‘a human being of either sex’, and *woman* in English. On the basis of Trubetzkoy’s (1931) theory of phonemic opposition, Jakobson (1932, 1939) argued that the inclusion relationship exists at the morphological level.



\*Note that [~feminine] is different from [-feminine]. *Man* [~feminine] indicates that *man* is not specified or is neutral with respect to the feature [feminine]

**Figure 1.** Class distinction and class inclusion

With regard to the opposition between nouns and verbs, generative grammar, which in my view is based mainly on English and other Indo-European languages, holds that nouns and verbs in human languages can be clearly differentiated, i.e., it is assumed that nouns have the features [+N, -V], in contrast to verbs, which are marked as [+V, -N]. This position sees only one side of the coin, for the inclusion relationship also exists between nouns and verbs. In Chinese, I claim, verbs constitute a sub-category of nouns, i.e., nouns are defined by the feature [~V], which indicates they are not specified with respect to the feature [V]. In a series of articles (see Shen 2007, 2008a,b, 2009a, 2010a, 2017) and Shen (2016), I have argued for the inclusion relationship between nouns and verbs in Chinese from various perspectives (see Figure 2).



**Figure 2.** The noun-verb relationship in English and Chinese

The relation between nouns and verbs in English is comparable to the relation between *male* and *female*, while in Chinese it is analogous to the one between *man* and *woman*. In this language, verbs constitute a sub-category of nouns. On the one hand, nouns and verbs in Chinese are indistinguishable because all verbs are nouns; on the other hand, they are distinguishable because not all nouns are verbs.

Similar kinds of nominalism have also been uncovered in other languages. From a generativist, typological and historical perspective, Kaufman (2009) argues that in Tagalog all notional words (including verbs) belong to the noun class. Similarly, Larson (2009), a generative grammarian, also contends that in some Iranian dialects adjectives and verbs are included in the supra-noun category, just like in Chinese. Shen (2012) compares similarities and differences between Tongan nominalism (Broschart 1997; Broschart and Dawuda 2000) and Chinese nominalism.

The present chapter (a revised English version of Shen 2010b) makes a case for the position that the two types of opposition between nouns and verbs in Chinese and English parallels the two distinct modes of expressing negation in the two languages, lending further support to the thesis that in Chinese nouns constitute a supra-noun category that includes verbs.<sup>1</sup>

## 2. The division of negatives in English: *No* and *not*

As pointed out in Section 1, in English, nouns and verbs constitute separate categories. Accordingly, they are negated by two different negatives, *no* for nouns and *not* for verbs. *No* is a determiner and hence is positioned before the noun that it negates, as in the sentences given in (1).

- (1) a. *No teachers* went on strike.
- b. I've got *no Thursdays* free this term.
- c. She had *no idea* what I meant.
- d. *No honest man* would lie.
- e. Sorry, there's *no time* to talk.

*No* and the following noun may fuse into a new word (e.g. *nobody*, *nothing*, *none*, and *nowhere*) or form an expression with a more or less idiosyncratic meaning (e.g. *no doubt*, *no problem*).

In contrast, in the case of verb negation, the adverb *not* is used and placed after the auxiliary (e.g. *do*, *have*, *would*) and the copula (e.g. *be*). The examples in (1) may also be negated by *not*:

- (2) a. The teachers *did not* go on strike.
- b. I *haven't* any Thursday free this term.
- c. She *didn't* have any idea what I meant.
- d. An honest man *would not* lie.
- e. Sorry, there's *not* any time to talk.

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1. I am grateful to Lifei Zhang and Tian Li for carefully translating the original Chinese article into English. Any errors in the final text are my responsibility.

In some cases of *not*-negation, although the noun seems to be negated, in fact, it is an understood verb that is really negated, as demonstrated in (3) and (4):

- (3) A: Who's paying? B: Not me.  
 (4) The students went on strike, but not the teachers.

In (3), *not me* is an elliptical expression of *it's not me*. So it is still the verb *be* that is negated. Similarly, in (4), what is actually negated is not *the teachers*, but the action *went on strike*. This analysis is supported by the infelicity of (5), in which the subjects of the two clauses in (4) are reversed.

- (5) \*Not the teachers went on strike, but the students.

Clearly, *not the teachers* in (4) is in fact the omitted form of *but the teachers did not*.

There are also cases in which *not* is not used to negate the noun as such, but the quantifier before the noun. Consequently, the *not*-quantifier composite may be replaced by the nominal negative *no*, as in (6) and (7), or the negative quantifier *few*, as in (8).

- (6) We left not one bottle behind. = We left no bottle behind.  
 (7) Not a word would he say. = No word would he say.  
 (8) Not many people attended the meeting. = Few people attended the meeting.

As for the negation of adjectives, there seem to exist counterexamples in which *no* is used instead of *not*. But these apparent counterexamples pose no real challenge to our argumentation. With the exception of a few fixed expressions such as *no good* and *no different*, the *no*-negated adjectives appear invariably in the comparative form and convey a connotation of emphasis, as can be seen in (9):

- (9) a. Are you really fifty? You look no older than thirty-five.  
 b. You don't look older than thirty-five.

An important fact in Chinese is that there are no negative words equivalent to English *no*, and therefore Chinese students learning English as a second language are prone to use *not* in sentences where *no* should be used, as may be seen in (10)–(13):

- (10) \*He has not a brother. / He has no brother.  
 (11) \*Every one could not answer. / No one could answer.  
 (12) \*He showed no any sign of regret. / He showed no sign of regret (at all) / He didn't show any sign of regret (at all).

- (13) \*I have not such dictionary / \*I have no such a dictionary. / I have not such a dictionary / I have no such dictionary.

In this regard, French parallels English in also having distinct negatives, e.g. *nul/nulle* and *ne*. The former is a determiner and used for nouns, while the latter is an adverb that negates verbs. This is evidence, that in French, nouns and verbs are separate categories.

- (14) a. *nul espoir* ‘no hope’  
 b. *sans nulle vanité* ‘without any conceit’  
 c. *Nul homme ne t’approuve.* ‘No one agrees with you’  
 d. *Il n’a nulle cause de se plaindre.* ‘He has no reason to complain’

The difference between English *no* and French *nul/nulle* is that the latter usually occurs together with *ne* or *sans* ‘without’. The adverb *ne* occurs before the verb, which itself is usually followed by a negative particle *pas* or *point* to intensify the negative strength, as seen in the following examples:

- (15) a. *Il ne cesse de parler.* ‘He keeps talking without stopping’  
 b. *Je ne sais que faire.* ‘I don’t know what to do’  
 c. *Je ne sais pas.* ‘I have no idea’  
 d. *Elle ne le veut point.* ‘She does not want it (at all)’

In a word, for both English and French, a fundamental distinction is made between the negation of nouns and the negation of verbs.

### 3. The division of negatives in Chinese

#### 3.1 Ancient Chinese *bu* 不 / *fu* 弗 and *wu* 毋(无) / *wu* 勿

Throughout the history of Chinese, the primary division of negatives is between indicative negation and non-indicative negation, rather than between the negation of nouns and the negation of verbs. According to Lü (1942a: 234–242), during the Zhou and Qin period (770–206BC), a clear distinction is made between the indicative negatives *bu* 不 / *fu* 弗 and the non-indicative negatives *wu* 毋(无) / *wu* 勿, as illustrated in Examples (16)–(19)<sup>2</sup>:

- (16) 君子泰而不骄，小人骄而不泰。 (《论语·子路》 *Lunyu·Zilu*)

2. In this chapter, I take ‘indicative’ as a sentence pattern contrasting with, e.g. ‘imperative’, ‘hypothetical’, ‘prohibitive’, ‘resultative’, etc.

*Jnzi tai er bu jiao, xiaoren jiao er bu tai.*  
gentleman dignified but NEG haughty, common.people haughty but NEG  
*tai.*

dignified

‘The gentleman is dignified, but never haughty; common people are haughty, but never dignified’

- (17) 不知疾之所自起，则弗能攻。 (《墨子·兼爱上》 *Mozi·Jian'ai Shang*)

*Bu zhi ji zhi suo zi qi, ze fu neng gong.*

NEG know illness DEM REL from occur, then NEG can tackle

‘No one is able to deal with the situation if he does not know where the disorder comes from’

- (18) 己所不欲，勿施与人。 (《论语·颜渊》 *Lunyu·Yanyuan*)

*Ji suo bu yu, wu shi yu ren.*

Self REL NEG want, NEG give DAT others

‘Never do to others what you would not like them to do to you’

- (19) 无欲速，无见小利，欲速则不达，见小利则大事不成。

(《论语·子路》 *Lunyu·Zilu*)

*Wu yu su, wu jian xiao li; yu su ze bu da, jian  
NEG try hurry, NEG mind minor benefit, try hurry then NEG arrive, mind  
xiao li ze da shi bu cheng.*

minor benefit then important things NEG succeed

‘Do not try to hurry things. Ignore minor considerations. If you hurry things, your personality will not come into play. If you let yourself be distracted by minor considerations, nothing important will ever get finished’

In (16) and (17) *bu* 不 and *fu* 弗 are used in indicative sentences, and in (18) and (19) *wu* 勿 and *wu* 无 occur in non-indicative sentences. Apart from prohibitives, *wu* 毋(无)/*wu* 勿 is also seen in hypotheticals:

- (20) 若又勿坏，是无所藏币以重罪也。

(《左传·襄公三十一年》 *Zuo zhuan·Xiangong Sanshiyi Nian*)

*Ruo you wu huai, shi wu suo zang bi yi zhong  
COND further NEG destroy, DEM NEG place deposit offerings lead.to grave  
zui ye.*

charge IND

‘If we are further required not to throw down the walls, we shall have nowhere to deposit our offerings, and may lie open to the charge of a grave offence’

- (21) 苟毋适卫，吾出子。 (《史记·孔子世家》 *Shiji·Kongzi Shijia*)  
*Gou wu shi Wei, wu chu zi.*  
 COND NEG go.to Wei, 1PL release 2SG  
 ‘If you (Confucius) don’t go to Wei, you may leave’

According to Gong (2010), in the oracle bone inscriptions, *bu* 不 and *fu* 弗 are used in indicative negation, while *wu* 勿 and *jiang* 弜 are employed in non-indicative negation (including prohibitives and hypotheticals). A complete entry of oracle bone inscriptions usually consists of a hypothetical and a following resultative. Gong discovered that the hypothetical is negated by *wu* 勿 and *jiang* 弜, and the resultative is negated by *bu* 不 and *fu* 弗 (including the verbal *wang* 亡).

- (22) 贞:马勿先，其遘雨? (《甲骨文合集》 *Jiaguwen Heji*)  
*Zhen: ma wu xian, qi gou yu?*  
 ask: horse NEG first, AUX encounter rain  
 ‘Ask: If the horse doesn’t go first, is it going to rain?’
- (23) 弜酒，亡雨? (《小屯南地甲骨》 *Xiaotun Nandi Jiagu*)  
*Jiang jiu, wang yu?*  
 NEG wine, NEG rain  
 ‘If we don’t hold the ceremony, will there be no rain?’
- (24) 壬王迺田，丕雨? (《甲骨文合集》 *Jiaguwen Heji*)  
*Ren wang nai tian, bu yu?*  
 Ren king then hunt, NEG rain  
 ‘If the king goes hunting on the day of Ren, will it not rain?’
- (25) 戊戌卜:王其逐兕，禽? 弗禽? (《小屯南地甲骨》 *Xiaotun Nandi Jiagu*)  
*Wuxu wang qi zhu si, qin? Fu qin?*  
 Wuxu divine: king AUX hunt rhinoceros, catch? NEG catch?  
 ‘Divine on the day of Wuxu: The king goes out to hunt for the rhinoceros.  
 Can he catch it, or can’t he?’

Gong (2010) further proposed that the division of negatives in Zhou–Qin Chinese originates from the oracle bone inscriptions in the Shang Dynasty (1600–1046BC).

Before the Qin period (221–206BC) *bu* 不/*wu* 毋 are used to negate verbs followed by an object, while *fu* 弗/*wu* 勿 co-occur with verbs without an object (Ding 1935). However, this division is still far from the one between noun negation and verb negation:



- (26) 虽有嘉肴，弗食，不知其旨也；虽有至道，弗学不知其善也。  
(《礼记·学记》 *Liji•Xueji*)

*Sui you jia yao, fu shi, bu zhi qi zhi ye; sui*  
COND there.is delicious food, NEG eat, NEG know 3PL.POSS taste IND COND  
*you zhi dao, fu xue bu zhi qi shan ye.*  
there.is perfect course, NEG learn NEG know 3SG.POSS goodness IND  
'However fine the viands may be, if one does not eat them, one does not  
know their taste; however perfect the course may be, if one does not learn it,  
one does not know its goodness'

- (27) 不知疾之所自起，则弗能攻。(《墨子·兼爱上》 *Mozi•Jianai Shang*)

*Bu zhi ji zhi suo zi qi, ze fu neng gong.*  
NEG know illness POSS REL from occur, then NEG can tackle  
'No one is able to deal with the situation if he does not know where the  
disorder comes from'

- (28) 无友不如己者。过则勿惮改。(《论语·学而》 *Lunyu•Xue'er*)

*Wu you bu ru ji zhe. guo ze wu*  
NEG friend NEG superior REFL NMLZ make.a.mistake then NEG  
*dan gai.*  
afraid amend  
'There are cases in which your friends are not superior to you. If you have  
made a mistake, do not be afraid of admitting the fact and amending your  
ways'

After the Han Dynasty (202BC–220AD), even this division disappeared and both *fu* 弗/*wu* 勿 and *bu* 不/*wu* 毋 could be used to negate verbs followed by an object. Later on, *wu* 勿/*wu* 毋, together with *mo* 莫, *xiu* 休, *bie* 别 and *beng* 甬, are confined to orders and prohibitives.

In English, both *not* and *no* are used in prohibitives and hypotheticals. Sentences in (29) and (30) are some examples of prohibitives:

- (29) a. Don't you open the door!  
b. Don't fool yourself that you can get away with it!
- (30) a. No one open the door!  
b. Let no one fool himself that he can get away with it!

What is more, *no* and the nominalized V-ing form may fossilize into a chunk, occurring either alone (e.g. in a poster) or following *there is*:

- (31) a. NO SMOKING  
b. NO PARKING  
c. Sorry, there's no smoking in the waiting-room.

Thus it is clear that in English the distinction between indicative negation and non-indicative negation is not grammatically coded.

### 3.2 In modern Chinese: *Mei* 没/ *wu* 无/*wei* 未 and *bu* 不/*fei* 非

As previously pointed out, Chinese emphasizes the distinction between indicative and non-indicative negation. This division is especially apparent in modern and contemporary Chinese where the form of the negative depends on whether or not the negated verb is *you* 有 ‘has/there is’. That is to say, *you*-negation and non-*you*-negation are differentiated. For *you*-negation, the negatives are *mei* 没, *wu* 无, and *wei* 未, whereas for non-*you*-negation, which includes the negation of *shi* 是 ‘is’, the negatives are *bu* 不 and *fei* 非. (*Bu you* 不有 actually means *bu shi you* 不是有 and can only occur in rhetorical questions and hypotheticals.)

According to Lü (1942a: 238), *you*-negation focuses on past eventuality (i.e. whether or not an event has happened), while non-*you*-negation pays more attention to future actionality (i.e. whether or not to carry out an action). See the examples in (32) and (33):

(32) 他没(有)去。  
*Ta mei (you) qu.*  
 3SG NEG(have) go  
 ‘He didn’t go’

(33) 他不去。  
*Ta bu qu.*  
 3SG NEG go.  
 ‘He won’t go’

The English translation of *ta mei qu* 他没去 is *He didn’t go* and that of *ta bu qu* 他不去 is *He won’t go*, both of which use *not*. This indicates that in English the distinction between *you*-negation and non-*you*-negation is neutralized.

In Chinese, *you* 有 ‘has/there is’ and *shi* 是 ‘is’ denote separate concepts. Accordingly, two different negatives, namely *mei* 没 and *bu* 不, are utilized to negate *you* 有 and *shi* 是, respectively. The concept denoted by *shi* 是 ‘is’ could be expressed elliptically with this word, e.g. *Chen ying zhe, gu Dongyang lingshi* 陈婴者, 故东阳令史 ‘the person named Chen Ying (was) an official of Dongyang’ and *Lao Wang Shanghai ren* 老王上海人 ‘Old Wang (is) a Shanghainese’. Only in the case of negation, *shi* 是 is obligatory as in *wo bu shi Shanghai ren* 我不是上海人 ‘I’m not a Shanghainese’, and the negative *fei* 非 is equivalent to *bu shi* 不是 ‘is not’ as in *jing fei yu ye* 鲸非鱼也 ‘the whale is not a fish’.

*Shi* 是 'is' belongs to the category of non-*you*, focusing on whether or not to carry out an action (actionality), which in (34) has the reading 'yes; i.e., it is used as an answer to a *yes/no* question. I contend that it does exhibit the prototypical function of the indicative. This claim is supported by the fact that the response to an order or a prohibitive speech act is also *shi* 是 'is', as in (35).

(34) -他不开枪?

*Ta bu kaiqiang?*

3SG NEG fire

'He will not fire?' (Whether or not a state of affairs is true?)

-是。

*Shi.*

yes

'Yes'

(35) -开枪射击!/别开枪!

*Kaiqiang sheji!/ Bie kaiqiang!*

fire shoot/ NEG fire

'Fire!'/ 'Don't fire!' (Whether or not to carry out an action?)

-是。

*Shi.*

yes

'Yes'

In contrast, a question about whether an event has truly happened is coded with the morpheme *you* 有 'has/there is', i.e. as an indicative, as shown in the dialogues (36) and (37). In the former, *you* is an acceptable answer whereas, in the latter, it is an infelicitous response because the question is non-indicative; i.e., it is about the problem whether an action should be carried out or not.

(36) -有没有开枪?

*You mei you kaiqiang?*

Have NEG have fire

Have you fired? (Whether or not an event has happened?)

-有。

*You*

have

'Yes, I have'

(37) -开枪射击!/别开枪!

*Kaiqiang sheji!/ Bie kaiqiang!*

fire shoot/ NEG fire

'Fire!/'Don't fire!' (Whether or not to carry out an action?)

-\*有。

*You*

have

'Yes, I have'

Thus, *shi* 是 in Chinese does not completely correspond to its English counterpart *be*. *Shi* 是 was originally used as a demonstrative and was extended to encode the concept of being right or wrong. Both the original and the extended meanings are subjective and non-indicative. What is conveyed in such *shi* 是 sentences as *renjia shi fengnian* 人家是丰年 'They have a good harvest' (lit. 'they are a good harvest') and *wo shi reben taitai* 我是日本太太 'my wife is a Japanese' (lit. 'I am a Japanese wife') is a kind of subjective acknowledgement or the speaker's empathy (Shen 2008c, 2009b). The negative for *shi* 是 is *bu* 不, which, when used to negate other verbs, usually carries a pragmatic implication of intentionality. For example, *ta bu qu* 他不去 'he not go' implies 'he is not willing to go'.

In English, the concept *shi* 是 is conveyed by the copula *be*, and the concept *you* 有 by *there be*, still having *be* as an indispensable component. What is more, both *be* and *there be* are negated by means of *not*. It is thus evident that in English the concepts 'be' and 'there be' are not clearly distinguished. In sentences like *There is a unicorn in the garden*, the existential *there is* could be considered as one composite unit as well as two separate units, i.e. *there* and *is*. In the latter case, *there* functions as the subject. There is evidence suggesting that *there* in *there be* should be considered as an independent component. For example:

(38) a. Mary did homework and wrote a letter this morning.

b. \*Mary wrote and Tom received a letter.

(39) There are two cats and also a dog on the mat.

Example (38) shows that the rule of equi-NP deletion applies only to the subject but not to the object of the verb. Thus, *there* in (39), which is deleted in the second clause, behaves like a subject. Consider the following two examples with analogical structures:

(40) a. We believe Smith to be the culprit.

b. We believe there to be an error in this proof.

On the basis of the functional correspondence between *there* in (40a) and the proper noun *Smith* in (40b), McCawley (1988: 84–88) proposed that *There is a unicorn in the garden* is the result of adding the subject *there* to *a unicorn is in the garden*.

The evidence provided above, strongly suggests that in English *there be* is just a special kind of *be*. In an article that compares grammatical structures of Chinese and English Chao (1955: 37–38) observes<sup>3</sup>:

[In Chinese] there is no “there is”; there is only “has.” “There is a man” is rendered by *Yeou ren*, literally, “Has man.” [...] Incidentally, because both “there is” and “has” are covered by the same word, *yeou*, which has nothing to do with the word *sh* “is,” in the sense of “is a,” the consequence is that “the problem of being” in Western philosophy is very difficult to make intelligible Chinese sense unless it is specially dissociated from *sh* “is” and associated with *yeou*.

This quotation may be paraphrased as follows: in English, we cannot talk about the concept of ‘being’ without mentioning the concept of ‘there is’, while in Chinese the concept of *shi* 是 ‘being’ is dissociated with the concept of *you* 有 ‘has/there is’; as a result, Chinese *you* 有 does not completely match English *there is*.

In English, ‘possession’ and ‘existence’ are two independent concepts and are coded by *has* and (*there*) *is* respectively. In Chinese, however, *you* 有 has been employed to convey both ‘possession’ and ‘existence’ for over 3000 years (Yu 2009). For Chinese speakers, ‘possession’ and ‘existence’ are closely related and even interchangeable: X’s possessing of Y implies Y’s existence at X, as revealed by the equivalence between *ni you duoshao qian* 你有多少钱 ‘how much money do you have’ and *ni shouli you duoshao qian* 你手里有多少钱 ‘how much money do you have on hand’, or lit. ‘how much money is there in your hand’ (Yuan et al. 2009). This is additional evidence that Chinese *you* 有 does not completely correspond to English *there be*. The difference between English and Chinese in conveying the concepts of ‘being’, ‘existence’ and ‘possession’ is shown in Table 1.

Table 1. English and Chinese: Being, existence, possession

Concept	English	Chinese
being		<i>shi</i> 是
existence	<i>be</i>	
possession	<i>have</i>	<i>you</i> 有

Bearing this difference in mind, English teachers in China make it a priority to explain the usage of *there is* to students and remind them that the correct expression is *there are many people in the park* rather than *the park has many people*. In contrast, Western learners of Chinese would hesitate to saying *shan shang you zuo maio* 山上有座庙 ‘there is a temple on the mountain’, lit. ‘the mountain top has a temple’ and would utter *shan shang shi zuo miao* 山上是座庙 ‘On the mountain

3. Note that *you* and *shi* are transliterated as *yeou* and *sh* in the quote.

is a temple' instead. For western speakers, to be or not to be, is the primary concern, while for Chinese language users, to *you* 有 or not to *you* 有 (= *wu* 无), is of primary importance.

From the discussion of negatives thus far, the conclusion can be drawn that in English, in contrast to Chinese, the division between *you* 有 'there is/has' and non-*you* 有 (including *shi* 是 'is') is not highlighted.

#### 4. The primary division in Chinese grammar

Chinese does not draw a primary distinction between the negation of nouns and the negation of verbs as in English. In other words, in Chinese, the division between noun negation and verb negation is secondary to the division between indicative negation and non-indicative negation. First, if *mei* 没 is regarded as a negative in its own right rather than the abbreviation of *mei-you* 没有, the paradigm of Chinese negatives would be as follows: while *bu* 不/*wei* 未 only negate verbs (i.e. *bu* 不 for non-*you* negation and *wei* 未 for negation of *you* 有), *mei* 没/*wu* 无 negate both nouns and verbs. For example:

- (41) 不去 *bu qu*, NEG go 'would not go'                      \*不车 *bu che*, NEG car  
没去 *mei qu*, NEG go 'didn't go/hasn't gone' 没车 *mei che*, NEG car 'has no car'
- (42) 未回 *wei hui*, NEG return 'didn't return/hasn't returned'  
无回 *wu hui*, NEG return 'go without returning'  
\*未车 *wei che*, NEG car  
无车 *wu che*, NEG car 'has no car'

Although *bu che* 不车 is ungrammatical, such expressions as *bu cha bu yan* 不茶不烟 'bu tea bu cigarette', i.e. 'neither drink tea nor smoke', *bu guan bu wa* 不冠不袜 'bu hat bu socks', i.e. 'without wearing hats and socks' are acceptable and convey special rhetorical implications. Similar expressions include *bu jitian* 不几天 'bu a few days', i.e. 'in a few days', *bu liangshanri* 不两三日 'bu two or three days', i.e. 'in a few days', *bu yixiaohui* 不一小会儿 'bu a little while', i.e. 'in a little while', etc. Moreover, both *bu* 不 and *fei* 非 are members of the non-*you* negation category, but the former is confined to the negation of verbs while the latter may co-occur with nouns (e.g. *fei ren fei gui* 非人非鬼 'fei human fei ghost', i.e. 'be neither a human nor a ghost') as well as verbs (e.g. *fei bu wei ye* 非不为也 'fei not to do', i.e. 'it is not a question of readiness').

Secondly, if *mei* 没 is regarded as the abbreviation of *mei-you* 没有, *mei qian* 没钱 'mei money' i.e. 'have no money' amounts to *mei-you qian* 没有钱, in which

what is negated by *mei* 没 is the verb *you* 有 ‘has/there is’. If this analysis is correct, we may conclude that Chinese nouns themselves are not eligible for negation.

Lü (1942a: 234) once noted that there exist no negative words corresponding to English *no*. Instead, the existence of a thing may be negated by *mei* 没 rather than *bu* 不, i.e. through the negation of *you* 有. Similarly, the congruity of two things may also be negated through the negation of *shi* 是. Furthermore, *bu* 不 is not allowed in classical Chinese in this regard. (In classical Chinese, the negation of congruity is achieved by *fei* 非, while the corresponding affirmative is not indicated by *shi* 是.)

Drawing on the evidence adduced above, it can be concluded that in Chinese nouns and verbs are always negated by the same word, either *mei* 没, *wu* 无 or *fei* 非. This indicates that Chinese grammar emphasizes the distinction between *you* 有 ‘has/there is’ and *shi* 是 ‘is’ (belonging to non-*you*). The contrast between *you-wu* 有无 ‘has/there is’ and ‘has not/there is not’ and *shi-fei* 是非 ‘is and is not, right and wrong’, as argued above, is a manifestation of the primary division between indicative and non-indicative sentences, respectively. To a large extent, the contrast between *you* 有 ‘has/there is’ and *shi* 是 ‘is’ correlates with the opposition between the indicative and the non-indicative. More specifically, neither the distinction between ‘is or isn’t there such a thing’ and ‘is or isn’t there such an event’ nor the distinction between ‘is or isn’t this the thing’ and ‘is or isn’t this the event’ are grammatically differentiated in Chinese. On the contrary, English grammatically codes the division between ‘is or isn’t there such a thing’ (negated by *no*) and ‘is or isn’t there such an event’ (negated by *not*), while bypassing the distinction between *is* and *there is*. Thus, in English the primary division is the one between the negation of nouns and the negation of verbs. In some cases, the two negatives may be used to indicate differences in emphasis, with *no* indicating a stronger emphasis, as illustrated in (43)–(45). However, this distinction is only secondary in English.

- (43) a. I am not a writer.  
b. I am no writer.
- (44) a. He is not wiser than his brother.  
b. He is no wiser than his brother.
- (45) a. Write a composition of not less than 500 words.  
b. No less than 500 people were injured or killed in the accident.

Since the distinction between the negation of the indicative and the negation of the non-indicative sentence is formally coded in Chinese, Chinese speakers are sensitive to this opposition in English and are able to understand it, in spite of the fact that Chinese has no negatives equivalent to English *no*.

## 5. Negative affixes in English and Chinese

In a study contrasting English and Chinese negative affixes, Chen (1981) pointed out that the so-called negative affixes in Chinese are not affixes in the real sense, and he summarized the combinational possibilities of negative affixes with nominal, verbal and adjectival roots in the two languages as follows (see Tables 2 and 3):

**Table 2.** The combinational possibilities of negative affixes and roots in English

	<i>non-</i>	<i>dis-</i>	<i>un-</i>	<i>in-</i>	<i>a-</i>	<i>-less</i>
Nominal root	+	+	+	+	+	+
Verbal root	-	+	-	-	-	-
Adjectival root	+	+	+	+	+	-

**Table 3.** The combinational possibilities of negative affixes and roots in Chinese

	<i>bu</i> 不	<i>fei</i> 非	<i>wu</i> 无	<i>mo</i> 莫	<i>wei</i> 未
Nominal root	(-)	+	+	-	-
Verbal root	+	+	+	+	+
Adjectival root	+	+	+	+	+

Two differences are noteworthy. First, in terms of the combinational behavior with negative affixes, adjectives parallel nouns (with the exception of *-less*) in English. In contrast, in Chinese, adjectives align with verbs. This difference is due to the typological difference between Chinese and English adjectives, with the former akin to verbs and the latter to nouns. Second, in the English paradigm, nominal roots stand in contrast to verbal roots. Of all the six affixes, only *dis-* could combine with both nominal and verbal roots. In Chinese, the opposition between nominal and verbal roots is limited. Among the five affixes, only two, namely *mo* 莫 and *wei* 未, demonstrate such an opposition, which is absent on the remaining three affixes, i.e. *bu* 不, *fei* 非 and *wu* 无. The combination of *bu* 不 with nominal roots can be marked as '(+)' if such examples as *buri* 不日 'bu days, in a few days', *bushi* 不时 'bu time, from time to time', *buli* 不力 'bu strength, not do one's best', *bufa* 不法 'bu law, illegal', *buyi* 不一 'bu one, differ', *budaode* 不道德 'bu ethics, unethical', *buguize* 不规则 'bu rule, irregular', *bukexue* 不科学 'bu science, unscientific', *bumingyu* 不名誉 'bu reputation, disgraceful', etc. are taken into consideration. The primary opposition in Chinese is that between *bu* 不, *fei* 非 and *wu* 无, on the one hand, and *mo* 莫 and *wei* 未, on the other. *Mo* 莫 conveys 'prohibition' (e.g. *quan jun mo xi jinlüyi* 劝君莫惜金缕衣 'care not so much for expensive clothing') or denotes 'nobody' (e.g. *kuangzhe shang ren, mo zhi yuan ye* 狂者伤人, 莫之怨也 'no one would blame a madman who injured other people'), whereas *wei*



未 negates the state of completion of an event rather than the event itself, and is roughly equivalent to *not yet* in English (Lü (1942a) 187, 240, 305). In conclusion, the distribution of negative affixes confirms the hypothesis that the primary division in Chinese grammar is not the opposition between nouns and verbs.

## 6. Further notes on *you* 有 in Chinese

### 6.1 Properties of *you* 有

Nouns in Chinese are not subject to negation because, as explained above, in phrases like *mei* 没 + N the negative *mei* 没 is a short form for *mei-you* 没有, and what *mei* 没 really negates is the verb *you* 有 ‘has/there is’, which, either historically or dialectically, is capable of denoting the existence of both a thing and an event. Examples are in (46)–(47):

- (46) 有车 *you che* ‘has a car’ (*che* ‘car’ is a thing)  
 没有车/没车 *mei-you che /mei che* ‘has no car’  
 有没有车 *you-mei-you che* ‘whether [s/he] has a car or not’
- (47) 有去 *you qu* ‘has gone’ (*qu* ‘go’ is an event or activity)  
 没有去/没去 *mei-you qu /mei qu* ‘has not gone’  
 有没有去 *you-mei-you qu* ‘whether [s/he] has gone or not’

Chinese speakers conceptualize an event as a kind of abstract and dynamic thing. As a consequence, on the grammatical level, in Chinese a verb is also a noun, again an abstract and dynamic one.

From oracle bone inscriptions to *Shijing* 《诗经》 (*The Book of Songs*, 11th–6th centuries BC), and in modern dialects as well, *you* 有 ‘has/there is’ has been invariably utilized to affirm the existence of both a thing and an event (Yu 2009). In *Shijing* 《诗经》 *you lai* 有来 ‘you come’ amounts to *lai ye* 来也 ‘has come’, *you xing* 有行 ‘you go’ equals *xing yi* 行矣 ‘has gone’, and *you ai* 有哀 ‘you grieved’ is equivalent to *ai zai* 哀哉 ‘has bemoaned’, wherein the final particles *ye* 也, *yi* 矣, and *zai* 哉 all express affirmation (Guo 1979: 479). Li (1985) noted that that *you* 有 actually denotes ‘appear, arise, emerge’ (implying existence), which is eligible for not only persons and things but also actions and changes. As a result, *you* 有 takes as its complement nominal phrases denoting persons and things, as in (48)–(52), as well as verbal phrases and subject-predicate composites indicating actions and changes, as in (53)–(55):

- (48) 小国妄守则危，况有灾乎。  
 (《左传·昭公十八年》 *Zuozhuan•Zhaogong Shiba Nian*)  
*Xiaoguo wang shou ze wei, kuang you zai hu.*  
 small.state forget keep.guard then perilous let.alone have calamity MOD  
 ‘When a small state forgets to keep guard, it is in a perilous position; how much more must it be so on an occasion of calamity!’
- (49) 惠公之薨也，有宋师。(《左传·隐公元年》 *Zuozhuan•Yingong Yuannian*)  
*Huigong zhi hong ye, you Song shi.*  
 Hui.king POSS die IND have Song army  
 ‘When king Hui died, the state was in battle with Song’
- (50) 人弃常则妖兴，故有妖。  
 (《左传·庄公十四年》 *Zuozhuan•Zhuangong Shisi Nian*)  
*Ren qi chang ze yao xing, gu you yao.*  
 man abandon constant then monstrosity prosperous therefore have monster  
 ‘When man abandons the constant course of virtue, then monstrosities appear. Therefore it happens that there are monsters (and monstrous events)’
- (51) 齐有彗星。(《左传·昭公二十六年》 *Zuozhuan•Zhaogong Ershiliu Nian*)  
*Qi you huixing.*  
 Qi have comet  
 ‘There appeared comets in Qi’
- (52) 秋，有蜮。(《左传·庄公十八年》 *Zuozhuan•Zhuangong Shiba Nian*)  
*Qiu, you yu.*  
 autumn have evil spirit  
 ‘In autumn there were disasters caused by evil spirits’
- (53) 齐有乱。(《左传·僖公十六年》 *Zuozhuan•Xigong Shiliu Nian*)  
*Qi you luan.*  
 Qi have disorder arises (*luan* 乱 is commonly regarded as a verb)  
 ‘Qi will be all in disorder’
- (54) 十年春，王正月，有星出于婺女。  
 (《左传·昭公十年》 *Zuozhuan•Zhaogong Shi Nian*)  
*Shinian chun, wang zhengyue, you xing chu yu wunü.*  
 tenth.year spring duke first.month, have star appear out.of Woo-neu  
 ‘In the first month of the spring of the (duke’s) tenth year, a (strange) star appeared in (the constellation) Woo-neu’

- (55) 有使者出，乃入。（《左传·哀公十五年》 *Zuozhuan*•*Aigong Shiwu Nian*)  
*You shizhe chu, nai ru.*  
 have messenger come.out then enter  
 ‘Just then a messenger came out of the gate, and Tsze-loo entered’

Li (1985) also pointed out that in pre-Qin Chinese, *you* 有 was used to mark the extraordinary, which covers both things, e.g. *you fei* 有蜚 ‘there are cockroaches’, *you yu* 有蜮 ‘there are evil spirits’, *you zai* 有灾 ‘there are disasters’, *you yao* 有妖 ‘there are monsters’, *you huixing* 有彗星 ‘there are comets’, *you songshi* 有宋师 ‘there are Song’s armies’, etc., and events, e.g. *you luan* 有乱 ‘disorders arose’, *you shi zhi* 有食之 ‘a solar eclipse happened’, *you shizhe chu* 有使者出 ‘a messenger came out’.

Further evidence can be found in the four-character construction *you* 有 X *you* 有 / *wu* 无 Y in modern Chinese, in which both X and Y may be instantiated by nouns, verbs and adjectives. For example:

- (56) X and Y are nouns:

有血有肉 *you xue you rou* (has blood has flesh) ‘vivid and substantial’  
 有山有水 *you shan you shui* (has mountain has water) ‘there are mountains and rivers’  
 有滋有味 *you zi you wei* (has flavor has taste) ‘savory’  
 有板有眼 *you ban you yan* (has heavy meter has light meter) ‘in order’  
 有口无心 *you kou wu xin* (has mouth hasn’t heart) ‘promise with no intention of doing’  
 有气无力 *you qi wu li* (has breath hasn’t strength) ‘breath is present but vigor is absent’  
 有名有姓 *you ming you xing* (has given name has surname) ‘be identifiable by both given name and surname’  
 有名无实 *you ming wu shi* (has name hasn’t content) ‘exist only in name’

- (57) X and Y are verbs:

有去无回 *you qu wu hui* (has go hasn’t come) ‘go without coming back’  
 有吃有穿 *you chi you chuan* (has eat has wear) ‘have food and clothing’  
 有说有笑 *you shuo you xiao* (has speak has laugh) ‘talking and joking’  
 有劳有逸 *you lao you yi* (has work has rest) ‘alternate work and ease’  
 有恃无恐 *you shi wu kong* (has support hasn’t fear) ‘fear nothing with sb. at his back’  
 有得有失 *you de you shi* (has gain has lose) ‘have gains and losses’  
 有借有还 *you jie you huan* (has borrow has return) ‘make it a point to return everything one has borrowed’  
 有赏无罚 *you shang wu fa* (has reward hasn’t punish) ‘there are rewards but no punishments’

(58) X and Y are adjectives:

有肥有瘦 *you fei you shou* (has thick has thin) 'of all sizes and shapes'

有大无小 *you da wu xiao* (has big hasn't small) 'there are big ones but no small ones'

有长有短 *you chang you duan* (has long has short) 'have long ones and short ones'

有多有少 *you duo you shao* (has many has few) 'some have more, others fewer'

有新有旧 *you xin you jiu* (has new has old) 'there are new ones as well as old ones'

有高有矮 *you gao you ai* (has tall has low) 'have taller ones and lower ones'

有紧有松 *you jin you song* (has tense has loose) 'tension alternating with relaxation'

有快有慢 *you kuai you man* (has fast has slow) 'there are fast ones as well as slow ones'

Drawing on data from *Hanyu Da Cidian* 《汉语大词典》 (A Comprehensive Dictionary of Chinese) and *Xiandai Hanyu Cidian* (5th edition) 《现代汉语词典》 (Dictionary of Contemporary Chinese) as well as their own collection, Diao and Li (2010) collected compound verbs of the pattern 'you + monosyllabic verbal morpheme', as in (59):

(59) 有亡 *you wang* (lose) 'suffer losses'

有同 *you tong* (identical) 'the same as'

有如 *you ru* (alike) 'as if'

有待 *you dai* (wait) 'await'

有辱 *you ru* (humiliate) 'humiliated'

有关 *you guan* (to concern) 'concerning'

有救 *you jiu* (save) 'can be saved'

有损 *you sun* (to harm) 'do harm to'

有违 *you wei* (violate) 'contrary to'

有加 *you jia* (add) 'great in degree'

有慢 *you man* (slow) 'treat disrespectfully'

有容 *you rong* (contain) 'kind and generous'

有行 *you xing* (behave) 'with moral integrity'

有请 *you qing* (request) 'request sb's presence' 有变 *you bian* (change) 'changes have occurred'

有成 *you cheng* (accomplish) 'achieve'

有似 *you si* (similar) 'be similar to'

有若 *you ruo* (similar) 'be similar to'

有染 *you ran* (to contract) 'be contracted'

有得 *you de* (to gain) 'benefit from'

- 有碍 *you ai* (hinder) 'get in the way of'  
 有赖 *you lai* (depend) 'depend on'  
 有失 *you shi* (lose) 'fail'  
 有获 *you huo* (to gain) 'have gained'  
 有售 *you shou* (sell) 'for sale'  
 有劳 *you lao* (to labor) 'trouble sb.'

Some of the words in (59) can be traced back to ancient times, e.g. *you cheng* 有成 'achieve' and *you ru* 有如 'as if', and some have come into existence more recently, e.g. *you guan* 有关 'concerning' and *you shou* 有售 'for sale'. Although in some cases, *you* 有 has bleached into a meaningless pre-clitic, in the majority of these compounds *you* 有 is still a verb that denotes a concrete meaning.

Diao and Li (2010) further proposed that *you* + VP denotes the completion of an action, in which *you* 有 functions as an aspectual marker. However, their proposal to regard *you* 有 as the marker of the perfective aspect is misleading as *you* 有 denotes only the existence or occurrence of a thing or an event, and nothing else.<sup>4</sup> This is clearly the case in some southern dialects. In Cantonese, for example, *you* 有 and *wu* 无 denote merely whether or not an event exists or arises and have nothing to do with the perfectivity of an action. For example:

- (60) 佢今日有冇食烟?  
*k'øy<sup>13</sup> kem<sup>55</sup> jət<sup>22</sup> jəu<sup>13</sup> mou<sup>13</sup> sik<sup>22</sup> jin<sup>55</sup>.*  
 3SG today have.NEG.have smoke  
 'Did he smoke today?' (*wu* 无 in Cantonese is pronounced *mou* 有)
- (61) 佢不溜都有无食烟?  
*k'øy<sup>13</sup> pət<sup>55</sup> leu<sup>55</sup> tou<sup>55</sup> mou<sup>13</sup> sik<sup>22</sup> jin<sup>55</sup>*  
 3SG always all NEG.have smoke  
 'Does he smoke or not?'

Such usages are pervasive in Hakka and Southern Wu dialects. The following examples from the Fuzhou dialect are given in Zheng (2009):

- (62) 门只有开。  
*muoŋ<sup>53</sup> tsi<sup>32</sup> ouŋ<sup>53</sup> ou<sup>242</sup> khui<sup>44</sup>.*  
 door DEM a.while have open  
 'The door is open' (*you* 有 is pronounced *ou*<sup>242</sup> in the dialect)

4. Although Huang (1988) considered *ta youmeiyou qu* 他有没有去 (ta you-mei-you go) 'did he go or not' as an example of the perfective, he added that, semantically, the perfective is a kind of existential construction. What sets them apart is that the latter denotes the existence of a person or a thing while the former denotes the existence of an event or an action.

- (63) 后日有上堂。  
*au*<sup>242</sup> *nik*<sup>5</sup>                      *ou*<sup>242</sup> *suonj*<sup>242</sup> *dounj*<sup>53</sup>.  
 the.day.after.tomorrow have lesson  
 ‘A lesson will be given on the day after tomorrow’
- (64) 我有想去考研究生。  
*ŋuai*<sup>32</sup> *ou*<sup>242</sup> *suonj*<sup>32</sup> *kho*<sup>21</sup> *kho*<sup>32</sup>    *ŋienj*<sup>32</sup> *ŋiu*<sup>21</sup> *seinj*<sup>44</sup>.  
 I have want go take.the.entrance.examination graduate.student  
 ‘I want to go to graduate school’
- (65) 伊有拍算起蜀落厝。  
*i*<sup>44</sup> *ou*<sup>242</sup> *phak*<sup>23</sup> *saunj*<sup>21</sup> *khi*<sup>32</sup> *suok*<sup>5</sup> *lok*<sup>5</sup> *tshuo*<sup>21</sup>.  
 3SG have plan build one CLF house  
 ‘He plans to build a house’
- (66) 楼顶有住蜀隻依客。  
*lau*<sup>53</sup> *tiŋj*<sup>32</sup> *ou*<sup>242</sup> *tiu*<sup>242</sup> *suok*<sup>5</sup> *tsiek*<sup>23</sup> *nønj*<sup>53</sup> *khak*<sup>23</sup>.  
 upstairs have live one CLF guest  
 ‘A guest lives upstairs’
- (67) 明旦伊有去，我无去。  
*miŋj*<sup>53</sup> *taŋj*<sup>21</sup> *i*<sup>44</sup> *ou*<sup>242</sup> *khɔ*<sup>21</sup>, *ŋuai*<sup>32</sup> *mɔ*<sup>53</sup> *khɔ*<sup>21</sup>.  
 tomorrow 3SG have go 1SG NEG go  
 ‘He will go tomorrow, (while) I will not’ (*wu* 无 is pronounced *mɔ*<sup>532</sup> in the dialect)
- (68) 头先无邊雨，只瞞有邊雨。  
*thau*<sup>53</sup> *seinj*<sup>44</sup> *mɔ*<sup>53</sup> *taunj*<sup>242</sup> *y*<sup>32</sup>, *tsi*<sup>32</sup> *muanj*<sup>53</sup> *ou*<sup>242</sup> *taunj*<sup>242</sup> *y*<sup>32</sup>.  
 just.now NEG rain now have rain  
 ‘It didn’t rain a moment ago, (while) it’s raining now’
- (69) 汝有看电影过来蜀下。  
*ny*<sup>32</sup> *ou*<sup>242</sup> *khanj*<sup>21</sup> *tiej*<sup>242</sup> *ij*<sup>32</sup> *kuo*<sup>21</sup> *li*<sup>53</sup> *suok*<sup>5</sup> *a*<sup>242</sup>.  
 2SG have see movie come one CLF  
 ‘Come here if you want to see the movie’
- (70) 佢团都有读书。  
*nie*<sup>53</sup> *kianj*<sup>32</sup> *tu*<sup>44</sup> *ou*<sup>242</sup> *le*<sup>0</sup> *thok*<sup>5</sup> *tsy*<sup>44</sup>.  
 child all have PROG read.book  
 ‘The children are all reading the books’

In Examples (62)–(70), *you* 有 denotes the occurrence of an action or the existence of a state rather than the completion of an action or a state, in opposition to *wu* 无, which indicates non-occurrence or non-existence. Lü (1942a: 238) noted that *wei* 未 and *mei*(*you*) 没(有) are not confined to the negation of completion of an

action but have a wider application than English negative complete sentences. Such English sentences as *He didn't go* and *He hasn't gone* could both be translated into Chinese as *Ta wei qu* 他未去 or *Ta mei(you) qu* 他没(有)去 (lit. 'he not has go'). The addition of adverbs indicating 'no yet', such as *hai* 还 or *shang* 尚, are unnecessary for translating *He hasn't gone* into Chinese. The above examples demonstrate that *you* 有 'has/there is' in Chinese denotes the existence or occurrence of an action or a state, stretching across past, present and future.<sup>5</sup>

In contemporary Mandarin Chinese, while *you* 有 still may be used for the negation of an action, e.g. *mei-you qu* 没有去 'didn't go/hasn't gone', it is no longer employed to affirm the occurrence of an action. As a result, one would not say *you qu* 有去 'did go/has gone'. Rather, the so-called aspectual marker *le* 了 would be used, which denotes the realization of an action, and one would say *qu le* 去了 'did go/has gone', because the realization of an action implies its existence. Still, *le* 了 should not be equated with the English perfective marker, as explained above. Consider Examples (71)–(74):

- (71) 门口站了一个警卫。  
*Menkou zhan le yige jingwei.*  
 entrance stand LE a guard  
 'A gate guard stands at the entrance'
- (72) 他们打了起来。  
*Tamen da le qilai.*  
 3PL hit LE up.come  
 'They started fighting against each other'
- (73) 山上的叶子红了大半。  
*Shanshang de yezi hong le daban.*  
 mountain.top POSS leaf red LE half  
 'More than half of the leaves on the mountain became red'
- (74) 小王现在有(了)很大的改变。  
*Xiaowang xianzai you (le) henda de gaibian.*  
 little.Wang now have (LE) great ADJ change  
 'Great change has happened to XiaoWang'

In (71), *le* 了 could be replaced by *zhe* 着 (durative) without a radical meaning change. In (72) *le* 了 denotes the beginning of the action *da* 打 'fight' rather than

5. In this regard, my colleague Wan Quan supplied a pick-up example:

A: *Ta shi zhu zai Beiyu fujin ma?* 他是住在北语附近吗? he is live at Beiyu nearby ('Does he live nearby Beiyu?')

B: *Meiyou.* 没有 not has ('No').

the completion. Similarly, in (73) *le* 了 denotes the appearance of the state *hong* 红 ‘red’ rather than the termination. In the last example, *le* 了 is optional, as its meaning is implied in *you* 有 ‘has/there is’ (Wang 2010). Moreover, *you qu* 有去 ‘did go/has gone’ (lit. ‘has go’), originally an expression in southern dialects, is becoming more and more popular in Mandarin Chinese, especially among younger speakers, as a replacement of *qu le* 去了. This trend is not surprising since such expressions as *you-mei-you qu* 有没有去 ‘did or didn’t go/has or hasn’t gone’ (lit. ‘has-not-has go’) have already been used in Mandarin Chinese.

To sum up, in Chinese, neither the semantic division between possession and existence nor that between the existence/occurrence of a thing and of an event is grammatically differentiated. To illustrate further, see the two pairs of examples in (75)–(76):

- (75) a. 他有眼泪 / 眼眶里有眼泪  
*ta you yanlei / yankuang li you yanlei*  
 3SG have tear / eye inside have tear  
 ‘He has tears’ / ‘There are tears in his eyes’
- b. 他的眼泪 / 眼眶里的眼泪  
*ta de yanlei / yankuang li de yanlei*  
 3SG POSS tear / eye inside POSS tear  
 ‘his tears’ / ‘tears in his eyes’
- (76) a. 狱警有打骂 / 牢里有打骂  
*yujing you dama / laoli you dama*  
 warden have beat.scold / prison.inside have beat.scold  
 ‘Wardens beat and scold the prisoners’ / ‘Beating and scolding happens in the prison’
- b. 狱警的打骂 / 牢里的打骂  
*yujing de dama / laoli de dama*  
 warden poss beat.scold / prison.inside poss beat.scold  
 ‘wardens’ beating and scolding’ / ‘beating and scolding in the prison’

## 6.2 Usage extensions of *you* 有

By extension, *you* 有 can mean ‘large in amount or rich in kind’, a fact already noticed by Confucian classics teachers during the Han Dynasty (202BC–220AD) and up to Daizhen 戴震 (1723–1777) in the Qing Dynasty. Yu (2009) pointed out that this extended use is seen mostly in southern dialects, e.g. *you de shou ta de qi li* 有得受他的气哩 ‘frequently be the vent of his anger’ (lit. ‘has get his bullying’) in Wu dialects, *hao bu you* 好不有 ‘plenty of’ (lit. ‘so many has’), *shou de qi you* 受得气有 ‘frequently be the vent of anger’ (lit. ‘get bullying has’) in the Wenzhou



dialect. Even in Mandarin, such expressions as *you de shi* 有的是 ‘plenty of’ (lit. ‘has POSS is’), *you qian* 有钱 ‘rich’ (lit. ‘has money’), *you yisi* 有意思 ‘interesting’ (lit. ‘has sense’), are frequently heard. It is worth noting that *you* 有 with the reading ‘richness’ could collocate not only with nouns but also with verbs and adjectives. Thus, the pattern ‘*you* 有 + noun/verb/adjective’ has long been the template for producing descriptive words indicating a high amount or degree of an event or quality (‘richness’) ever since ancient times. Examples (77)–(82) are from *Shijing* 《诗经》 (*The Book of Songs*):

- (77) 乐且有仪。 (《小雅·菁菁者莪》)  
*Le qie you yi.* (Xiaoya•Jingjing Zhe E)  
 happy also have politeness  
 ‘We greet him (our lord) with delight’
- (78) 明星有烂。 (《郑风·女曰鸡鸣》)  
*Mingxing you lan.* (Zhengfeng•Nu Yue Ji Ming)  
 morning.star have shine  
 ‘The morning star shines bright’
- (79) 有秩斯祐。 (《商颂·烈祖》)  
*You zhi si hu.* (Shangsong•Liezhu)  
 have great this blessing  
 ‘Shower down blessings here’
- (80) 四牡有骄。 (《卫风·硕人》)  
*Si mu you jiao.* (Weifeng•Shuoren)  
 four steed have vigor  
 ‘Four steeds run vigorously and strongly’
- (81) 中心有违。 (《邶风·谷风》)  
*Zhong Xin you wei.* (Beifeng•Gufeng)  
 middle heart have sadness  
 ‘My heart feels sad and cold’
- (82) 有洸有溃。 (《邶风·谷风》)  
*You guang you kui.* (Beifeng•Gufeng)  
 have rage have release  
 ‘You have your face outraged and release the anger toward me’

Similar examples are more abundant in modern dialects, such as the dialects of Xiamen, Taiwan and Meixian. In some of these dialects, *you* 有 even has changed into a marker of descriptive words, highlighting the existence of a state of richness:

- (83) 有额 *you e* 'has fixed number, aged'  
 有销 *you xiao* 'has sell, sell well'  
 有重 *you zhong* 'has weight, heavy'  
 有煮 *you zhu* 'has boil, (of rice) make more food'  
 有岁 *you sui* 'has years, aged'  
 有穿 *you chuan* 'has wear, durable'  
 有水 *you shui* 'has water, good-looking'

Also noteworthy is the fact that in *Shijing* 《诗经》 (*The Book of Songs*) the pattern *you* 有 + X, together with the reduplication construction 'XX', is employed in descriptions (Wang 1959), and the duplicated X is, most of the time, an adjective or a verb, e.g. *you-zhong* 有忡 = *zhongzhong* 忡忡 'has worry, very worried', *you-dang* 有荡 = *dangdang* 荡荡 'has swing, vast', *you chu* 有楚 = *chuchu* 楚楚 'has clear, lovely and delicate', *you he* 有赫 = *hehe* 赫赫 'has grand, very impressive', *you fen* 有蕢 = *fenfen* 蕢蕢 'has laden, be laden with fruit', and *you bian* 有扁 = *bianbian* 扁扁 'has flat, very flat'. Convincing evidence is also provided by the rhetorical device of *duiwen* 对文 or *hucan* 互参, i.e., antithesis, i.e. the syntactic parallelism of words whose senses contrast with each other:

- (84) 四牡有骄, 朱纆鑣鑣。 (《卫风·硕人》)  
*Si mu you jiao, zhu fen biaobiao.* (*Weifeng·Shuoren*)  
 four steed have vigor red trapping adorned  
 'Four steeds run vigorously and strongly. Their bits adorned with red trappings'
- (85) 行道迟迟, 中心有违。 (《邶风·谷风》)  
*Xing dao chichi, zhong xin you wei.* (*Beifeng·Gufeng*)  
 walk road slowly middle.heart have sadness  
 'Slowly I go my way. My heart feels sad and cold'
- (86) 桃之夭夭, 有蕢其实。 (《周南·桃夭》)  
*Tao zhi yaoyao, you fen qi shi.* (*Zhounan·Taoyao*)  
 peach DEM glorious, have laden 3SG.POSS fruit  
 'The peach tree blossoms gloriously. How plentiful its fruit!'
- (87) 幽幽南山。 (《小雅·斯干》) 其叶有幽。 (《小雅·隰桑》)  
*You you Nanshan.* (*Xiaoya·Sigan*) *Qi ye you you* (*Xiaoya·Xisang*)  
 dark dark Nanshan 3SG.POSS leaf have dark  
 'The quiet Nanshan mountain' 'Its leaves darken each day'
- (88) 有秩斯祜。 (《商颂·烈祖》) 秩秩斯干。 (《小雅·斯干》)  
*You zhi si hu.* (*Shangsong·Liezu*) *zhizhi si gan.* (*Xiaoya·Sigan*)  
 have great this blessing zigzag this stream  
 'Shower down blessings here' 'The stream flows zigzagly'

- (89) 有皇帝。(《小雅·正月》)                      皇皇后帝。(《鲁颂·閟宫》)  
*You huang shangdi. (Xiaoya•Zhengyue)* *Huanghuang houdi. (Lusong•Bigong)*  
 have great emperor                      great great emperor  
 ‘There is the great emperor’                      ‘The great emperor’

In addition, a study by Hua (2008) indicated that in contemporary Mandarin Chinese, the duplication of attributive adjectives, verbs or nouns is the mechanism for producing descriptive words (i.e. descriptive adjectives). For example:

- (90) 丝 *si* NOUN ‘a tiny bit’  
 河面上漂浮着丝丝霞光。  
*Hemian shang piaofu zhe sisi xianguang.*  
 river.surface up float DUR bit sunglow  
 ‘The river surface is dotted with sunglow’
- (91) 山水 *shanshui* NOUN ‘mountain and river’  
 山山水水地画个不停。  
*Shanshanshuishui de hua ge bu ting.*  
 mountain.river ADV draw AUX NEG stop  
 ‘Keep drawing pictures of mountains and rivers’
- (92) 抖 *dou* VERB ‘shake’  
 母亲吃力地抬起手臂抖抖地指着墙上挂的干粮筐。  
*Muqin chili de taiqi shoubi doudou de zhi zhe qiangshang*  
 Mother painfully ADV lift arm shakingly ADV point.to DUR wall.on  
*gua de ganliang kuang.*  
 hang REL solid.food basket  
 ‘The mother painfully lifted her arm and pointed to the basket containing the solid food with a shaking hand’
- (93) 摇摆 *yaobai* VERB ‘sway’  
 花儿在风中笑得摇摇摆摆。  
*Huaer zai fengzhong xiao de yaoyaobaibai.*  
 flower in wind laugh RES sway  
 ‘Flowers swayed in the wind as if (they) were laughing’
- (94) 白 *bai* ADJ ‘white’  
 把脸抹得白白的。  
*Ba lian mo de baibai de.*  
 hold face paint RES white ADJ  
 ‘painted the face white’

- (95) 随便 *suibian* ADJ ‘in a casual manner’  
 随随便便说了几句。  
*Suisuibianbian shui le jiju.*  
 casually say LE a.few.words  
 ‘said just a few words’

In summary, all these facts indicate that since ancient times the primary division of Chinese word classes has been the division between indicative words and non-indicative words (descriptive words), and that the distinction between nouns, verbs and adjectives within indicative words is secondary and not as linguistically relevant as the opposition between indicative and non-indicative lexemes. Previous studies of negatives in contemporary Chinese (e.g. Li and Thompson 1981; Teng 1975; Thomas 1995; Yeh 1995; Xu 1999), except Lü (1942a, 1942b), have failed to address the relevant issues in connection with the division of negatives in the history of Chinese and consequently did not uncover the fact that the distinction between *bu(shi)* 不(是) ‘not (is)’ and *mei(you)* 没(有) ‘not (has/there is)’ is essentially a manifestation of the division between *shi* 是 ‘is’ and *you* 有 ‘has/there is’. Even those studies that have noticed this fact regard *you* 有 inappropriately as a perfective marker, in an effort to construct a Chinese grammar on the model of English grammar and, as a result, have not succeeded in revealing the basic differences between the two Chinese negatives.

## 7. Philosophical background

In this section, I address the question of how the contrastive analysis of negation in Chinese and English relates to differing philosophical concepts in Chinese and western philosophy. Liu (2009) contends that, in western philosophy, metaphysics centered around the concept of ‘being’, whereas Chinese pre-Qin philosophers took the verb *you* 有 ‘has/there is’ as their starting point for speculative metaphysics. Thus, according to Liu, the concept of *you-wu* 有无 ‘has/there is – hasn’t/there isn’t’ has long been a central metaphysical concept in traditional Chinese philosophy. Liu (2009) further proposed that another crucial term in traditional Chinese philosophy is *ming* 名 ‘name’. The basic tenet of the School of Names was that everything should be known through its name, where the concept ‘name’ covers not only the name of a thing but also the name of an event or of an attribute. Shang (2009) considers *shi* 是 ‘is’ as an unmarked concept by default, while *you* 有 ‘has/there is’, which contrasts with *shi* 是, is the marked concept and deserves special attention. By way of analogy, which is characteristic of Chinese thinking, *shi* 是 ‘is’ was transformed into *haoxiang shi* 好像是 ‘seem to be’ or *jiu dang shi* 就

当是 ‘take sth. to be’, and ‘A, B 也’ (meaning ‘A is B’, but without the copula *be*) became the basic pattern of traditional exegesis. As a result, the issue of *shi-bu-shi* 是不是 ‘to be or not to be’ is not an important philosophical problem and hence does not deserve great attention. This is the philosophical background of the division between *shi* 是 ‘is’ and *you* 有 ‘has/there’ in Chinese, which stands in sharp contrast to the relation between *there is* and *is* in the West.

Shang (2009) further notes that in western philosophy, attributes are inherent to things, but they are not things *per se*. In contrast, in Chinese philosophy, attributes not only hinge on things but they are also things themselves. As rightly pointed out in Yang (2010), Chinese philosophers have long noticed the relationship between *wu* 物 ‘thing’ and *shi* 事 ‘event’. In his definition of *wu* 物 in *Daxue* 《大学》 (*The Great Learning*), Zheng Xuan (郑玄, 127–200AD) claimed that *wu, you shi ye* 物, 犹事也 ‘things are the same as events’ (*Liji Zhu*•*Daxue* 《礼记注•大学》). This definition of *wu* 物 was widely accepted by earlier philosophers, as can be seen in Zhu Xi’s (朱熹, 1130–1200) definition of *wu* 物 in *Daxue Zhangju* 《大学章句》 (Annotations to *The Great Learning*) and in Wang Yangming’s (王阳明, 1472–1528) characterization *wu ji shi ye* 物即事也 ‘things are just events’. In conclusion, the idea that, in Chinese, nouns form a supra-category that includes verbs is already prefigured in traditional Chinese philosophy.

For linguists, philosophical discussions of conceptual differences are merely speculative unless they are backed up by grammatical distinctions. Chao (1955) was the first to notice the close formal relationship between *is* and *there is* in English, which is missing in their respective Chinese counterparts. To put it another way, in Chinese, in contrast to English, the distinction between *you* 有 ‘has/there is’ and *shi* 是 ‘is’ is given prominence. As previously noted, this distinction is one and the same as the division between the indicative and the non-indicative. Such expressions as *wo shi riben taitai* 我是日本太太 ‘my wife is Japanese’ (lit. ‘I am a Japanese wife’), *renjia shi fengnian* 人家是丰年 ‘they have a good harvest’ (lit. ‘they are a good harvest’), *wo shi zajianganmian* 我是炸酱面 ‘I want fried bean sauce noodles’ (lit. ‘I am fried bean sauce noodles’), are common in ordinary language. They indicate that Chinese speakers care little about the problem of *shi-bu-shi* 是不是 ‘to be or not to be’. Guo (1979: 142) also pointed out that ancient Chinese people considered things and events to be on an equal footing, although they distinguished between what is physical and what is virtual. In this regard, the most convincing evidence comes from the fact that, in Chinese, words denoting time and space are essentially nouns, that attributive *de* 的 and adverbial *de* 地 are the same word and identically pronounced in oral speech, and that Chinese has a large number of noun classifiers. The description of negatives and their contrasting distributions in Chinese and English presented in this chapter provides further formal support for the proposal of a supra-noun category in Chinese, which includes verbs.

## 8. Conceptual metaphors in Chinese

Our argumentation for the supra-noun category in Chinese is further strengthened by some observations regarding structural and conceptual differences between Chinese and English (see Shen 2016: Section 3.1):

Difference A

(96) 他开飞机。

Ta kai feiji

He fly plane

He flies a plane.

\*He fly a plane.

In contrast to English, in Chinese, every verb can be used in its bare form as a predication without necessitating any morphological change, as e.g. *kai* ‘to fly’. In other words, there is *no* process of “predicationization” as in English, where *fly*, as in the example above, has to be realized as a finite form, e.g. *flies*. In this sense, one can say that Chinese verbs are *predications*.

Difference B

(97) 他开飞机。

Ta kai feiji.

he fly plane

He flies a plane.

\*He flies plane.

In Chinese, every noun in its bare form, e.g. *feiji* ‘plane’, can be directly used as an identifying referential term without an article. In other words, in Chinese, there is *no* process of “referentialization” as in English, where reference is achieved by means of additional specifiers (e.g. determiners) or the plural suffix, as in *a plane*, *the plane* or *planes*. In this sense, one can say that Chinese nouns are *referential* terms.

Difference C

(98) 开飞机容易。

Kai feiji rongyi.

Fly plane easy

Flying a plane is easy.

\*Fly a plane is easy.

In Chinese, a verb can be used as a noun, i.e. referentially, without requiring any morphological change. Thus, in Chinese, there exists *no* process of “nominalization” as in English, where *fly* in the above example has to be coded by nominal forms such as *flying* or *to fly*.

Nevertheless, although a noun can be used as a predicate in Chinese, it is only used in this way under certain conditions. In sentences other than affirmatives and indicatives, native speakers know that the use of nouns as predicates is a rhetorical device, and the verbal meaning of the noun has to be inferred from the context. In this respect, Chinese is *not* fundamentally different from English. When nouns surface as verbs, they are so-called “contextuals”, in the sense of Clark and Clark (1979: 782–783). See also Langacker (1987: 299) and Shen (2009a) for the asymmetry between nouns and verbs in human cognition.

Summing up the above differences and similarities, we come to the conclusion that in Chinese all the verbs are verbal nouns, or that, nouns in Chinese constitute a supra-noun category that includes verbs.

The conceptual background of the differences between Chinese and English can be explained from the perspective of conceptual metaphor theory. Ungerer and Schmid (2006: 147–149), following Boyd (1993), distinguish between *explanatory* and *constitutive* metaphors. While explanatory (or exegetical) metaphors are often useful pedagogical tools to understand e.g. a complex theory, constitutive metaphors are an “integral part” of theorizing (Ungerer and Schmid 2006: 153). The distinction between explanatory and constitutive metaphors also applies to domains of cognition other than scientific theorizing. For example, politicians often promote their political opinions by putting forward explanatory metaphors, manipulating them in such a way that they turn into constitutive ones in the subconscious minds of people. Lakoff (1992) reports that before launching the Gulf War the U.S. government used the slogan ‘War is the continuation of politics’ plus the metaphor POLITICS IS BUSINESS to influence public opinion so that the facts that war means cruelty, death and bloodshed could be covered up.

To return to the subject matter of this chapter, according to Lakoff and Johnson (1980: 30), in English, “[e]vents and actions are conceptualized metaphorically as objects, activities as substances, states as containers”, i.e., they are examples of ontological metaphors.

In Lakoff and Johnson (1980), ontological metaphors are notated in nominalized form, as in (99):

- (99) EXPLOSION IS AN ENTITY  
 THINKING IS AN ENTITY  
 HOSTILITY IS AN ENTITY  
 HAPPINESS IS AN ENTITY

Native Chinese speakers will have difficulties conceiving of the expressions in (99) as ontological metaphors. The target expressions *explosion*, *thinking*, *hostility*, and *happiness* denote entities, i.e. are conceptualized as ‘things’. The question therefore arises whether the expressions in (99) are actually metaphors. That is to say, does

AN ENTITY IS AN ENTITY constitute a metaphor? For the Chinese speaker, the metaphors in (99) have to be reformulated as follows:

- (100) EXPLODE IS AN ENTITY  
 THINK IS AN ENTITY  
 HOSTILE IS AN ENTITY  
 HAPPY IS AN ENTITY

It seems that only constitutive metaphors count as metaphors to native Chinese speakers and the Chinese people live largely by constitutive metaphors. To native English speakers, nominalization is a process and a means of realizing abstract events or activities into concrete entities in conception. In Chinese thinking, however, events and activities *are* entities, thus nominalization is an unnecessary grammatical operation. To use Boyd's (1993) and Ungerer and Schmid's (2006) terminology, for the Chinese speaker, metaphors like the ones in (100) are constitutive.

## 9. Conclusion

On the basis of the foregoing discussions of contrasts between the division of negatives in Chinese and English, we draw the following conclusions:

- i In English, nouns and verbs are distinct grammatical categories and the concept 'there is' is closely linked to the concept 'is'. The default negative for nouns is *no*; for verbs it is *not*. Both *is* and *there is* may be negated by *not*. Thus, *there is* is a special kind of, or a subcategory of, *is*.
- ii In Chinese, *shi* 是 'is' and *you* 有 'has/there is' represent two separate conceptions, and *shi* 是 is negated by *bu* 不 and *you* 有 by *mei* 没. The opposition 'indicative' vs. 'non-indicative' cuts across nouns, verbs and adjectives.<sup>6</sup> Verbs constitute a subcategory of nouns, with both being negated by *mei* 没.
- iii Under the influence of grammatical distinctions that hold for European languages like English, the opposition between nouns and verbs has been overstated. As a consequence, Chinese grammarians have been unable to elucidate the functions of two frequently used possessive particles, *zhi* 之 in ancient Chinese as in *jiao zhi jiang si* 鸟之将死 'bird poss will die, the bird's coming death' and *de* 的 in modern Chinese as in *zhebenshu de chuban* 这本

6. Nouns, verbs and adjectives can all be the object of *you* 有 ('has/there'), as illustrated in (46) and (47) and other examples in Section 6.1, as well as the object of *shi* 是 'is'; e.g., 他是骗子 *Ta shi pianzi* ('he is cheat N.affix' *He is a cheat*); 他是骗人 *Ta shi pianren* ('he is cheat people' *He is cheating*); 他是狡猾 *Ta shi jiaohua* ('he is crafty' *He is deceitful*).



书的不出版 ‘the book poss not publish, the non-publication of the book’ (see Shen and Wan 2009). In English, *the bird is going to die* and *the bird’s coming death* are two different grammatical constructs. The former is a sentence, with *die* as the predicate verb, and the latter is a noun phrase with *death* as its head noun. Chinese grammarians, in an attempt to find an analogy to English, used to regard *niao jiang si* 鸟将死 ‘the bird is going to die’ and *niao zhi jiang si* 鸟之将死 ‘the bird’s coming death’ as exhibiting the same underlying structure, resulting in such unnecessary grammatical operations as phrasalization, nominalization and referentialization. As I have argued herein, I claim that in Chinese *niao jiang si* 鸟将死 is both a sentence and a phrase and *si* 死 is a verb (corresponding to *die*) as well as a noun (corresponding to *death*). Thus, all of the above-mentioned “-izations” are unnecessary for a proper grammatical analysis of Chinese.

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# The conceptual spatialization of actions or activities in Chinese

## The Adjective + Verb construction

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This chapter focuses on the semantics of a grammatical pattern in Chinese that combines an adjective with a verb (Adj + V construction). The pattern contravenes the grammatical traditions, which assume that a noun is typically modified by an adjective (Adj + N) and a verb by an adverbial (Adv + V). This study shows that the Adj + V construction is not only pervasive in Chinese, but that the V may even convey a highly dynamic meaning. Rather than concluding that the existence of the construction is the evidence of a word class shift from verb to noun, from a cognitive perspective, it is argued that the Adj + V construction mirrors a certain way of thinking about actions and activities in terms of entities and substances located in space.

**Keywords:** cognitive perspective, grammatical pattern, word class shift

### 1. Introduction

The linguistic phenomenon addressed in this chapter is the Adjective + Verb (Adj + V) construction, i.e. the modification of a verb by an adjective, a syntactic pattern that is considered ungrammatical or unacceptable in many languages, but is very frequently used in Chinese. In English, as is well known, an adjective can be combined with a noun (Adj + N), where the adjective denotes a property of the noun referent. Furthermore, English has a construction in which an adverb functions as a modifier of a verb.<sup>1</sup> The adverb denotes concepts such as ‘manner (of action)’, ‘place’, ‘time’ and ‘degree’, to mention just a few (Trask 1993: 8–9,

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1. It should be noted that in English adverbs can occupy various positions in a sentence, one of which is the modifiers of verbs. Furthermore, adverbs can modify other constituents than verbs, e.g. adjectives and sentences.

Bussmann 1996: 7–8, Li 1924/2007: 22, Lü and Zhu 1972: 10, Liu, Pan and Gu 2001: 46, Alexander 2013: 197, 223). The two patterns Adj + N and Adv + V are exemplified in (1) and (2), but as (3) shows, the sequence Adj + V is ungrammatical in English.

- (1) resolute actions, vigorous men, powerful speeches, eternal friendship
- (2) resolutely refuse (sth.), vigorously promote (sth.), powerfully defend (sth.), eternally cherish (sth.)
- (3) \*resolute refuse (sth.), \*vigorous promote (sth.), \*powerful defend (sth.), \*eternal cherish (sth.).

In Chinese, both the Adj + N and the Adj + V construction are acceptable and highly productive. Examples of these two patterns are given in (4) and (5), respectively:

- (4) The Adj + N pattern in Chinese  
 高山          浅海          短线          厚礼  
*gāoshān      qiǎnhǎi      duǎnxiàn hòulǐ*  
 high mountain shallow sea short line thick gift
- (5) The Adj + V pattern in Chinese<sup>2</sup>  
 高看          浅尝          短叹          厚待  
*gāokàn      qiǎncháng      duǎntàn hòudài*  
 high look shallow taste short sigh thick treat

In (4), *gāo* ‘high’, *qiǎn* ‘shallow’, *duǎn* ‘short’ and *hòu* ‘thick’ are adjectives that modify the nouns *shān* ‘mountain’, *hǎi* ‘sea’, *xiàn* ‘line’ and *lǐ* ‘gift’, respectively. What is worth mentioning here is that the adjectives in (4) are spatial. They denote spatial properties of entities or substances, i.e., ‘high’, ‘shallow’, ‘short’ and ‘thick’ clearly signify various dimensions in space.

The examples in (5) exhibit the pattern Adj + V, in which the adjectives function as modifiers of the verbs *kàn* ‘look’, *cháng* ‘taste’, *tàn* ‘sigh’ and *dài* ‘treat’. This pattern is so commonly used in Chinese that native speakers are not aware of its existence, though *prima facie* it seems to violate the widely accepted normative rule that adjectives can modify only nouns rather than verbs, and verbs can be modified only by adverbs rather than adjectives. In this chapter I argue that the widespread use of the pattern Adj + V in Chinese can be accounted for by the Chinese way of conceptualizing actions or activities as entities or substances. In other words, in the minds of Chinese speakers, the verbs in (5) exhibit noun-like properties. In conclusion, despite the fact that nouns and verbs *prototypically*

2. See the detailed discussion in Section 3.

display a spatial and a temporal dimension, respectively (see Chen 1988; Zhang 1994; Langacker 2008: 104, Taylor 2013; Wang 2013a,b), this chapter shows that, in Chinese, actions and activities may acquire noun-like spatial meaning components, which motivate the syntactic pattern Adj + V.<sup>3</sup>

## 2. The spatiality of nouns and the temporality of verbs

An entity or substance can be described in terms of both spatial and temporal properties. The form or shape of an entity or a substance is a spatial feature. In other words, an entity or a substance assumes a certain form or shape no matter when and where it exists, and the form or shape of an entity or a substance is defined in terms of its length, height and width. Spatial entities may also move in space and change their shape, i.e., they also have temporal characteristics.

As for time, it is usually conceptualized as a (one-dimensional) line, allowing us to determine, for example, when an action or activity begins or ends, its duration, and the temporal order of different actions or activities. Entities or substances manifest themselves in space in terms of physical characteristics such as quantity, size, height, diameter, depth, length, width and thickness.

The world is made up of different entities or substances. Speakers usually use nouns to designate different kinds of three-dimensional entities or substances. At the same time, people also use different kinds of verbs to refer to different behaviors, motions or changes of entities or substances that happen in time. In his discussion of the typical characteristics of nouns and verbs, Langacker (2008: 104) contends that the noun and verb archetypes constitute polar opposites, whose prototypical properties he characterizes verbatim as follows:

*Nouns* (Langacker 2008: 104):

1. A physical object is composed of material substance.
2. We think of an object as residing primarily in space, where it is bounded and has its own location.
3. In time, on the other hand, an object may persist indefinitely, and it is not thought of as having any particular location in this domain.
4. An object is conceptually autonomous, in the sense that we can conceptualize it independently of its participation in any event.

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3. The idea that nouns denote objects in space and verbs have a temporal dimension can already be found in Aristotle's work *De Interpretatione* (written in 350 B.C.E.), which is available online in an English translation by E. M. Edghill at: <http://classics.mit.edu/Aristotle/interpretation1.1.html>.



*Verbs* (Langacker 2008: 104):

1. An energetic interaction is not itself material, consisting instead of change and the transfer of energy.
2. Thus an event resides primarily in time; it is temporally bounded and has its own temporal location.
3. By contrast, an event's location in space is more diffuse and also derivative, as it depends on the locations of its participants.
4. This is so because an event is conceptually dependent; it cannot be conceptualized without conceptualizing the participants who interact to constitute it.

From Langacker's list two important points can be distilled. First, nouns are used to denote objects, and verbs are used to designate motions and changes. And objects are just entities or substances that are bounded in space, and hence they are definable in terms of spatiality, while actions or activities involve motion and change, which are bounded in time, and are thus characterizable in terms of temporality. Second, entities or substances are conceptually autonomous and do not have their own temporal location. In contrast, actions or activities are conceptually dependent and do not have their own spatial location.

### 3. The Adj + V pattern in Chinese

As claimed repeatedly in this chapter, the Adj + V pattern is commonly used in Chinese, although, from the point of view of normative/prescriptive grammar, it might not be considered as "good" usage. Notwithstanding, Huang et al. (2009) find that instances of the Adj + V pattern have emerged in large numbers in recent decades. Further examples, in addition to those already provided in (5), are given in (6).<sup>4</sup>

- (6) 具体研究            刻苦训练  
 jùtǐ yánjiū        kèkǔ xùnlìàn  
 concrete examine assiduous train  
 直接调查            合理调整  
 zhíjiē diàochá    hélǐ tiáozhěng  
 direct investigate reasonable adjust  
 严肃批评        努力钻研  
 yánsù pīpíng    nǔlì zuānyán  
 harsh criticize painstaking study

4. All of the examples are taken from Huang et al. (2009). The reasons for the existence of the Adj + V pattern in Chinese are provided there.

In (6), *jùtì* ‘concrete’, *kèkǔ* ‘assiduous’, *zhíjiē* ‘direct’, *héli* ‘reasonable’, *yánsù* ‘harsh’ and *nǚlì* ‘painstaking’ are all adjectives, and *yánjiū* ‘examine’, *xùnlìan* ‘train’, *diàochá* ‘investigate’, *tiáozhěng* ‘adjust’, *pīpíng* ‘criticize’ and *zuānyán* ‘study’ are all regarded as verbs by Chinese linguists. Contrary to the analysis proposed in this chapter, Huang et al. (2009) suggest that the second constituent in the construction in question should be tagged as a *noun* rather than a verb. That is to say, these verbs can be viewed as multi-category words (words that can be thought of as hybrids of verbs and nouns) so that the Chinese adjective can fulfill a legitimate function as a premodifier of the nominal head. No matter what the word class status of the second element of the pattern studied in this chapter is, Huang et al. (2009) deserve praise for having discovered the existence of what looks *prima facie* like an Adj + V pattern, i.e. a verb modified by an adjective, a phenomenon hitherto ignored by the Chinese linguistic community.

A closer look at the examples studied by Huang et al. (2009) reveals that the verbs in their data are basically disyllabic, such as 研究 *yánjiū* ‘examine’, 训练 *xùnlìan* ‘train’, 调查 *diàochá* ‘investigate’, 调整 *tiáozhěng* ‘adjust’, 批评 *pīpíng* ‘criticize’ and 钻研 *zuānyán* ‘study’, as provided in (6).

With regard to disyllabic verbs in Chinese, what is relevant in the present context is their degree of dynamicity. A number of researchers in China have noticed the differences in dynamicity between disyllabic and monosyllabic verbs and have proposed similar accounts of this phenomenon. Liu and Wang (2010) find that, diachronically, there has been a change from mostly monosyllabic words, which were dominant in the ancient period, to prevalently disyllabic verbs in the modern period. Concomitantly, disyllabic verbs have become increasingly weak in dynamicity, but they have become more and more self-sufficient in meaning. In contrast, the degree of dynamicity of monosyllabic verbs remains strong, though their meaning is not as self-contained as that of disyllabic verbs. Shen (2012) therefore proposes that closer attention should be paid to these semantic differences between disyllabic and monosyllabic verbs in Chinese. He further suggests that the influence that disyllabification has had on verbs can be stated as “The dynamic degree of disyllabic verbs weakens and their nominality strengthens” (2012: 13–14). That is to say, monosyllabic verbs are of weak nominality while disyllabic verbs are of strong nominality. Shen contends that disyllabic verbs are converted into nouns and can hence be considered to be a subcategory of nouns.<sup>5</sup> In a similar vein, Zhang (2012: 344) emphasizes that “monosyllabic verbs are of strong verbality and disyllabic ones are of nominality”, which can be interpreted as that monosyllabic verbs in Chinese display strong verbality, while disyllabic verbs exhibit weak verbality. In other words, the disyllabification of Chinese verbs has an effect on their nominalization.

5. See also Shen’s discussion of the Chinese noun-verb distinction (Chapter 4) in this volume.

There are at least two interpretations that can be derived from the above discussions of Chinese monosyllabic and disyllabic verbs. The first is that Chinese monosyllabic verbs are strongly verbal and disyllabic verbs are weak in verbality; the second is that when their verbality becomes weaker and weaker, disyllabic verbs could develop into disyllabic nouns, in the sense that they have overt nominal functions. The present chapter agrees with these conclusions, but I argue below that the basic semantic function of monosyllabic verbs might not be the one postulated by the linguists discussed in the previous paragraphs. If monosyllabic verbs have a strong degree of verbality, they should display the prototypical properties of verbs. One would expect monosyllabic verbs to be modifiable only by adverbs to form the Adv+V pattern, but they should not allow adjectival modifiers, i.e. not be used in the Adj + V construction. However, there is strong evidence suggesting that Chinese monosyllabic verbs are not in accordance with this hypothesis. The actual use of Chinese monosyllabic verbs shows that the Adj + V pattern does exist in daily communication.<sup>6</sup> The examples provided in (7) illustrate this usage.

- (7) 轻取 假造 臭骂  
 qīngqǔ jiǎzào chòumà  
 easy take false make smelly swear  
 淡描 滥用 惨杀  
 dànmiáo lànòng cǎnshā  
 light draw abusive use cruel kill  
 傻想 巧做 快攻  
 shǎxiǎng qiǎozuò kuàigōng  
 stupid think skillful do rapid attack

In the 6th edition of *The Modern Chinese Dictionary* (MCD), words such as 轻 *qīng* ('easy'), 假 *jiǎ* ('false'), 臭 *chòu* ('smelly'), 淡 *dàn* ('light'), 滥 *làn* ('abusive'), 惨 *cǎn* ('cruel'), 傻 *shǎ* ('stupid'), 巧 *qiǎo* ('skillful'), 快 *kuài* ('rapid') and 急 *jí* ('urgent') showing up in (7) are all labeled as adjectives, not as adverbs or multi-category words.<sup>7</sup> Chinese adjectives can be syntactically tested in the following ways: first, adjectives can all be modified by the Chinese adverb 很 *hěn* ('very'); second, adject-

6. In this chapter I concentrate solely on the relation of constituency within this type of structure. The question of whether the combinations of words are compounds or phrases is not discussed herein. It should be noted that the Adj + V pattern also often shows up in juxtapositions, such as 高职低聘 (*gāozhídīpìn*, 'high position low employ') and 低职高聘 (*dīzhígāopìn*, 'low position high employ'). See the relevant discussion in Section 3 and in footnotes 10, 11 and 12.

7. *The Modern Chinese Dictionary* (6th edition, Beijing: Commercial Press, 2012) follows the basic way of tagging syntactic categories of words used in its 5th edition, and makes some revisions concerning the syntactic category of some words.

tives can be reduplicated; third, adjectives can modify nouns.<sup>8</sup> The first units in (7) (listed above) pass the three tests and have hence to be considered as adjectives, as can be seen in (8)–(10):

- (8) 很 + 轻/假/臭/淡/滥  
 hěn + qīng/jiǎ/chòu/dàn/làn  
 very+ easy/false/smelly/light/abusive  
 很 + 惨/傻/巧/快/急  
 hěn + cǎn/shǎ/qiǎo/kuài/jí  
 very+ cruel/stupid/skillful/rapid/urgent
- (9) 轻轻 假假 臭臭  
 qīngqīng jiǎjiǎ chòuchòu  
 easy easy false false smelly smelly  
 淡淡 滥滥 惨惨  
 dàndàn lànlan cǎncǎn  
 light light abusive abusive cruel cruel  
 傻傻 巧巧 快快  
 shǎshǎ qiǎoqiǎo kuàikuài  
 stupid stupid skillful skillful rapid rapid
- (10) 轻舟 轻车  
 qīngzhōu qīngchē  
 light boat light vehicle  
 假山 假发  
 jiǎshān jiǎfà  
 fake mountain false hair  
 臭脚 臭气  
 chòujiǎo chòuqì  
 smelly feet stinky air  
 淡水 淡季  
 dànshuǐ dànjì  
 light water light season  
 滥调 滥词  
 lànliào làncí  
 abusive tone abusive word

8. What this chapter is concerned with is only the reduplicative form of Chinese adjectives, such as 大 *dà* ('large') → 大大 *dàdà* ('large large') and 长 *cháng* ('long') → 长长 *chángcháng* ('long long'). The issue of whether or not the reduplicatives should be followed by the attributive marker 的 *de* depends basically on the syntactic environments in which they show up, such as in the sentence 她有一双大大的眼睛，一头长长的头发 (*tā yǒu yīshuāng dàdà de yǎnjīng, yītóu chángcháng de tóufà*) ('She has large eyes and long hair').

惨案	惨景
cǎnàn	cǎnjǐng
cruel case	cruel scene
傻子	傻法
shǎrén	shǎfǎ
stupid person	stupid way
巧妇	巧手
qiǎofù	qiǎoshǒu
skillful woman	skillful hand
快车	快手
kuàichē	kuàishǒu
speedy vehicle	rapid hand

Furthermore, according to the syntactic categories tagged in the MCD, the words provided in (7) such as 取 *qǔ* ('take'), 造 *zào* ('make'), 骂 *mà* ('swear'), 描 *miáo* ('draw'), 用 *yòng* ('use'), 杀 *shā* ('kill'), 想 *xiǎng* ('miss'), 做 *zuò* ('do'), 攻 *gōng* ('attack') and 求 *qiú* ('request') are all verbs. In addition, based on the widely accepted ways of syntactic category testing, these words can be shown to be verbs, since: (1) they can all take objects; (2) they can all be modified by adverbs like 不 *bù* ('not') or 都 *dōu* ('entirely'); (3) they can all be followed by tense and aspect markers such as 着 *-zhe* ('imperfective'), 了 *-le* ('perfective') and 过 *-guo* ('experiential'); (4) they can all co-exist with such auxiliaries as 能 *néng* ('can'), 会 *huì* ('can' or 'will') and 可以 *kěyǐ* ('can'). These test criteria are applied in (11)–(14).

- (11) 取样          取证  
 qǔyàng      qǔzhèng  
 take sample take evidence  
 造林          造册  
 zàolín      zàocè  
 make forest make volumes  
 骂人          骂娘  
 màrén      màniáng  
 swear people swear mother  
 描眉          描图  
 miáoméi    miáotú  
 draw eyebrow draw picture  
 用心      用力  
 yòngxīn yòngli  
 use heart use energy  
 杀狗      杀敌  
 shāgǒu shādí  
 kill dog kill enemy

想你 想家

xiǎngnǐ xiǎngjiā

miss you miss home

做事 做工

zuòshì zuògōng

do things do work

攻心 攻城

gōngxīn gōngchéng

attack heart attack city

求学 求医

qiúxué qiúyī

request learning request medicine

- (12) 不/都 + 取/造/骂/描

bù/dōu + qǔ/zào/mà / miáo

not/entirely+ake/make/swear/draw

不/都 + 用/杀/想/做

bù/dōu + yòng/shā/xiǎng/zuò

not/entirely+use/kill/miss/do

不/都 + 攻/求

bù/dōu + gōng/qiú

not/entirely+attack/request

- (13) 取/造/骂/描 + 着/了/过

qǔ/zào/mà/miáo+ -zhe/-le/-guo

take/make/swear/draw + -zhe/-le/-guo

用/杀/想/做 + 着/了/过

yòng/shā/xiǎng/zuò+ -zhe/-le/-guo

use/kill/miss/do+ -zhe/-le/-guo

攻/求 + 着/了/过

gōng/qiú+ -zhe/-le/-guo

attack/request + -zhe/-le/-guo

- (14) 能/会/可以 + 取/造/骂

néng/huì/kěyǐ + qǔ/zào/mà

can/will/can + take/make/swear

能/会/可以 + 描/用/杀/想

néng/huì/kěyǐ + miáo/yòng/shā/xiǎng

can/will/can + draw/use/kill/miss

能/会/可以 + 做/攻/求

néng/huì/kěyǐ + zuò/gōng/qiú

can/will/can + do/attack/request

In Chinese linguistics, the usual practice of dictionary compilers is not to label the syntactic categories of the constituents of disyllabic words. If the examples given in (7) are all considered to be disyllabic *cí* (词, ‘word’, a Chinese grammatical unit, which is smaller than a phrase) rather than *cízǔ* (词组, ‘phrase’, which is usually composed of more than one *cí*), then the examples such as 假造 *jiǎzào*, 傻想 *shǎxiǎng*, 巧做 *qiǎozuò* and 急求 *jíqiú* are not listed in the MCD as *cí*. It is thus hard to say whether they are words or phrases. Moreover, although all the examples in (7) instantiate the Chinese modifier-head construction (i.e. the Adj + N construction), it is not easy to test whether they are words or phrases by means of the well accepted “extension method”, since all of these examples are composed of monosyllabic adjectives or verbs. For example, it is almost impossible to test whether 傻想 *shǎxiǎng* and 淡描 *dànmiáo* are words or phrases by using the extension method. Even if 傻 *shǎ* and 淡 *dàn* are viewed as adverbs, they cannot possibly be extended to such constructions as 傻地想 *shǎdìxiǎng* and 淡地描 *dàndìmiáo*, either, since 地 *dì* is considered to be the marker of adverbials.

On the basis of their syntactic categories tagged in the MCD, I propose that the first constituent of each example in (7) is an adjective, and the second constituent is a verb. With this hypothesis in mind, let us assume that the internal structure of the instances in (7) is Adj + V. If this hypothesis can be confirmed, it follows that the verbs in this construction have already been recategorized as nouns, since only nouns can be modified by adjectives under normal circumstances. The point of interest here is that both monosyllabic and disyllabic verbs in Chinese have nominal characteristics, as is shown in (7) and (6) respectively, which is consistent with the analyses proposed by Shen (2010; 2011: 12, 14, 65–97) and Wang (2013a,b).<sup>9</sup> Thus, as has been repeatedly emphasized in this chapter, verbs in Chinese that denote kinds of behavior or movement are often converted into nouns, as illustrated with further data in (15). Note, the claim the original verbs have been recategorized as nouns is strengthened by the fact that they can be specified by numerals and quantifiers, as shown in (16):

9. Shen (2010, 2011: 12, 14, 65–97; also this volume, Chapter 4) holds that verbs in Chinese are a subcategory of nouns, and have the properties of nouns. They can also be used in communication as predicates and referring expressions. For instance, 吃有吃相 (*chīyǒuchīxiàng*, ‘eat has eat manners’). In this instance, the recurring verb *chī* functions as a referring, i.e. nominal, expression.

- (15) 小炒            大动  
 xiǎochǎo      dàdòng  
 small stir-fry big move  
 厚望            薄葬  
 hòuwàng      bó zàng  
 thick expect thin bury  
 高产            细究  
 gāochǎn      xìjiū  
 high produce thin investigate
- (16) 一呼百应  
 yīhūbǎiyìng  
 one call a hundred answer  
 三求四告  
 sānqiú sìgào  
 three request four beg  
 五讲四美三热爱  
 wǔjiǎng sìměi sānrè'ài  
 five talk four beauty three love  
 三个代表            八项注意  
 sāngèdàibiǎo      bāxiàngzhùyì  
 three piece represent eight kind notice  
 五条规定            三道命令  
 wǔtiáoguīdìng      sāndào mìnglìng  
 five item stipulate three piece order

The examples given in (15) demonstrate that Chinese verbs can be directly modified by adjectives, and thus, again, show that verbs denoting events, actions or movements are treated as if they were nouns. Strong evidence that verbs can behave formally and conceptually like nouns, is found in (16) where the verbs 呼 *hū* ('call'), 应 *yìng* ('answer'), 求 *qiú* ('request'), 告 *gào* ('beg'), 讲 *jiǎng* ('talk'), 代表 *dàibiǎo* ('represent'), 热爱 *rè'ài* ('love'), 注意 *zhùyì* ('notice'), 规定 *guīdìng* ('stipulate'), 命令 *mìnglìng* ('order') are modified by numerals.<sup>10</sup> Further evidence for this claim is that verbs like 注意 *zhùyì* ('notice'), 代表 *dàibiǎo* ('represent'), 规定 *guīdìng* ('stipulate') and 命令 *mìnglìng* ('command') can be modified by quantifiers like 项 *xiàng*, 个 *gè*, 条 *tiáo* and 道 *dào*. What is more, nouns and verbs can show up side by side in the antithetical structures frequently used in Chinese such as 一鱼两吃 *yīyúliǎngchī* (lit. 'one fish two eat'), 一韵五唱 *yīyùnwǔchàng* (lit. 'one

10. In modern Chinese, syntactically, numerals are not immediately adjacent to nouns. They are usually followed by a quantifier that turns up before a noun to form the 'numeral + quantifier + noun' construction, as in 五条河 *wǔtiáo hé* ('five rivers').



rhyme five sing'), 一石二笑 *yīshíèrxǎo* (lit. 'one stone two smile') and 十病九痛 *shíbīngjiǔtòng* (lit. 'ten disease nine ache'). In these four examples, the respective noun-verb pairs 鱼 *yú* ('fish') – 吃 *chī* ('eat'), 韵 *yùn* ('rhyme') – 唱 *chàng* ('sing'), 石 *shí* ('stone') – 笑 *xiào* ('smile'), and 病 *bìng* ('disease') – 痛 *tòng* ('ache') are asyndetically conjoined. What is noteworthy here is that in these syntagmas there is no clear-cut distinction between nouns and verbs.

Nouns and verbs can also appear in coordinate constructions, such as 图书和出版 *túshū hé chūbǎn* (lit. 'books and publish'), 掌声和尖叫 *zhǎngshēng hé jiǎnjiào* (lit. 'applause and scream'), 任务和要求 *rènwù hé yāoqiú* (lit. 'task and require'), 存在与时间 *cúnzài yǔ shíjiān* (lit. 'exist and time'), 情与变 *qíng yǔ biàn* (lit. 'love and betray'), 笑与泪 *xiào yǔ lèi* (lit. 'smile and tear'), 罪与罚 *zuì yǔ fá* (lit. 'crime and punish'), 养与病 *yǎng yǔ bìng* (lit. 'recuperate and illness'). Though Shen (2009) maintains that these examples support his proposal to treat verbs as a subcategory of nouns in Chinese, Yuan (2010a,b) insists that these examples are still in accordance with what he calls "the Condition of Parallelism" for two reasons: first, "the Condition of Parallelism" in Chinese is subject to pragmatic constraints rather than syntactic ones, and, second, words like 出版 *chūbǎn* ('publish') appear mainly in written texts and are called 'nouny verbs' in Zhu's (1982) terminology, i.e., they are disyllabic verbs that can be used as the objects of the verb 有 *yǒu* ('have') and such verbs as 进行 *jìnxíng* ('conduct'), 给予 *jǐyǔ* ('give'), 作 *zuò* ('compose'), and that they cannot be modified by adverbs. The lexical item 出版 *chūbǎn* ('publish') is more like a verb in the phrase 出版这些图书 *chūbǎn zhèxiē túshū* ('publish these books'), whereas it is more like a noun in the phrase 图书和出版 *túshū hé chūbǎn* ('books and publish'). The present chapter presumes that this phenomenon is caused by the conceptual spatialization of actions or activities, i.e., Chinese language users tend to think of actions or activities as three-dimensional entities or substances. Monosyllabic words as 变 *biàn* ('change') in 情与变 *qíng yǔ biàn* (lit. 'love and betray'), and 笑 *xiào* ('laugh') in 笑与泪 *xiào yǔ lèi* (lit. 'laugh and tear') are likely to occur both in written and spoken Chinese. Zhu (1982: 101) proposed the notion of *materialization* of actions or activities in the Chinese language, which is in agreement with the ideas developed in the present chapter (see also Wang 2014).

Further evidence for the empirical validity of my analysis comes from the behavior of the Chinese paired antonyms 大 *dà* ('big') and 小 *xiǎo* ('small') in the Adj + V construction. These adjectives can be used to modify nouns in the pattern Adj + N as in examples (17) and (18), in which 大 *dà* ('big') and 小 *xiǎo* ('small') denote the spatial size of entities or substances. Interestingly, they can also occur as adjectival modifiers in the Adj + V construction, as evidenced in examples (19) and (20).

- (17) 大 *dà* ('big') + noun  
 大杯 大路 大刀 大道 大河 大套 大腸 大鍋  
*dàbēi dàlù dàdāo dàdào dàhé dàtào dàcháng dàguō*  
 big cup big road big knife big way big river big set big bowel big pot
- (18) 小 *xiǎo* ('small') + noun  
 小杯 小路 小刀 小道 小河 小套 小腸  
*xiǎobēi xiǎolù xiǎodāo xiǎodào xiǎohé xiǎotào xiǎocháng*  
 small cup small road small knife small way small river small set small bowel  
 小鍋 小頭  
*xiǎoguō xiǎotóu*  
 small pot small head
- (19) 大 *dà* ('big') + verb  
 大吵 大鬧 大鳴 大動 大飲 大撈 大變  
*dàchǎo dànao dà míng dàdòng dà yǐn dàlāo dàbiàn*  
 big quarrel big scream big bleat big move big drink big gain big change  
 大敗 大跌  
*dàbài dàdiē*  
 big lose big decline
- (20) 小 *xiǎo* ('small') + verb  
 小吵 小鬧 小鳴 小動 小飲 小撈  
*xiǎochǎo xiǎonào xiǎomíng xiǎodòng xiǎoyǐn xiǎolāo*  
 small quarrel small scream small bleat small move small drink small gain  
 小變 小敗 小跌  
*xiǎobiàn xiǎobài xiǎodiē*  
 small change small lose small decline

Examples (17)–(20) indicate that antonymic adjectives can modify not only nouns but also verbs in Chinese.<sup>11</sup> As a matter of fact, apart from the two spatial adjectives 大 *dà* ('big') and 小 *xiǎo* ('small'), there are many other pairs of antonymic spatial adjectives that can be used both in the Adj + N and the Adj + V pattern in Chinese. (see (22) and (23) below). Here is a list of such antonymic pairs:

11. Some scholars might argue that 大 *dà* ('big') and 小 *xiǎo* ('small') are degree adverbs rather than adjectives when modifying verbs. If this were true, 大 *dà* and 小 *xiǎo* should be compatible with the complement marker 得 *dé*. For example, 大吵 *dàchǎo* and 小吵 *xiǎochǎo* should be rephrasable as 吵得大 *chǎodédà* and 吵得小 *chǎodéxiǎo*, respectively. However, these rephrased expressions do not seem to be fully acceptable in Chinese.

- (21) 高/低 粗/细 深/浅  
 gāo/dī cū/xì shēn/qiǎn  
 high/low thick/thin deep/shallow  
 长/短 宽/窄(严) 厚/薄  
 cháng/duǎn kuān/zhǎi (yán) hòu/báo  
 long/short wide/narrow(strict) thick/thin

The use of the adjectives listed in (21) in the Adj + N pattern in Chinese is illustrated in (22), while (23) provides examples, in which the adjectives in question function as modifiers of verbs, i.e. appear in the Adj + V pattern in Chinese.

- (22) 高层 高分  
 gāocéng gāofēn  
 high level high score  
 低层 低分  
 dīcéng dīfēn  
 low level low score  
 粗毛 粗心  
 cūmáo cūxīn  
 thick wool thick mind  
 细毛 细心  
 xìmáo xìxīn  
 thin wool thin mind  
 深层 深海  
 shēncéng shēnhǎi  
 deep layer deep sea  
 浅层 浅海  
 qiǎncéng qiǎnhǎi  
 shallow layer shallow sea  
 长波 长线  
 chángbō chángxiàn  
 long wave long line  
 短波 短线  
 duǎnbō duǎnxiàn  
 short wave short line  
 宽带 宽韵  
 kuāndài kuānyùn  
 wide band wide rhyme  
 窄带 窄韵  
 zhǎidài zhǎiyùn  
 narrow band narrow rhyme

严父 严刑  
yánfù yánxíng  
strict father strict torture

厚礼 厚利  
hòulǐ hòulì  
thick gift thick profit

薄礼 薄利  
bóli bóli  
thin gift thin profit

- (23) 高看 高聘  
gāokàn gāopin  
high look high employ
- 低看 低聘  
dīkàn dīpin  
low look low employ
- 粗读 粗看  
cūdú cūkàn  
thick read thick look
- 细读 细估  
xìdú xìgū  
thin read thin estimate
- 深耕 深尝  
shēngēng shēncháng  
deep plough deep taste
- 浅耕 浅尝  
qiǎngēng qiǎncháng  
shallow plough shallow taste
- 长叹 长传  
chángtàn chángchuán  
deep sigh long deliver
- 短叹 短传  
duǎntàn duǎnchuán  
short sign short deliver
- 宽打 宽管  
kuāndǎ kuānguǎn  
wide hit wide supervise
- 严打 严管  
yándǎ yánguǎn  
strict hit strict supervise

厚葬 厚待  
 hòuzàng hòudài  
 thick bury thick treat  
 薄葬 薄待  
 bóuzàng bóudài  
 thin bury thin treat  
 窄用  
 zhǎiyòng  
 narrow use

The examples given in (23) reveal that all the spatial adjectives can appear in the Adj + V construction, with the sole exception of 窄 *zhǎi* ('narrow'), the antonym of 宽 *kuān* ('wide'). However, if 严 *yán* ('strict') is regarded as the antonym of 宽 *kuān* (wide), the acceptability problem does not arise, since 严 *yán* ('strict') can be used as an adjectival modifier in the Adj + V construction. In looking at these examples, we notice that Chinese spatial adjectives can be the direct modifiers of verbs. Again, we have support for the thesis that actions or activities are conceptualized as spatial entities or substances by Chinese native speakers, which explains the frequent collocation of verbs with preceding adjectival modifiers.

What needs to be mentioned here is that the MCD does not consistently tag paired antonymic lexemes as adjectives. It categorizes 高/低 *gāo/dī* ('high/low'), 长/短 *cháng/duǎn* ('long/short'), and 宽/窄(严) *kuān/zhǎi (yán)* ('wide/narrow (strict)') as adjectives. However, it classifies 粗 *cū* ('thick') and 深 *shēn* ('deep') as both adjectives and adverbs, and 细 *xì* ('thin') and 浅 *qiǎn* ('shallow') only as adjectives, though 粗/细 *cū/xì* ('thick/thin') and 深/浅 *shēn/qiǎn* ('deep/shallow') are paired spatial adjectival antonyms (see Table 1).

**Table 1.** The tagging of the syntactic categories of Chinese paired spatial adjective antonyms in the MCD

Spatial adjectives	<i>gāo</i> 'high'	<i>dī</i> 'low'	<i>cū</i> 'thick'	<i>xì</i> 'thin'	<i>shēn</i> 'deep'	<i>qiǎn</i> 'shallow'	<i>cháng</i> 'long'
adjective	√	√	√	√	√	√	√
adverb			√		√		
spatial adjectives	<i>duǎn</i> 'short'	<i>kuān</i> 'wide'	<i>zhǎi</i> 'narrow'	<i>yán</i> 'strict'	<i>hòu</i> 'thick'	<i>bó</i> 'thin'	
adjective	√	√	√	√	√	√	
adverb							

There are three questions that arise from Table 1: (i) Why are 粗/细 *cū/xì* ('thick/thin') and 深/浅 *shēn/qiǎn* ('deep/shallow') treated differently from other paired

spatial antonyms like 高/低 *gāo/dī* ('high/low'), 长/短 *cháng/duǎn* ('long/short'), 宽/窄 (严) *kuān/zhǎi (yán)* ('wide/narrow (strict)'), and 厚/薄 *hòu/bó* ('thick/thin') that are all labeled as adjectives? (ii) Why are only 粗 *cū* ('thick') and 深 *shēn* ('deep') categorized as both adjectives and adverbs, while 细 *xì* ('thin') and 浅 *qiǎn* ('shallow') are not, although they are the corresponding antonyms of 粗 *cū* ('thick') and 深 *shēn* ('deep'), respectively, in normal communicative situations? (iii) Why can only 粗 *cū* ('thick') and 深 *shēn* ('deep') be labeled as adverbs when all the other paired antonymic adjectives given in (23) can function as modifiers of verbs?

There are several conclusions that can be drawn from the issues involved in the three questions in the previous paragraph: (i) It is an arduous task to classify the syntactic categories of Chinese words. The difficulty in assigning lexemes to syntactic categories is evident in the case of the paired antonyms discussed above, since these words can modify nouns as well as verbs. From this perspective, these lexemes could therefore be viewed as both adjectives and adverbs. (ii) The MCD lacks consistency in marking the syntactic categories of words, as shown above (see Table 1). (iii) More generally, as Huang (2001: 88) points out: "The clarification of the syntactic categories of words in Chinese still waits for further discussion, and it thus remains of great difficulty to tag the syntactic categories of words".

Regarding the same problem, Xu and Tan (2006: 31), two of the authors of the MCD, frankly admit:

We have met a series of troubles in syntactically categorizing Chinese words. Different grammarians have different understandings with regard to the syntactic category of a particular word, and the tagged category of Chinese words varies from dictionary to dictionary in present dictionary compilation.

Actually, the difficulties and inconsistencies in question can be attributed to subjective as well as objective reasons. Subjectively, we still do not have a thorough understanding of the syntactic category of words in Chinese, partly because, in past decades, we have spent much more time and effort on theoretical discussions than on practical investigations. Objectively speaking, the peculiarities of Chinese make it rather difficult to classify words in syntactic terms (Guo 2010: 11). These difficulties are also due to the fact that Chinese linguists are still influenced by grammatical frameworks that were originally developed for the analysis of Indo-European languages.

In this chapter, I contend that it is difficult, if not impossible, to assign Chinese lexemes to syntactic categories unless they are studied within the larger context of sentences in which they occur. For example, 曾经 *céngjīng* ('once') is labeled as an adverb in the MCD, as shown in (24). However, this word does not function as an adverb in (25)–(27).

- (24) 他们俩 曾经 爱 过。  
 tāmenliǎ céngjīng ài guò.  
 They two once love past particle  
 ‘They two were once in love’
- (25) 路灯下 的 情人  
 lùdēngxià de qíngrén  
 under the road lamps of sweethearts  
 象是 曾经 的 我们。  
 xiàngshì céngjīng de wǒmen  
 seem once of us  
 ‘The sweethearts under the road lamps seem like us of the past’
- (26) 请 想一想 中国  
 qǐng xiǎngyīxiǎng zhōngguó  
 please think Chinese  
 大豆 的 曾经 和 现实。  
 dàdòu de céngjīng hé xiànshí  
 soybean of once and present  
 ‘Please think about the past and the present of Chinese soybeans’
- (27) 他们俩 曾经 过。  
 tāmenliǎ céngjīng guò  
 they two once past particle  
 ‘Those two were once in love’

Apparently, 曾经 *céngjīng* (‘once’) in (25) is used as an adjective, in (26) as a noun, and in (27) as a verb. It is interesting to note that (27) is acceptable in a particular situation, though 曾经 (*céngjīng* ‘once’) is not so often used as a verb. Just imagine that there were a man and a woman who used to be lovers, but they finally broke up. When someone who knew their past saw them one day and said 他们俩曾经过 (*Tāmenliǎng céngjī guò* ‘Those two were once in love’), this utterance would be totally acceptable in such a context. This example illustrates that it is not an easy task to tag Chinese words in terms of their syntactic category (see also Lü 2010: 39 for additional discussion of this issue). As to Table 1 given above, it shows that, with the exception of 粗 *cū* (‘thick’) and 深 *shēn* (‘deep’), which are classified as both adjectives and adverbs, all the words listed in it function only as adjectives. Hence, it is a plausible assumption that these lexemes are prototypically adjectives. Besides, the adjectival nature of these words is further supported by the fact that all of them, as the examples in (22) show, can be used to modify nouns. What we need to pay special attention to is that the verbs in (23) can also be modified by these adjectives. These distributional facts suggest that Chinese verbs can behave

like nouns. However, in my view it does not follow that the verbs in question have shifted their word class, i.e. become nouns (Lü 2010: 39). I contend that these verbs inherently exhibit properties of nouns (Shen 2010, 2011: 12, 14, 65–97), i.e., they have spatial features (Wang 2013a,b; Wang and He 2014). Moreover, (22) and (23) demonstrate that both Chinese nouns and verbs can occupy the same syntactic positions; they can be modified by spatial adjectives and can be substituted for each other. In other words, Chinese nouns and verbs can form what Saussure (1974: 122) calls a *paradigmatic* relation, and in this sense, they can be said to have the same syntactic properties, as illustrated in (28):

(28)	厚 +	{	礼 lǐ	thick gift
	hòu		利 lì	thick profit
	thick		葬 zàng	thick bury
			待 dài	thick treat
	薄 +	{	礼 lǐ	thin gift
	bó		利 lì	thin profit
	thin		葬 zàng	thin bury
			待 dài	thin treat

In (28), both 厚 hòu ('thick') and 薄 bó ('thin') are spatial adjectives; 礼 lǐ ('gift') and 利 lì ('profit') are nouns; and 葬 zàng ('bury') and 待 dài ('treat') are verbs. This means that the two nouns and the two verbs can occupy the same syntactic slot and thus form a paradigmatic relation.

Furthermore, based on Zhu's Principle of Structural Parallelism (Zhu 1985: 31, 33, 52), we can also postulate that the grammatical combination of words in (22) and (23) forms an identical syntactic construction, as indicated in (29):

(29) spatial adjectives + nouns/verbs

Thus, I claim that the combination of 'spatial adjective + noun' belongs to the same syntactic construction as that of 'spatial adjective + verb'. That is to say, they form "identical structures" (Zhu 1985: 31).

As a matter of fact, this type of identical structures can also be observed in the Chinese four-word phrases of the 'spatial adjective + noun + spatial adjective + verb' construction, as seen in the examples listed in (30):

(30)	大材小用	小材大用
	dàcáixiǎoyòng	xiǎocáidàyòng
	big material small use	small material big use
	大題小做	小題大做
	dàtíxiǎozuò	xiǎotídàzuò
	big issue small address	small issue big address



小病大看	大病小看
<i>xiǎobìngdàkàn</i>	<i>dàbìngxiǎokàn</i>
small disease big treat	big disease small treat
高职低配	低职高配
<i>gāozhídīpèi</i>	<i>dīzhígāopèi</i>
high position low assign	low position high assign
长话短说	短话长说
<i>chánghuàduǎnshuō</i>	<i>duǎnhuàchángshuō</i>
long story short speak	short story long speak

The lexemes 用 *yòng* ('use'), 做 *zuò* ('address'), 看 *kàn* ('treat'), 配 *pèi* ('assign') and 说 *shuō* ('speak') that occur in (30) are prototypical verbs. An intriguing question is whether these words keep their status as verbs in these Chinese four-word phrases. As is well known, Chinese speakers have a preference for the use of parallel syntactic structures. In (30), 大 *dà* ('big') and 小 *xiǎo* ('small'), 高 *gāo* ('high') and 低 *dī* ('low'), 长 *cháng* ('long') and 短 *duǎn* ('short') are all paired antonyms, which requires the words that they modify to display an analogous relationship. More precisely, if 大 *dà* ('big'), 高 *gāo* ('high') and 长 *cháng* ('long') are adjectives, then 小 *xiǎo* ('small'), 低 *dī* ('low') and 短 *duǎn* ('short') should also be adjectives. Likewise, if 大 *dà* ('big'), 高 *gāo* ('high') and 长 *cháng* ('long') are adverbs, then 小 *xiǎo* ('small'), 低 *dī* ('low') and 短 *duǎn* ('short') should have the same syntactic function. It is ruled out that 大 *dà* ('big'), 高 *gāo* ('high') and 长 *cháng* ('long') are adjectives, while 小 *xiǎo* ('small'), 低 *dī* ('low') and 短 *duǎn* ('short') are adverbs, and vice versa.

Moreover, the lexemes 材 *cái* ('material'), 题 *tí* ('issue'), 病 *bìng* ('disease'), 职 *zhí* ('position') and 话 *huà* ('story') in (30) cannot be verbs. On the contrary, they are nouns that are tagged as such in the MCD. They are modified by 大 *dà* ('big'), 小 *xiǎo* ('small'), 高 *gāo* ('high'), 低 *dī* ('low'), 长 *cháng* ('long') and 短 *duǎn* ('short'), which are clearly labeled as adjectives in the MCD. Only if these modifiers can be classified as adverbs, the lexemes 用 *yòng* ('use'), 做 *zuò* ('address'), 看 *kàn* ('treat'), 配 *pèi* ('assign') and 说 *shuō* ('speak') can be syntactically regarded as verbs. However, this analysis is implausible, given the preference of Chinese language users for parallel structures. It is therefore highly unlikely that the paired antonyms within the same Chinese four-word phrases in (30) belong to different word classes. For example, it does not make sense to categorize 大 *dà* ('big') and 小 *xiǎo* ('small') as adverbs, as in 大病小看 *dàbìngxiǎokàn*, or vice versa. The same generalization holds for the other antonymic pairs in (30). It is thus reasonable to assume that, at least for phrases like (30), Chinese treats the verbs occurring in them, such as 用 *yòng* ('use'), 做 *zuò* ('address'), 看 *kàn* ('treat'), 配 *pèi* ('assign') and 说 *shuō* ('speak'), as nouns. In other words, Chinese native speakers conceptualize the actions or activities that these verbs express as entities or substances that, accordingly, have spatial properties.

Additional evidence for the analysis proposed for examples (23) can be found in the 15 billion token corpus BCC (available at: <http://bcc.blcu.edu.cn>), compiled by the BLCU-Corpus Center at Beijing Language and Culture University (Xun et al. 2016). The corpus contains numerous two-word phrases in which verbs are modified by spatial adjectives, as shown in (31).

- (31) 大拆          大做    大呼  
*dàchāi          dàzuò dàhū*  
 big demolish big do big call  
 小胜          小编    小聚  
*xiǎoshèng      xiǎobiān xiǎojù*  
 small succeed small edit small meet  
 高粘    高开    高拿  
*gāozhān    gāokāi    gāoná*  
 high glue high open high take  
 低渗          低喊    低笑  
*dīshèn          dīhǎn    dīxiào*  
 low penetrate low cry low smile  
 粗磨          粗跟    粗变  
*cūmó          cūgēn    cūbiàn*  
 thick grind thick follow thick change  
 细读    细看    细想  
*xìdú              xìkàn    xìxiǎng*  
 thin read thin look thin think  
 深吸          深吻    深刺  
*shēnxī          shēnwěn shēncì*  
 deep breathe deep kiss deep stab  
 浅刺          浅刻          浅耕  
*qiǎncì          qiǎnkè          qiǎngēng*  
 shallow stab shallow carve shallow plough  
 长笑    长谈    长问  
*chángxiào    chángtán chángwèn*  
 long smile long talk long ask  
 短变          短管          短养  
*duǎnbiàn    duǎnguǎn    duǎnyǎng*  
 short change short supervise short keep  
 宽达          宽说          宽选  
*kuāndá          kuānshuō kuānxuǎn*  
 wide arrive wide say wide choose  
 窄变          窄握          窄播  
*zhǎibiàn      zhǎiwò      zhǎibō*  
 wide change narrow grasp narrow broadcast

严抓      严治      严生  
*yánzhuā yánzhì yánshēng*  
 strict grasp strict treat strict produce  
 厚抓      厚磨      厚防  
*hòuzhuā hòumó hòufáng*  
 thick grasp thick grind thick defend  
 薄晒      薄游      薄惩  
*bóshài bóyóu bóchéng*  
 thin shine thin travel thin punish  
 薄采      薄施      薄敷  
*bócai boshī bófū*  
 thin take thin donate thin spread

Actually, analogous constructions of two-word phrases in which spatial adjectives are used to modify verbs also show up abundantly in *The Dream of Red Mansions*, a well-known eighteenth-century Chinese classical novel. Examples are given in (32).

- (32) 大说    大恸    大干  
*dàshuō dàtòng dàgàn*  
 big talk big cry big do  
 小有      小怪      小解  
*xiǎoyǒu xiǎoguài xiǎojiě*  
 small have small worry small untie  
 高卧    高揭      高起  
*gāowò gāojiē gāoqǐ*  
 high lie high reveal high rise  
 低吟    粗打      细打  
*dīyín cūdǎ xìdǎ*  
 low chant thick hit thin hit  
 细搜      细瞧      细诉  
*xìsōu xìqiáo xìsù*  
 thin search thin look thin tell  
 细理      细思      细拆  
*xìlǐ xìsī xìchāi*  
 thin manage thin think thin unpack  
 细观      细告      细烫  
*xìguān xìgào xìtàng*  
 thin observe thin tell thin iron  
 细找      细忖      细阅  
*xìzhǎo xìcǔn xìyuè*  
 thin search thin think thin read

细揣	深辗	深嘱
xìchuāi	shēnzhǎn	shēnzhǔ
thin ponder	deep crush	deep advise
深悉	深赞	深念
shēnxī	shēnzàn	shēnniàn
deep know	deep agree	deep miss
深敬	长问	长挑
shēnjìng	chángwèn	chángtiāo
deep respect	deep ask	long select
长揖	短哄	短住
chángyī	duǎnhǒng	duǎnzhù
long bow	short coax	short live
短想	宽解	宽宥
duǎnxiǎng	kuānjiě	kuānyòu
short think	wide relieve	wide pardon
宽放	严鞠	厚待
kuānfàng	yánjū	hòudài
wide put	strict interrogate	thick treat
厚得	厚爱	薄置
hòudé	hòuài	bózhì
thick gain	thick love	thin buy
薄造	薄胜	薄看
bóào	bóshèng	bókàn
thin make	thin succeed	thin look

In all instances given in (32), adjectives function syntactically as modifiers of verbs. As repeatedly observed with other data in this chapter, the verbs in (32) no longer function as “pure” verbs, i.e., they have adopted nominal characteristics. In other words, the actions or activities these verbs denote are reconceptualized by Chinese speakers as entities or substances that have physical properties such as shape, mass, quantity, size, height, diameter, depth, length, width and thickness. Thus reanalyzed, these verbs can be treated as nouns modified by adjectives.

#### 4. Conclusion

In grammatical studies, it is often assumed that adjectives can modify only nouns but not verbs, and that the modifiers of verbs are adverbs. Both in English and in Chinese grammatical traditions, the sharp contrast between the Adj + N pattern, on the one hand, and Adv+V syntagm, on the other, is deeply rooted in the minds of grammarians and linguists. As a result, the Adj + V pattern is judged to be

non-existent or unacceptable. In the present contribution, I have presented strong evidence that the Adj + V construction is pervasive in Chinese, demonstrating that adjectives can function as modifiers of verbs. This finding is in accordance with Huang et al. (2009), who already observed that the Adj + V construction is a very common phenomenon in the Chinese language.

The examples of the Adv+N construction given in Huang et al. (2009) all involve disyllabic verbs. In the present chapter, the examples I have provided and discussed in much detail are all monosyllabic verbs. As various authors have observed, monosyllabic verbs are in some sense more prototypical verbs than disyllabic ones, because they display a high degree of dynamicity in their meanings (Liu and Wang 2010; Shen 2012; Zhang 2012). It is all the more significant in the context of the present chapter that even monosyllabic verbs can be modified by adjectives in Chinese and hence show nominal characteristics.

Guo (2010) proposes that the function of Chinese words is defined on two levels: one is the lexical category level, and the other is the syntactic level, i.e. the level that determines the grammatical roles that words assume in a wider syntagmatic context. According to Guo, the lexical category of words and their grammatical function on the syntactic level relate to each other in specific ways, i.e., a category on the lexical level can turn into a different category on the syntagmatic level. The present chapter, however, takes a somewhat different position: namely, the Adj + V construction in Chinese is not the result of a change from what is a verb at the lexical level to a noun at the syntactic level. That is, I assume that the undeniable existence of the Adj + V construction in Chinese lends support to the thesis that actions or activities can be thought of as entities or substances in the minds of Chinese speakers. More generally, I contend that language is the representation of thought, and hence the grammatical structure of a language reveals specific ways of thinking of its speakers. The pervasive use of the Adj + V construction suggests that Chinese language users have a strong tendency to think of the world in terms of entities and substances that have spatial properties.

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PART II

# Cognitive pragmatics





# Structural salience and referential accessibility

## A cognitive account of inter-clausal NP anaphora in Chinese complex sentences

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In Chinese, the subject NP of a preposed subordinate clause can be placed either before or after the subordinate conjunction. This chapter argues that this positional difference of the NP is closely related to whether the NP is intended to be conjoint or disjoint in reference with the subject NP of the main clause. Based on the two theoretical notions of Topicality and Accessibility, I propose two hypotheses to account for the preferred patterns of inter-clausal NP anaphora in Chinese complex sentences. The results of the data analyses corroborate the two hypotheses.

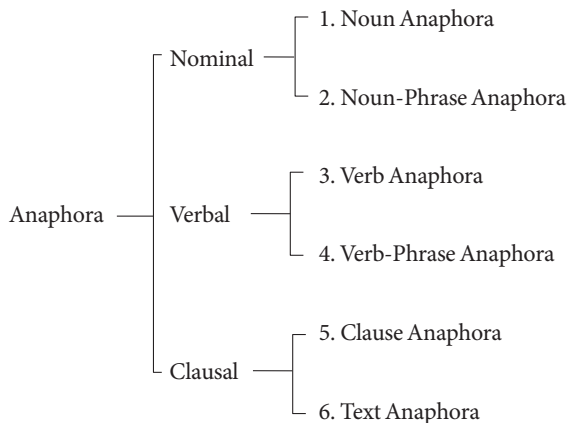
**Keywords:** conjoint reference, disjoint reference, subordinate clause, topicality

### 1. Introduction

#### 1.1 Basic concepts

##### 1.1.1 *The notion of anaphora*

In its broadest sense, anaphora may be characterized as an (often attenuated) expression that is used to refer (back) to an entity or sense mentioned by another expression in the same text or discourse. The entity referred back to by means of the anaphor is called its *antecedent*. In this broad sense, different types of anaphora may be classified in terms of the different types of antecedent involved and their morpho-syntactic properties, as depicted in Figure 1 (cf. Cornish 1986), each of which is illustrated by one or two sentences in (1) to (6) (with the anaphor and its antecedent italicized):



**Figure 1.** A classification of different types of anaphora

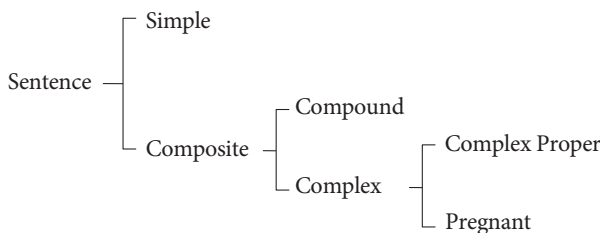
- (1) a. John bought a blue *jacket* and Paul bought a black *one*.  
b. John's *jacket* is blue and Paul's  $\emptyset$  is black.
- (2) a. *The man* told John that *he* bought a blue jacket.  
b. The man persuaded *John*  $\emptyset$  to buy a blue jacket.
- (3) John *bought* a blue jacket and Paul  $\emptyset$  a black one.
- (4) John *bought a blue jacket* and Paul  $\emptyset$  too.
- (5) Someone told me *that John can speak ten different languages*, but I won't believe *it*.
- (6) *This* is what has happened: (followed by the description)

This study focuses primarily on type (2), namely NP anaphora, (henceforth “anaphora” for short).

### 1.1.2 *Types of sentences in Chinese*

It is generally accepted that complete sentences in Chinese can be broadly classified into three types, namely, simple, compound and complex sentences. A simple sentence consists of a single clause. By contrast, both compound and complex sentences are composed of two or more than two clauses. The difference between the two is that, in a compound sentence, these clauses are in a coordinate relation, whereas in a complex sentence, they are in a non-coordinate relation (see Chao 1968: Chapter 2, Li and Liu 1987; Lin 1987). Compound and complex sentences sometimes are collectively referred to as composite sentences. Within the complex sentence, a further distinction is often made between the complex sentence proper, which consists of a main clause and one or more subordinate clauses, each capable of standing on its own, and the so-called ‘pregnant’ sentence, in which

the matrix clause has one or more embedded clauses. The relationship between different types of Chinese sentences is depicted schematically in Figure 2.



**Figure 2.** A classification of Chinese sentences

In this study of anaphora the focus is restricted to complex sentences proper (henceforth “complex sentences” for short).

## 1.2 The problem

One peculiarity of the Chinese language, as compared with English and many other European languages, is that in the preposed subordinate clause of a Chinese complex sentence, the subject NP can be placed either before or after the subordinate conjunction. Thus, corresponding to the structure of the English sentence in (7), there are two structural variants in Chinese, as shown in (8) and (9).<sup>1</sup>

(7) As John<sub>i</sub> is ill, he<sub>i,j</sub> is not able to come.

(8) 因为 张三<sub>i</sub>病了, 所以他<sub>i,j</sub>不能来。  
*Yinwei John<sub>i</sub> bing le, suoyi ta<sub>i,j</sub> bu neng lai*  
 Because John ill CRS, so he not can come  
 ‘Because John is ill, he cannot come’

(9) 张三<sub>i</sub> 因为 病了, 所以他<sub>i,j</sub>不能来。  
*John<sub>i,j</sub> yinwei bing le, suoyi ta<sub>i,j</sub> bu neng lai*  
 John because ill CRS, so he not can come  
 ‘Because John is ill, he cannot come’

Another well-known characteristic of Chinese is that it is a pro-drop language. Therefore, the overt pronoun in the subject position of the main clause may be omitted, yielding another set of two possible structures, as shown in (10) and (11).

1. Following Y. Huang (1991: 309–310), Chinese examples are transcribed in the Pinyin system of Romanization with tones suppressed throughout this chapter. The glosses are intended to capture only the structure of the original Chinese examples. The abbreviations used in the glosses are: BA = the *ba* marker in the *ba*-construction; CRS = currently relevant state (*le*); EMP = emphatic particle; PFV = perfective aspect (*le*); PO = possessive (*de*).

- (10) 因为 张三<sub>i</sub>病了, 所以  $\emptyset_{ij}$  不能 来。  
*Yinwei John<sub>i</sub> bing le, suoyi  $\emptyset_{ij}$  bu neng lai*  
 Because John ill CRS, so (he) not can come  
 'Because John is ill, he cannot come'
- (11) 张三<sub>i</sub> 因为 病了, 所以  $\emptyset_{ij}$  不能 来。  
*John<sub>ij</sub> yinwei bing le, suoyi  $\emptyset_{ij}$  bu neng lai*  
 John because ill CRS, so (he) not can come  
 'Because John is ill, he cannot come'

Just as the pronominal subject *he* in the main clause of (7) can refer either to the subject NP *John* in the subordinate clause or to someone else not mentioned in the sentence, because it is not locally bound according to Binding Principle B, so can the two pronominal subjects *ta* 'he' in (8) and (9) and the two zero pronouns in (10) and (11). Therefore, a question arises as to which sentence pattern is the preferred one when coreference or disjoint reference between the two NPs in the subject positions of the main and the subordinate clauses is intended.

Moreover, in Chinese, when coreference is intended between the two subject/topic NPs in the main and the subordinate clauses, either an overt pronoun or a covert zero form may be found in the subject position of the postposed main clause. This gives rise to another question, i.e., which form is preferred in such cases?

This chapter tries to show that the actual use of the four Chinese structures and the referential relations between the subject NPs in the subordinate and the main clauses of such sentences as intended by the writer and interpreted by the reader are cognitively constrained. More specifically, I argue that, properly defined and sufficiently operationalized, the two theoretical notions of Topicality and Accessibility, reflecting respectively structural salience of a potential antecedent NP and its referential accessibility marked by the anaphor NP, can be employed to account for the preferred patterns of anaphoric reference in the majority of Chinese complex sentences. Based on these two notions, two hypotheses are formulated and tested by means of a corpus-based text analysis. The results of the data analysis largely corroborate the two hypotheses.

## 2. Topicality and anaphora

### 2.1 The identification of topic

Although it is well known that the most easily identifiable structural relation in a Chinese clause is that of Topic and Comment, rather than Subject and Predicate, and that Topic plays a very important role in the organization of Chinese discourse,

there seems to be no standard way of identifying a Topic in a Chinese sentence. Li and Thompson (1979, 1981) and Tsao (1979, 1987) are among the first who tried to systematically explore the differences between Subject and Topic in Chinese by examining the grammatical roles they play in sentence and discourse. One basic strategy they adopted in doing so seems to be that, as long as a preverbal NP bears a clear “doing” or “being” relation with the verb, it would be identified as a Subject; otherwise, it would be a Topic. Thus, for them, in the following sentence *xiang* ‘elephant’ is the Topic and *bizi* ‘nose’ is the Subject (Li and Thompson 1981: 93).

- (12) 象       鼻子长  
*Xiang   bizi chang*  
 Elephant nose long  
 ‘Elephants have long trunks’

As a result, what can be identified as Topics are largely limited to those clause-initial NPs that bear only a vague “aboutness” relationship with the verb and those that are “topicalized”. This method of analysis seems to have had wide-spread influence among Chinese linguists.

For example, in his study of anaphora in Chinese within the framework of a neo-Gricean theory of pragmatics, Y. Huang (1991: 325) shows, correctly in my view, that in (13) both the zero anaphor in (13a) and the pronoun *ta* ‘he’ in (13b) are coreferential with the sentence Topic *Xiaohua*, as the Topic is the most salient relevant NP in the sentence.

- (13) a. 小华<sub>i</sub>, 小明<sub>j</sub> 一       进屋,  $\emptyset$ <sub>i</sub> 就把门关  
*Xiaohua<sub>p</sub>, Xiaoming<sub>j</sub>, yi       jin wu,  $\emptyset$ <sub>i</sub> jiu ba men guan*  
 Xiaohua, Xiaoming as soon as enter house, (he) BA door close  
 上 了  
*shang le*  
 up PFV  
 ‘Xiaohua<sub>p</sub>, as soon as Xiaoming<sub>j</sub> enters the house, (he<sub>i</sub>) closes the door’
- b. 小华<sub>i</sub>, 小明<sub>j</sub> 一       进屋, 他<sub>i</sub> 就把门关  
*Xiaohua<sub>p</sub>, Xiaoming<sub>j</sub>, yi       jin wu, ta<sub>i</sub> jiu ba men guan*  
 Xiaohua, Xiaoming as soon as enter house, he BA door close  
 上 了  
*shang le*  
 up PFV  
 ‘Xiaohua<sub>p</sub>, as soon as Xiaoming<sub>j</sub> enters the house, he<sub>i</sub> closes the door’

In the analysis of the sentences in (14), however, Huang (1991: 326) attributes the preferred interpretation of anaphora to the close semantic relation of causality

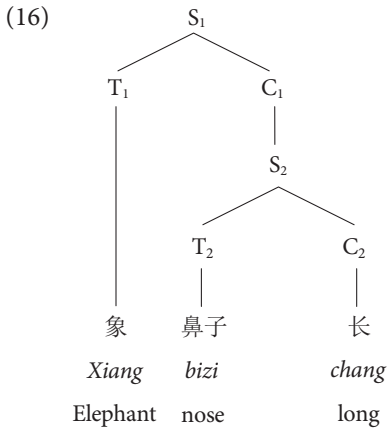
between the two clauses, which, following Levinson (1987), he claims, “tends to give rise to a ‘same agent/patient as the last clause’ effect”.

- (14) a. 老李<sub>i</sub> 因为 病 了, 所以 $\emptyset$ <sub>i</sub> 不 能 来。  
*Lao Li<sub>i</sub> yinwei bing le, suoyi  $\emptyset$ <sub>i</sub> bu neng lai*  
 Lao Li because ill CRS, so (he) not can come  
 ‘Because Lao Li<sub>i</sub> is ill, (he<sub>i</sub>) cannot come’
- b. 老李<sub>i</sub> 因为 病 了, 所以 他<sub>i</sub> 不 能 来。  
*Lao Li<sub>i</sub> yinwei bing le, suoyi ta<sub>i</sub> bu neng lai*  
 Lao Li because ill CRS, so he not can come  
 ‘Because Lao Li<sub>i</sub> is ill, he<sub>i</sub> cannot come’

I would like to argue that, in this particular example, Topic also plays an important role – in fact, a more important one than the so-called “tight inter-clausal semantic linkage” – because *Lao Li* in both sentences is the Topic of the whole complex sentence and therefore controls the reference of both the zero anaphor in (14a) and the pronoun *ta* ‘he’ in (14b). If the structure of the two sentences in (14) is changed to (15), then, as implied in the English translation, both the zero and the pronominal anaphors can refer to people other than *Lao Li*. This is because in (15), although the so-called “tight inter-clausal semantic linkage” still holds as in (14), *Lao Li* is no longer the Topic of the whole complex sentence, but merely the Topic of the subordinate *yinwei* ‘because’ clause. Thus, the “same agent/patient as the last clause” effect is noticeably weakened.

- (15) 因为 老李<sub>i</sub> 病 了, 所以  $\emptyset$ <sub>i/j</sub>/他<sub>i/j</sub>/她<sub>i/j</sub> 不 能 来。  
*Yinwei Lao Li<sub>i</sub> bing le, suoyi  $\emptyset$ <sub>i/j</sub>/ta<sub>i/j</sub> bu neng lai*  
 Because Lao Li ill CRS, so  $\emptyset$ /he/she not can come  
 ‘Because Lao Li<sub>i</sub> is ill, (he<sub>i/j</sub>/she<sub>i/j</sub>/I/we/they) cannot come’

My view on the identification of Topic in Chinese is that, as Subject and Topic enter into two different structures at two different levels of linguistic description, one being a category in the grammatical organization of a clause and the other being a category in the organization of the clause as a message, they should not be analyzed at the same level. The fact that the Chinese language lacks explicit formal linguistic coding, such as Subject-Predicate concord, to identify a Subject suggests that, in the organization of a Chinese clause, what is more important is the discourse functional structure of the clause as a message rather than the formal grammatical relations among the constituents. Hence, as I have pointed out elsewhere (Xu 1984b, 1989), as far as its discourse functional structure is concerned, sentence (12) can be analyzed as having the structure in (16) (where S = Sentence/ clause, T = Topic, C = Comment).



In essence, this analysis treats almost all the preverbal phrases and clauses as a Topic of one sort or another. Thus, I propose the following Topic Identification Principle for the analysis of the discourse functional structure of Chinese clauses (cf. Xu 1995, 1996):

(17) Topic Identification Principle in Chinese:

In a Chinese clause, any preverbal NP that expresses a participant in a process described by the verb in the clause should be treated as Topic.

This positionally determined notion of Topic corresponds very closely to Halliday's notion of Theme (or more precisely his notion of "Topical Theme"), which, together with Rheme, constitutes what Halliday calls the thematic structure of a clause. On Halliday's view (see e.g. Halliday 1970, 1985), in a typical or "unmarked" case, the Theme in a clause is also the Subject in the grammatical structure and the Given in the informational structure of the clause. When the Theme and the Given in the two structures of a clause are conflated, we have a "Topic" in Halliday's sense.

To my mind, this definition of Topic remains the clearest and can be most conveniently applied to text or discourse analysis. Moreover, as my analysis deals mainly with written texts, in which the intonationally determined information structure of Given and New usually does not apply, I use the term Theme in place of the popular but sometimes confusing term of Topic used in the literature.

However, because of the general non-applicability of informational structure in the analysis of written texts, a Theme of a clause can usually be seen as the Topic except in cases where a contrast is clearly stated or otherwise implied. I therefore choose to use the more popular term of Topic instead of Halliday's Theme or Topical (or ideational) Theme at the risk of confusion (for a more detailed discussion on the modification and re-analysis of Halliday's notion of Topical Theme as Topic and its identification, see Xu 1995, 1996).



Note also that when a Topic is used contrastively, which more often occurs in spoken discourse, it is not always definite and anaphoric, as is illustrated in (18), and hence can usually be safely excluded from the study of definite NP anaphora in written discourse.

- (18) 菜 我还能吃一点, 酒 我是 一点也不能  
*Cai wo hai neng chi yidianr, jiu wo shi yidianr ye bu neng*  
 Food I still can eat a little bit, wine I EMP a little even not can  
 喝 了  
*he le*  
 drink CRS  
 'Food, I can still eat a little bit; wine, I cannot drink any more'

## 2.2 Topic and preferred co-referential interpretation in Chinese complex sentences

A typical complex sentence consists of a main clause and a clause subordinate to it. In Chinese, the subordinate clause may either precede the main clause or follow it, as is illustrated in (19). However, when the subordinate clause follows the main clause, it is often intended as an afterthought on the statement made in the main clause (cf. Chao 1968: 115). Therefore, in what follows, we shall focus only on cases in which the subordinate clause precedes the main clause.

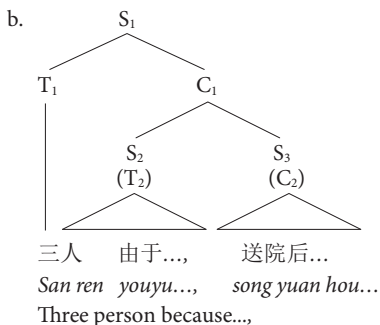
- (19) a. 因为 小王 病了, 他没有 来。  
*Yinwei Xiao Wang bin le, ta meiyou lai.*  
 Because Xiao Wang ill CRS, he not come  
 'Because Xiao Wang was ill, he didn't come'
- b. 小王 没有 来, 因为 他病了。  
*Xiao Wang meiyou lai, yinwei ta bin le.*  
 Xiao Wang not come, because he ill CRS  
 'Xiao Wang didn't come, because he was ill'

Chao (1968: 113) remarks that, in a Chinese complex sentence, what would generally be analyzed as an adverbial subordinate clause in the western grammatical tradition is in fact better treated, when it occurs at the beginning of a sentence, as the Subject of the sentence, with the main clause treated as the Predicate. As he uses the terms Subject and Predicate in the sense of Topic and Comment (or more precisely, perhaps in the sense of Halliday's ideational Theme and Rheme) in so far as their grammatical meaning is concerned (Chao 1968: 69), we can interpret his remark as meaning that a subordinate clause in a Chinese complex sentence is better understood as the Topic of the sentence and the main clause as the Comment.

For the analysis of NP anaphora in Chinese complex sentences, a further distinction should be made between a subordinate clause as the Topic of the whole sentence and a subordinate clause as a Topic within the Comment part of a higher Topic-Comment structure. In the spirit of Chao's analysis, this distinction can be illustrated with the two sentences in (20), whose structures are schematically shown in a simplified form in (21).

- (20) a. 由于 港人 喜欢 冬天 进补, 令  
*Youyu gangren xihuan dongtian jin bu, ling*  
 Because Hong Kong people like winter take tonic food, make  
 受保护 及 濒临绝种 动物 的非法 入口 数字 不断  
*shoubao hu ji binlinjuezhong dongwu de feifa rukou shuzi buduan*  
 protected and endangered animals PO illegal import number keep  
 上升。  
*shangsheng*  
 rising.  
 'Because Hong Kong people like to take tonic food to build up their health in winter, the number of illegally imported animals of protected and endangered species keeps rising'  
 (《成报》 *Cheng Bao* 'Sing Pao Daily News', 1989, 12, 12)
- b. 三 人 由于 伤势 过重, 送 院 后 终  
*San ren youyu shangshi guo zhong, song yuan hou zhong*  
 Three person because wounded too seriously, send hospital after finally  
 告 不治。  
*gao buzhi.*  
 announce die  
 'Three of them, because they were seriously wounded, died in the hospital'  
 (《明报》 *Ming Bao* 'Ming Pao Daily News', 1990, 4, 19)

- (21) a.
- 
- 由于 港人..., 令...  
*Youyu gangren..., ling...*  
 Because HK people, make ...



In (20a), the *youyu* 'because' clause is immediately dominated by S, as is illustrated in (21a), and therefore it is the Topic of the whole sentence. In this case, the NP *gangren* 'Hong Kong people' in the *youyu* clause does not serve as the Topic of the whole sentence, but only as that of the subordinate clause. In contrast, in (20b), the *youyu* clause is not immediately dominated by  $S_1$ , but by  $C_1$  under  $S_1$ , as is illustrated in (21b). The  $T_1$  that is immediately dominated by  $S_1$  in this case is the NP *san ren* 'three person', and therefore it is the primary Topic of the whole complex sentence. Another structural difference between the two sentences is that the C in (21a) is a VP, thus the whole sentence should perhaps be more appropriately identified as a pregnant sentence with an embedded subject clause rather than a complex sentence, though a subordinate conjunction is used in it; whereas in (21b) the  $C_1$  consists of a Topic ( $T_2$ ) and a Comment ( $C_2$ ), each of which is a clause by itself, and hence instantiates a genuine case of a complex sentence. In the following discussion, therefore, sentences like (20a) are excluded.

Another characteristic of subordinate clauses peculiar to Chinese is that the subordinate conjunction can either precede or follow the subject NP of the clause. And the possibility or frequency of occurrence of a co-referential zero or full pronoun in the subject position of the main clause of the complex sentence depends very much on the syntactic position of the subordinate conjunction.

In his analysis of the sentences in (22) (his examples 126–129; star in the original), C-T. J. Huang (1982: § 5.4.2) argues that the zero in (22a–d) is a pro, and according to the Pro-Drop Parameter it must be identified with the closest Subject.

- (22) a. 张三<sub>i</sub> 虽然 没有 空  $\emptyset_i$  还是 来 了。  
*Zhangsan<sub>i</sub> suiran meiyou kong  $\emptyset_i$  haishi lai le.*  
 Zhangsan though not free, (he) still come PFV  
 'Although Zhangsan<sub>i</sub> was not free, (he<sub>i</sub>) nevertheless came'
- b.  $\emptyset_i$  虽然 没有 空, 张三<sub>i</sub> 还是 来 了。  
 *$\emptyset_i$  suiran meiyou kong, Zhangsan<sub>i</sub> haishi lai le.*  
 (He) though not free, Zhangsan still come PFV  
 'Although (he<sub>i</sub>) was not free, Zhangsan<sub>i</sub> nevertheless came'

- c. 虽然 张三<sub>i</sub> 没有 空, 他<sub>i</sub> 还是 来了。  
*Suiran Zhangsan<sub>i</sub> meiyou kong, ta<sub>i</sub> haishi lai le.*  
 Though Zhangsan not free, he still come PFV  
 ‘Although Zhangsan<sub>i</sub> was not free, he<sub>i</sub> nevertheless came’
- d. \*\*虽然 张三<sub>i</sub> 没有 空, Ø<sub>i</sub> 还是 来了。  
 \**Suiran Zhangsan<sub>i</sub> meiyou kong, Ø<sub>i</sub> haishi lai le.*  
 Though Zhangsan not free, (he) still come PFV  
 ‘Although Zhangsan<sub>i</sub> was not free, (he<sub>i</sub>) nevertheless came’

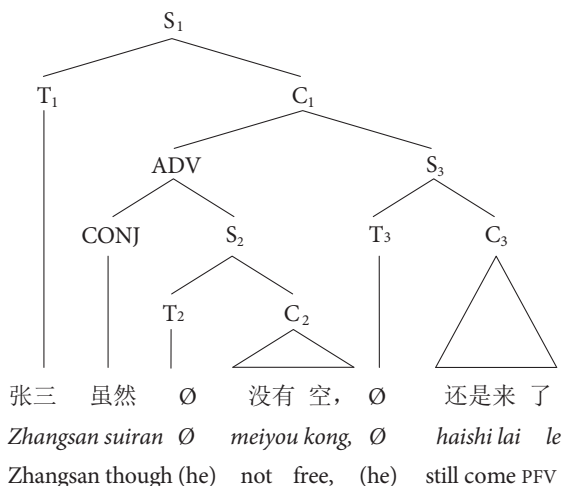
As *Zhangsan* in (22b) c-commands and in (22a) weakly c-commands the zero, the zero in the two sentences can be identified with *Zhangsan*, and hence the two sentences are well-formed.<sup>2</sup> *Zhangsan* in (22d), on the other hand, is not directly dominated by the highest node of the adverbial clause and therefore cannot even weakly c-command the zero. Consequently, the zero in (22d) cannot be identified, violating the Pro-Drop Parameter, and hence the sentence is not well-formed. If a lexical pronoun occurs in such a position, as in (22c), then the sentence will be well-formed, because a lexical pronoun does not require an identifier.

For the moment, I ignore complex sentences like (22b), because from the discourse perspective, the zero in such sentences usually does not refer cataphorically merely to the subject of the main clause that follows it, but also refers anaphorically to an entity talked about in the preceding part of the text. In a discourse, the full NP in the subject position of the main clause in sentences like (22b) is often used for reidentification (cf. Bolinger 1979: 298, C. I. Li 1985: 32).

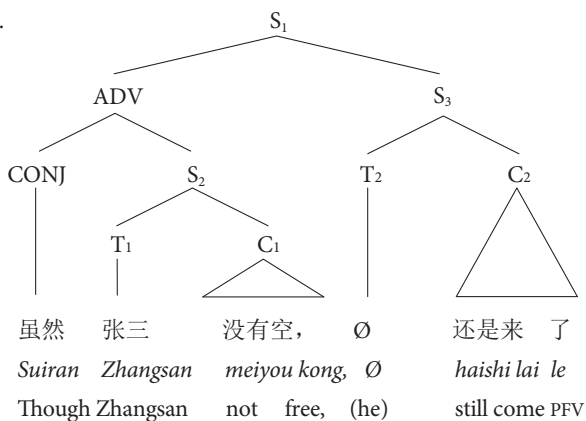
The difference between (22a) and (22d) lies in that, in the former, the subordinate conjunction *suiran* ‘although’ follows the sentence-initial NP *Zhangsan*, while in the latter it precedes *Zhangsan*. *Zhangsan* in (22d) is clearly the subject of the subordinate clause, which, according to the Topic Identification Principle as specified in (17), is also the Topic of the subordinate clause. In the case of (22a), it is not clear whether *Zhangsan* is merely the Topic of the subordinate clause or the Topic of the whole complex sentence. C-T. J. Huang, probably following Chao’s (1968: 114) suggestion that the subordinate conjunction in a complex sentence “can follow *the subject of the dependent clause*” (my italics), assumes that, like *Zhangsan* in (22d), *Zhangsan* in (22a) is also the subject of the subordinate clause. As such, it would also be the Topic of the subordinate clause. I, however, would like to postulate that it is the Topic of the whole complex sentence and not merely the Topic of the subordinate clause. I argue that sentences like (22a) and (22d) have different thematic structures as illustrated in (23a) and (23b) (where S = Sentence/ clause, T = Topic, and C = Comment).

2. “Weakly c-command” is defined as “A weakly c-commands B if and only if the node that directly dominates A c-commands B”.

(23) a.



b.



As (23a) shows, *Zhangsan* in (22a) is the Topic ( $T_1$ ) of the whole complex sentence ( $S_1$ ), whose Comment ( $C_1$ ) consists of two clauses  $S_2$  and  $S_3$ . Whereas *Zhangsan* in (22d), as is shown in (23b), is merely the Topic ( $T_1$ ) of the subordinate clause ( $S_2$ ), whose Comment ( $C_1$ ) is *meiyou kong* ‘is not free’. We may further assume that the notion of c-command also applies here. For, after all, what the notion of c-command tries to capture is, in essence, the relative structural salience of one constituent over another in a structure. Not all the NPs that may function as Topic in a thematic structure have equal status. Their relative salience also depends on the relative prominence of the syntactic position they occupy in a thematic structure. Thus, a Topic that c-commands another in a thematic structure is a structurally more salient Topic over the other. From (23) we can see that *Zhangsan* ( $T_1$ ) in (23a) c-commands the two zeros in  $T_2$  and  $T_3$ , whereas *Zhangsan* ( $T_1$ ) in (23b) does not even weakly c-command the zero in  $T_2$ .

Here, the factor of *structural saliency* comes into play. It stipulates that a structurally more salient NP is more likely to govern the interpretation of a less salient one within the structure. In (23a), as the c-commanding  $T_1$  is structurally more salient than  $T_2$  and  $T_3$ , it is more likely to govern the interpretation of  $T_2$  and  $T_3$ ; in (23b), on the other hand, as neither  $T_1$  nor  $T_2$  shows structural saliency over the other, the factor of structural saliency has no influence in this case.

In other words, I argue that, in terms of Cognitive Grammar,  $T_1$  in (23a) is the conceptual reference point (Langacker 1993, 2009; van Hoek 1997), whose dominion is the whole complex sentence  $S_1$ , and hence  $T_2$  and  $T_3$  within the dominion can be easily construed as coreferential with it.  $T_1$  in (23b), on the other hand, is merely the reference point in the interpretation of the adverbial clause  $S_2$ . As  $T_2$ , the Topic NP of the main clause  $S_3$ , lies outside the dominion of  $T_1$ , it is somewhat difficult to construe it as coreferential with  $T_1$ .

Now, if we look at the possible referential relations between NPs in the Topic/Subject positions of the sentences having the structures of (23a) and (23b), the following four basic patterns can be identified: (i) the NPs are conjoint in reference, with the first NP placed after the subordinate conjunction (I refer to this structure as the CA pattern); (ii) the NPs are conjoint in reference, with the first NP placed before the subordinate conjunction (the CB pattern); (iii) the NPs are disjoint in reference, with the first NP placed after the subordinate conjunction (the DA pattern); and (iv) the NPs are disjoint in reference, with the first NP placed before the subordinate conjunction (the DB pattern). The structures of these four patterns are schematically shown in (24), where the subscripts indicate referential relations between the NPs and coreferential NPs are co-indexed. In cases where the first NP is placed before the subordinator, as the  $\emptyset$  following the subordinate conjunction in the subordinate clause, i.e.  $T_2$  in (23a), is obligatorily coreferential with NP1 in both CB and DB patterns, it is ignored. In what follows, we shall use NP1 and NP2 to refer to the structural position of the two Topic/Subject NPs respectively, with NP2 always referring to the Topic/Subject NP of the main clause.

- (24) a. CA pattern: CONJ NP<sub>1</sub>..., NP<sub>2</sub><sub>i</sub>...  
 b. CB pattern: NP<sub>1</sub> CONJ..., NP<sub>2</sub><sub>i</sub>...  
 c. DA pattern: CONJ NP<sub>1</sub>..., NP<sub>2</sub><sub>j</sub>...  
 d. DB pattern: NP<sub>1</sub> CONJ..., NP<sub>2</sub><sub>j</sub>...

As argued above, when NP1 precedes the subordinate conjunction, it is the reference point of the whole complex sentence and has structural saliency over NP2 that lies within its dominion. This structural relation strongly favors an interpretation of a zero or a compatible pronoun in the NP2 position as co-referential with NP1. Therefore, when coreference is intended by the speaker/writer, we expect that CB is the preferred pattern. On the other hand, if disjoint reference is intended, the

DA pattern seems to be the optimal one, because in this pattern, NP1 is merely the reference point of the subordinate clause, and as such it does not have structural salience over NP2 in the main clause, and hence it is much more difficult to induce a coreferential relation with it. Thus, our first hypothesis concerning the preferred referential patterns in Chinese complex sentences can be stated as in (25).

(25) Hypothesis 1:

Other things being equal, when coreference between NPs in the Topic/subject positions of a complex sentence is intended, CB would be the preferred pattern; whereas when disjoint reference is intended, DA would be the preferred pattern.

### 3. Accessibility marking and anaphora

From the discussion thus far, we can see that Topicality is a positional status associated with an NP in the discourse functional structure of a sentence. Its importance for the interpretation of NP anaphora resides in the fact that it marks the (primary) Topic of the sentence as the preferred antecedent for the anaphor(s) co-occurring in the sentence. This is one type of surface linguistic cue that the speaker/writer can use to signal intended coreferential relations between NPs and that the listener/reader can rely on for the interpretation of the preferred referential meaning intended by the speaker/writer.

Another surface linguistic cue the speaker/writer may employ to signal to the listener/reader the intended referential relations between NPs in a discourse is the surface linguistic marking of the Accessibility of the referent, which is associated with the form of the NP as the anaphor. In Xu (1984a: 89), I have shown that the preferred pattern of referent introduction and tracking in a piece of Chinese text, which is mainly about that referent, tends to take the schematic form as shown in (26) (where ind. = indefinite, dem. = demonstrative, pron. = pronoun).

(26) ind. NP → (dem. + NP →) pron. → ∅

This, in effect, postulates that there is a degree of markedness in the different means of referring. That is to say, when a referent is first introduced, a more marked form, e.g. a full NP, is used to single out that entity as the referent. After that, and as the referent is firmly established in the discourse, a more attenuated form of referring, e.g. a pronoun or its zero form, is used. From a listener/reader's point of view, a more marked form used in the text or discourse suggests that the entity mentioned is less readily identifiable in the context, while a more attenuated form implies that the referent is already established and can be easily identified.

This aspect of NP anaphora is more systematically investigated by Ariel (1990, 2013), in which she proposes a theory of Accessibility to account for NP anaphora used in language. As she has argued, marked forms of referring are Low Accessibility Markers, which include names and definite descriptions, because the entities they refer to are less accessible to the listener/reader's mind and people usually have to search their encyclopaedic knowledge to retrieve those entities. More attenuated forms of referring, on the other hand, are High Accessibility Markers, which include zeros and third-person pronouns, because the entities they refer to are recently mentioned in the immediate context and are usually retained in the short-term memory of the listener/reader's mind. In between, there are some Intermediate Accessibility Markers, which include first- and second-person pronouns and demonstratives, whose referents are typically those present in the physical environment of the communicative event. Moreover, I contend that, as a High Accessibility Marker, a zero is more attenuated than a pronoun and suggests higher Accessibility of its referent than a pronoun does, though both of them are High Accessibility Markers.

The notion of Accessibility is a psychological or cognitive one, referring to the relative ease or difficulty with which an entity in the mental representation of a discourse can be retrieved. It is an anaphor-related notion, and the choice of a specific Accessibility Marker, i.e. the form of an anaphor, is largely determined by the structural salience of the antecedent NP and the physical proximity between the antecedent and the anaphor NPs. This is because a text is often both hierarchically and linearly organized. Other things being equal, an entity denoted by an NP occupying a structurally more salient position or at a higher level in the hierarchical organization of a text is more accessible, since in interpreting that NP, the reader is more likely to attach greater importance to that entity and to keep it in mind in the interpretation of the other parts of the text that are less salient or at a lower level. An entity denoted by an NP that is closer to another NP in the linear organization of a text is also more accessible, since by the time the second NP is reached in the process of interpreting the text the entity denoted by the first NP is more likely to be still fresh in the reader's mind.

As far as anaphora in Chinese complex sentences is concerned, as NP1 in the CB pattern c-commands NP2 whereas NP1 in the CA pattern does not, it is more salient in the hierarchical structure of the sentence than NP1 in the CA pattern. Hence, in the case of CB, by the time NP2 is reached in the process of text comprehension, the entity denoted by NP1 is more accessible than the entity denoted by NP1 in the case of CA. It is to be expected, then, that a higher Accessibility Marker, i.e. a zero rather than a full pronoun, is more likely to be used in the NP2 position in the CB pattern, since its referent is more accessible than that of the NP2 in the CA pattern.



In the linear organization of text, the distance between the two NPs in all four patterns can be understood in terms of the sheer physical distance measurable by the number of words that separate the two. In distance terms, NP1 is closer to NP2 in the CA pattern than in the CB pattern. However, as the difference between the two patterns is only a difference of one word, we expect that its influence on the use of anaphora is much weaker and, other things being equal, will be overridden by the structural distance. Thus, my second hypothesis regarding the preferred referential patterns in Chinese complex sentences can be stated as in (27):

- (27) Hypothesis 2:  
 Other things being equal, zero anaphora would be the norm of anaphoric reference in the CB pattern, and less so in the CA pattern.

## 4. Data analysis

### 4.1 Methodological preliminaries

To test the two hypotheses presented herein, a statistical analysis of the distribution of the four referential patterns was conducted. The data used were taken from the Chinese Corpus compiled in the Department of Chinese and Bilingual Studies of Hong Kong Polytechnic University. They consist of sentences actually appearing in the articles of five newspapers published in Hong Kong, Taiwan and mainland China during the period of 1989–1990. Four subordinate conjunctions were singled out, namely, *yinwei* ‘because’, *youyu* ‘because’, *suiran* ‘although’, and *jinguan* ‘though’, and all the sentences containing these words were printed out. Then, the number of occurrences of the sentences in the four referential patterns were counted. In the case of conjoint reference, the number of occurrences of zero anaphora as NP2 in the CA and CB patterns were also tallied. Since personal reference is the focus of this study, a separate analysis of sentences involving personal reference was performed.

### 4.2 Results and discussion

Altogether, a total of 687 applicable sentences were collected from the pool of data, out of which 160 sentences involve personal reference. By and large, the results confirm the two hypotheses.

Let us look first at the distribution of the four referential patterns in the complex sentences investigated. Table 1 shows the overall distribution. As can be seen from the table, in the case of conjoint reference, CB is indeed the preferred pattern, constituting about 86.1% of the total; and in the case of disjoint reference, the DA

pattern is the most favorite choice, as approximately 95.8% of the sentences in which disjoint reference is intended exhibit this pattern.

**Table 1.** Distribution of referential patterns in all complex sentences investigated

Subord. Conj.	Conjoint Reference			Disjoint Reference			TOTAL
	CA	CB	SUM	DA	DB	SUM	
<i>Yinwei</i>	1	29	30	26	0	26	56
<i>Youyu</i>	10	83	93	281	1	282	375
<i>Suiran</i>	20	86	106	111	18	129	235
<i>Jinguan</i>	2	6	8	13	0	13	21
SUM	33	204	237	431	19	450	687
%	13.9	86.1	100	95.8	4.2	100	

Subord. Conj. = Subordinate Conjunction

% = percentage of cases involving either conjoint or disjoint reference

In the case of personal reference, the distribution is summarized in Table 2. It shows that a more or less similar distributional pattern obtains: 84.0% of the sentences are used in the CB pattern when conjoint reference is intended, and 85.4% of the sentences are used in the DA pattern when disjoint reference is intended. These results lend strong support for Hypothesis 1.

**Table 2.** Distribution of referential patterns in complex sentences with personal reference

Subord. Conj.	Conjoint Reference			Disjoint Reference			TOTAL
	CA	CB	SUM	DA	DB	SUM	
<i>Yinwei</i>	1	20	21	4	0	4	25
<i>Youyu</i>	6	39	45	13	1	14	59
<i>Suiran</i>	12	38	50	18	5	23	73
<i>Jinguan</i>	0	3	3	0	0	0	3
SUM	19	100	119	35	6	41	160
%	16.0	84.0	100	85.4	14.6	100	

Subord. Conj. = Subordinate Conjunction

% = percentage of cases involving either conjoint or disjoint reference

As for Hypothesis 2, the results of the statistical analysis are presented in Table 3. If all the complex sentences investigated are considered, then we see that zero anaphora is used in 91.2% of the CB sentences, whereas it is used in only 57.6% of the CA sentences. In the case of personal reference, zero anaphora is used in 90.0% of the CB sentences, but used only in 52.6% of the CA sentences. Again the results support my hypothesis.

Table 3. Percentage of zero anaphor in the main clause in CA and CB patterns

Subord. Conj.	Str. Pat.	In All Cases			In Personal Reference		
		Obsv.	Zero	%	Obsv.	Zero	%
<i>Yinwei</i>	CA	1	1	100.0	1	1	100.0
	CB	29	28	96.6	20	19	95.0
<i>Youyu</i>	CA	10	6	60.0	6	4	66.7
	CB	83	81	97.6	39	37	94.9
<i>Suiran</i>	CA	20	10	50.0	12	5	41.7
	CB	86	71	82.6	38	31	81.6
<i>Jinguan</i>	CA	2	2	100.0	0	0	
	CB	6	6	100.0	3	3	100.0
SUM	CA	33	19	57.6	19	10	52.6
	CB	204	186	91.2	100	90	90.0

Subord. Conj. = Subordinate Conjunction

Str. Pat. = Structural Pattern

Obsv. = total number of observed cases

Zero = number of cases in which the NP in the main clause is a zero-pronoun

% = the percentage of zeros in all observed cases (= Zero/Obsv.)

But here we may have a sneaking suspicion as to why the percentage of the CA sentences in which zero anaphora is used is also quite high: 57.6% in all the cases and 52.6% in the case of personal reference. I propose this is due largely to two factors. The first is what I have called proximity. As a subordinate clause and its main clause combine to form a complex sentence, NP1 and NP2 are normally not very far apart from each other. The other major factor is perhaps the close semantic relation between the two clauses, which tends to create what Levinson (1987: 115) has called the “same Agent/Patient as the last clause” effect as previously mentioned. The combination of these two factors tends to motivate a Chinese language user to use zero anaphora.

It is interesting to note here that C-T. J. Huang (1982) regards zero anaphora in sentences with the CA pattern as ill-formed. His example has already been cited above in (22d) (= his example (129)) and is repeated below for the reader’s convenience as (28).

- (28) \*虽然 张三<sub>i</sub> 没有 空, Ø<sub>i</sub> 还是 来 了。  
 \**Suiran Zhangsan<sub>i</sub> meiyou kong, Ø<sub>i</sub> haishi lai le.*  
 Though Zhangsan not free, (he) still come PFV  
 ‘Although Zhangsan<sub>i</sub> was not free, (he<sub>i</sub>) nevertheless came’

As Table 3 shows, however, if all the Chinese complex sentences investigated are considered, there are altogether 19 sentences with the CA pattern in which zero

anaphora is used. Of course, as inanimate pronouns are rarely used in Chinese when the entity involved is inanimate, a zero-pronoun or a repeated noun is often used instead of a pronoun. Therefore, zero anaphora referring to an inanimate entity used in sentences with the CA pattern should be expected. For instance, in the case of sentences with the subordinate conjunction *suiran* ‘although’, half (5 out of 10) of the sentences in the CA pattern involve zero anaphora for inanimate reference. One example of such sentences is given in (29).

- (29) 虽然 美国 经济<sub>i</sub> 出现 放缓 现象, 但  $\emptyset_i$  不  
*Suiran Meiguo jingji<sub>i</sub> chuxian fanghuan xianxiang, dan  $\emptyset_i$  bu*  
 Though American economy show stagnation phenomenon, yet (it) not  
 会 到 衰退 阶段。  
*hui dao shuaitui jieduan.*  
 likely arrive recession phase  
 ‘Although the American economy<sub>i</sub> shows signs of stagnation, (it<sub>i</sub>) will not  
 enter a phase of recession’  
 (《明报》 *Ming Bao* ‘*Ming Pao Daily News*’, 1990, 1, 6)

But, Table 3 also shows that even in the case of personal reference, in which the people referred to are definitely animate entities, there are still 10 sentences with the CA pattern in which zero anaphora is used, making up a total of 52.6% of all the sentences in our data involving personal reference in the CA pattern. This result shows that C-T. J. Huang’s syntactic account of the distribution of zeros in Chinese complex sentences is at variance with the observed facts, at least as far as newspaper-style writing is concerned. Three examples in which the subordinate conjunction *suiran* is used are given in (30).

- (30) a. 虽然 B仔<sub>i</sub> 才 三个 星期大, 但  $\emptyset_i$  已 懂得 凭  
*Suiran B-zai<sub>i</sub> cai sange xingqi da, dan  $\emptyset_i$  yi dongde ping*  
 Though B-baby only three weeks old, but (he<sub>i</sub>) already know by  
 气味 分出 爸爸 与 妈妈。  
*qiwei fenchu baba yu mama.*  
 smell distinguish father and mother  
 ‘Although B-baby<sub>i</sub> is only three weeks old, (he<sub>i</sub>) can already distinguish  
 his father from his mother by smell’  
 (《明报》 *Ming Bao* ‘*Ming Pao Daily News*’, 1990, 3, 3)
- b. 虽然 他<sub>i</sub> 有份 入围, 但  $\emptyset_i$  觉 获奖 机会 甚 微。  
*Suiran ta<sub>i</sub> youfen ruwei, dan  $\emptyset_i$  jue huo jiang jihui shen wei.*  
 Though he get shortlisted, but (he) feel get prize chance very little  
 ‘Although he<sub>i</sub> is able to get into the final, (he<sub>i</sub>) thinks that there is little  
 chance to win the prize’  
 (《明报》 *Ming Bao* ‘*Ming Pao Daily News*’, 1990, 3, 29)

- c. 虽然 他<sub>i</sub> 实时 受伤, 但  $\emptyset_i$  却 一直 保持  
*Suiran ta<sub>i</sub> shishi shoushang, dan  $\emptyset_i$  que yizhi baochi*  
 Though he<sub>i</sub> real time injured, but (he<sub>i</sub>) yet always remained  
 神智清醒。  
*shenzhiqingxing.*  
 conscious  
 ‘Although he<sub>i</sub> was injured on the spot, (he<sub>i</sub>) remained conscious  
 throughout’

(《信报》 *Xin Bao* ‘Hong Kong Economic Journal’ 1990, 4, 12)

The NP1 involved in (30a) is a full NP *B-zai* ‘B-baby’, whereas in (30b) and (30c) the pronoun *ta* ‘he’ appears. In all 10 cases in which zero anaphora is used in sentences with the CA pattern for personal reference, 7 sentences (70%) have a pronoun as NP1 while only 3 sentences (30%) have a full NP as NP1. This, I believe, follows from the cumulative nature of Accessibility: other things being equal, an entity referred to by a higher Accessibility Marker becomes more accessible than the one referred to by a lower Accessibility Marker. If the NP1 in a sentence of the CA pattern is a pronoun, which is a High Accessibility Marker, it indicates that the referent is highly accessible already, and therefore it is more natural to use a zero in the NP2 position to refer to it. In a syntactic account, such as the one adopted by C-T. J. Huang, whether the NP in the NP1 position is a pronoun or a full NP has no influence on the interpretation of the zero in the NP2 position. In both cases, this account predicts that a zero is not permissible in the NP2 position if the two NPs are co-indexed.

## 5. Conclusion

In this study, I have adopted a cognitive approach to the study of inter-clausal NP anaphora in complex sentences in written Chinese texts. I have shown that, properly defined and sufficiently operationalized, the two notions of Topicality and Accessibility can be employed to account for the preferred patterns of anaphoric reference in the majority of the Chinese complex sentences analyzed. Where they seem to fail, there are other discourse semantic and pragmatic factors that are at play, among which are the proximity of the antecedent and the anaphor NPs, and the close inter-clausal semantic relation between the main and the subordinate clauses, which tends to create the “same agent/patient as the last clause” effect.

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# Complementing cognitive linguistics with pragmatics and vice versa

## Two illustrations from Chinese

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In this chapter I present two examples in Chinese that illustrate the efficacy of combining cognitive linguistics with pragmatics in the study of language. The first is the greeting *ni chi le mo?*(你吃了没?) ‘How are you?’ in a Chinese dialect about which I argue that an adequate analysis is obtained by combining the basic tenets of construction grammar with principles of the speech act theory. The second comes from metaphor. By looking at metaphors that are not meant to help the hearer understand a thing but rather to see it differently, I make the same point, that cognitive linguistics and pragmatics can complement each other so that a deeper understanding of language is achieved.

**Keywords:** construction grammar, speech act theory

### 1. Introduction

Recent years have seen a welcome move in cognitive linguistics, that is, cognitive linguistics has been combined with other sub-disciplines of linguistics to further enhance the study of language. There is cognitive sociolinguistics (Kristiansen and Dirven 2008; Geeraerts 2003) that looks at language variation from the perspective of cognitive linguistics. There is cognitive stylistics/poetics (Semino and Culpepper 2002; Stockwell 2002) that adopts cognitive linguistics in the study of literary works; there is cognitive critical discourse analysis (Hart and Lukeš 2007), and there is the attempt to make the presence of cognitive linguistics felt in the area of applied linguistics and language teaching (Pütz 2010).

As one might naturally expect, the intersection of cognitive linguistics and pragmatics has also been explored. Schmid (2012) may be the best representation



of this endeavor. Twenty papers are included in this more than 600-page volume, in which authors explore how cognitive principles and semantic principles can be taken advantage of in the study of language use (Part II, see Singer and Lea; but particularly Taylor), how language acquisition and disorder can be studied from a cognitive perspective (Part III, see Giora, Cummings), how speakers construe non-explicit meaning in context (Part IV, see Horton, Deignan), and how to account for the emergence of linguistic structures (Part V, see Harder, Trousdale.)<sup>1</sup>

Even in Schmid's volume, which is edited by a cognitive linguist and includes experts in their respective fields, the discussions between cognitive linguistics and pragmatics seem to be vague for the most part. In the introduction, the editor notes, for instance, that "cognitive pragmatics can be broadly defined as encompassing the study of the cognitive principles and processes involved in the construal of meaning-in-context" (2012: 3). The term *cognitive* thus used appears to be far more general in meaning than its counterpart in cognitive linguistics, a topic I take up in the next section. As a result, one is left wondering what precisely *is* the relationship between cognitive linguistics and pragmatics beyond the well-received idea that they are both immediately relevant in the study of language use. This is also seen in many of the chapters cited in the preceding paragraph.<sup>2</sup>

What I do in this chapter is different from those previous studies. I propose that the best relationship between cognitive linguistics and pragmatics is complementation. In other words, I argue that each of the two offers something that the other does not to the study of human languages. A fuller understanding of language use can therefore be achieved by taking advantage of both. Seen in this light, my argument is more specific than what has been made in the literature and more – I would like to say – exact. The evidence I use is from the Chinese language, although – as I discuss at the end of the chapter – the same idea should hold in other languages.

As the first illustration, I discuss the greeting *ni chi le mo?* (你吃了没?) 'How are you?' in a Chinese dialect, demonstrating that construction grammar (Goldberg 1995, 2006) explains why the expression has the meaning it has while pragmatics

1. Other efforts along these lines are also found in journal articles, e.g. Kleinke (2010), who argues that cognitive linguistic principles ought to be part of Grice's (1975) Cooperative Principle.

2. Reading Schmid's volume, one is reminded of the term *cognitive pragmatics* used by others, which, according to Kasher (<http://www.tau.ac.il/~kasher/pprag.htm>), began to appear in the 1960s, including John Searle and Noam Chomsky. This version of *cognitive pragmatics* is defined by Kasher on the website as "that part of the cognitive studies of language that is related to some system of pragmatic knowledge of language use". Kasher lists as representatives of this approach Sperber and Wilson (1986) and Kasher (1988), and I would say that more recent works such as Bara (2010, 2011) and Carston (2002) are similar.

offers an account why that meaning has come into being in the first place. As the second illustration, I turn to metaphors, offering a detailed analysis of the Chinese metaphor *jiaoshi shi renlei de gongchengshi* 教师是人类的工程师 ‘Teachers are the engineers of the human soul’ to show that the theory of conceptual metaphor explains why metaphor works the way it does while pragmatics is the field in which to seek reasons why many metaphors function not to help the hearer understand something new but to force her to see something “old” more effectively.

## 2. Illustration 1: *Ni chi le mo* (‘How are you?’)

In a dialect spoken in a suburb in Shaanxi Province, speakers greet each other with:

- (1) ni chi le mo? (你吃了没?)<sup>3</sup>  
 you eat PFV Q  
 ‘Have you eaten? = How are you?’

As a way of greeting, the utterance is used at any time – morning, mid-morning, noon, afternoon, at night – and in any place – at home, at work, in the market place, on the bus. Moreover, one can only respond by saying

- (2) wo chi le (我吃了)  
 I eat PFV  
 ‘I have eaten’ = ‘I’m fine’<sup>4</sup>

This simple utterance is an instance of what students of pragmatics call “formulaic” or “situation-bound” utterances (Kecskes 2016) and can be best explained by the theory of speech acts. It is rendered in the form of a question but it is not meant to be a question, as a question implies that an answer – either in the affirmative or the negative – is possible. It performs the function of greeting, an act

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3. My experience with this expression is direct – it is used in the community in which I grew up – so I view it as a very localized dialect. However, the expression may be used in other communities in China. Its existence – both its form and function – is acknowledged as early as 1978 by Morgan (1978) and as recently as 2016, the time of writing this chapter by Kecskes (2016: 109–110).

4. Quite often, the speaker of (2) will say (1) to reciprocate and get (2) as a response. So, the literal transliteration of the greeting routine in this community is:

- A. Have you eaten?  
 B. Yes. I have. Have you eaten?  
 C. Yes. I have.

of acknowledging the hearer and expression of good will. There are such formulaic utterances in languages all over the place (Kecskes 2016; Morgan 1978; Schiffrin 1987). *What's up?* is an example in English.

However, to say that *ni chi le mo?* 你吃了没? is a formulaic utterance for greeting should not be enough for the students of language use. The statement that something is formulaic should be the beginning of investigation, not the end. We should ask at least two questions with regard to utterances of this kind. The first is why individual words can be strung together to form a structure that means something seemingly different from what the words would suggest by themselves. The second is why it is this utterance that has become selected from other plausible alternatives by the speech community for the purpose of performing a greeting but not others. I will discuss these two questions in turn.

The answer to the first question can be sought in construction grammar. The basic tenets of construction grammar, as espoused by Goldberg (1995), is that language is composed of a series of constructions, defined as pairings of form and meaning. These constructions can be any linguistic unit: a morpheme, a phrase, a sentence. A construction, further, has a fixed form, with well-defined slots in its structural skeleton, and has a meaning that is greater than the sum of the meanings of its parts. In other words, in order for you to know the meaning of a construction, you cannot just add the meanings of its parts together.

The greeting utterance *ni chi le mo?* 你吃了没? is hence a construction that pairs the meaning of greeting with its fixed form. Its form is fixed in the same way as the form of any other construction is fixed in a language. It is no different from the passive construction in English, a pairing of the meaning that the entity denoted by the subject of the sentence is the patient – rather than the agent – of the action denoted by the verb with the form BE Vpast-participle.

From this we see that the construction grammar approach does not have to create a separate category for this set of fixed expressions. It suggests the integrity and coherence of the theory, placing the theory at a more advantageous position than its counterparts. The structuralist approach to language, for instance, has called these expressions “idioms”, things that have lost compositionality. Since these things cannot be analyzed internally, they are simply brushed aside and left alone. The same is true with the generative approach to language analysis.<sup>5</sup> For construction grammar, idioms are just like anything else. In Goldberg's (2006: 5)

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5. The loss of compositionality of these expressions poses a challenge to the generative approach. If we believe, as Chomsky and his colleagues would have us believe for decades now, that language is “generated” via a set of rules unique only to itself, we then would have reason to ask them why fixed-form expressions defy being analyzed in ways that other things are analyzed.

Table 1.1, for instance, she lists idioms together with other constructions such as “morpheme”, “word”, and “ditransitive” as “examples of constructions”.

Now the second question about *ni chi le mo?*: why has *ni chi le mo?* been selected from among other possible candidates to be the expression of greeting in the speech community, such as:

- (3) ni he le mo?  
 你 喝 了 没?  
 you drink PFV Q  
 ‘Have you drunk?’
- (4) ni Chuang le mo?  
 你 穿 了 没?  
 you dress PFV Q  
 ‘Have you dressed?’
- (5) ni shui le mo?  
 你 睡 了 没?  
 you sleep PFV Q  
 ‘Have you slept?’

It is here that construction grammar appears to be a bit at a loss. Goldberg (1995) uses the term “speech act constructions” for expressions like *ni chi le mo?* but does not dwell on why they have been privileged over others. In her 2006 work, she acknowledges the non-compositionality of idioms at various places (2006: 13, 55, 137, 161, 214) but does not offer much analysis on why they are the way they are.

The point I am making here – that construction grammar has left unanalyzed the issue of why these expressions behave the way they behave – is not meant to be a criticism of the approach. Each theory of language has a particular set of objectives and no theory can handle all aspects of language. The reason why the expression *ni chi le mo?* has been used in the relevant speech community as a way of greeting is cultural specific, and cultural specificity is not – and should probably not be – an objective of the theory of construction grammar, a theory aimed at explaining the overall architecture of human language. It is precisely here that pragmatics comes in handy, as its major objective is to study language use in context.

Morgan (1978) offers a detailed analysis of *goodbye* as an expression of farewell. I adopt his approach in my analysis of *ni chi le mo?* to demonstrate how pragmatics can complement construction grammar to achieve a more complete understanding of the expression.

Morgan proposes that there are two types of conventions in language: conventions of language and conventions of use. Conventions of language refer to what are typically called “idioms”, things that are fixed in form and expresses a

fixed meaning in all contexts. Take the English expression *the straw that breaks the camel's back*. On the one hand, the expression is fixed in form so that one cannot say any of the following:

- (6) \* the load/bag that breaks the camel's back
- (7) \* the piece of straw that breaks the camel's back.
- (8) \* the straw that injures/ruins the camel's back
- (9) \* the straw that breaks the donkey's/elephant's back
- (10) \* the straw that breaks the camel's leg/body

This feature, of course, is shared by *ni chi le mo?* in Chinese and fits the construction grammar account of idioms. The form of the idiom is unchangeable, i.e. *the straw that breaks the camel's back* can be used in any context that calls for its meaning. You could say that Peter's divorce, Mary's job loss, and the passing of Tom's wife is, for each of them, *the straw that breaks the camel's back*, in other words, an event that causes great stress in each case.

Convention of use is different. It applies to expressions that mean a thing only in a narrowly defined context. The meaning of *goodbye* is to express good wishes to the hearer, but you cannot use it to someone on first meeting or after hearing at a dining table that your dinner partner has been promoted. You can only use *goodbye* when parting with the hearer. Clearly, *ni chi le mo?* is an example of a convention of use.

Conventions of use come about through three steps. As a first step, three factors are in play: *occasion*, *goals* and *means*. Historically, the very first version of *goodbye* – *God be with you* – was said (means) on parting (occasion) to invoke the good will of God (goal) to the hearer. Over repeated usage, however, speakers became less and less clear of the goal and assumed that the utterance had the purpose of expressing one's good wishes (*God* got lost in the process!). More repeated usage made the goal disappear altogether so that English speakers simply said “God be with you” upon parting.

There were additional changes to the expression after that. Once the presence of God was completely erased from the speakers' mind in their saying *God be with you*, the principle of economy kicked in to reduce the utterance phonologically. *Goodbye* gradually came into being to replace *God be with you* so that the formula for parting becomes “upon parting, say *goodbye*”.

This process applies as well to *ni chi le mo?* in our Chinese dialect. In the area in which this utterance is used, poverty has been a historical issue for the people for centuries. In the sense that food is an essential requirement of life, we can

imagine that speakers may have had the following in mind when they began to say *ni chi le mo?* to others upon meeting:

- (11) Upon meeting (occasion), inquire about the hearer's wellbeing (goal) by asking her if she has eaten (saying *ni chi le mo?*).

Repeated use of an expression, as implied by Morgan (1978), has the effect of making its original goal vague and then lost. The goal of "inquiring about the hearer's wellbeing" gradually became lost. Instead, the goal of the utterance becomes asking if someone has eaten, and may be formulated as follows:

- (12) Upon meeting (occasion), ask the hearer if she has eaten by saying *ni chi le mo?*

Even that goal seems to have been erased by now: people meet and greet. Greeting seems to be something that people simply do for its own sake, not for the sake of something else. Therefore the final stage of the utterance seems to have been reached, which may be captured by (13):

- (13) Upon meeting, say *ni chi le mo?*

Once the utterance becomes no more than an expression of greeting, its propositional content is completely lost, together with the loss of its original goal. It becomes entrenched in speakers' minds as a frozen form, much like many other things in life that simply are or happen.

To summarize this section, on *ni chi le mo?*. The expression is challenging for linguists for two reasons. First, how to account for both its form and meaning. I have proposed that construction grammar handles this question in a simple and elegant way. The expression has a fixed form together with a well-defined meaning because it is a construction, defined as a pairing of form and meaning in the first place. Second, why this particular pairing but not others? I have drawn on Morgan's (1978) study of *goodbye* to demonstrate that *ni chi le mo?* may have its origin in the scarcity of food in the area in which it is used. Due to repeated use, the expression has lost its propositional content as well as the goal of uttering it so that it has become simply a way of greeting.

I discussed *ni chi le mo?* also for the purpose of demonstrating how cognitive linguistics and pragmatics can (or rather can be made to) complement each other. It should have become clear that a more insightful account of *ni chi le mo?* can only be obtained by tapping into both cognitive linguistics and pragmatics, as each of them is capable of handling one of the two key questions, not the other. The same point will be made in what follows, i.e. the illustration discussed in Section 3.

### 3. Illustration 2: Non-conceptual conceptual metaphors

The second illustration in this chapter for the purpose of showing how cognitive linguistics and pragmatics can benefit each other comes from the area of conceptual metaphor, a by-now very well-known field of study.

In the field of pragmatics, metaphor has not been studied in its own right. The most explicit treatment of metaphor theories is possibly that of H. P. Grice (1975), who sees metaphor as a case of violation of his maxim of quality: metaphor, Grice claims, is by definition semantically untrue. Since then, there have only been sporadic studies of metaphor in that light, exploring the effects of metaphor in specific genres (e.g. Chen 1993).

But why has metaphor come about in the first place? It must not have come about to provide speakers a means to violate the quality maxim because the quality maxim can be violated in innumerable ways. Moreover, using implicature to communicate has its drawbacks. First, it is less efficient. According to Grice, the interpretation of an implicature requires more steps in mental processing than the interpretation of an utterance that adheres to the maxims. Second, the meaning of an implicature is indeterminate, leaving room for misunderstanding. Therefore, rationality – a foundation of classical pragmatics theories such as Austin's and Searle's speech act theory and Grice's Cooperative Principle – would suggest that there must be a reason for using metaphor to breach the maxim of quality. So, pragmatics has not addressed the issue of why metaphor is there in the first place, leaving a void that was to be filled by conceptual metaphor theory a couple of decades later (Lakoff and Johnson 1980).

Lakoff and Johnson's *Metaphors We Live By* (1980) changed the landscape of metaphor study. Together with other scholars, Lakoff and Johnson's works have formed what may be called the contemporary "classical theory" of conceptual metaphor. According to this theory, metaphors are a way of thinking and knowing. This is because of the fact that speakers are confronted with new things in life constantly, and some of these new things defy ready understanding. Take the notion of TIME for instance. One cannot easily live without knowing time, but one may be hard pressed to define it.<sup>6</sup>

The way to know these stubborn new things is to understand them based on our knowledge of things we already know, and this is the essence of conceptual

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6. Competing theories of TIME abound. Classical mechanics defines time in one way, Newton defines time in another, and Einstein defines it yet differently from both. Philosophers such as Leibniz and Kant even doubt the very existence of TIME. I was trying to understand TIME for a project, did a lot of reading and thinking, but my efforts did not yield the kind of result that I can be proud of.

metaphor. Metaphor, thus seen, is the transference of knowledge from one domain of life, the source domain, to another, the target domain (so that we may understand the new thing in the target domain in terms of an old thing in the source domain). Take TIME again. Cultures seem to have converged on understanding TIME in terms of SPACE, as space is far less abstract and a lot easier to grasp, leading to the multitude of metaphors in many languages that use SPACE either as the source domain (*Christmas is still far ahead*) or as a platform for the moving of time (*Christmas is coming up soon*). Similarly, we use *Internet* – also a spatial metaphor – to refer to the thing we rely on to obtain information probably on a daily basis, but what would we call it if not *Internet*?<sup>7</sup>

In the past three decades since Lakoff and Johnson (1980), research on conceptual metaphor has thrust itself to the forefront of cognitive linguistics and even linguistics. In the mammoth literature on metaphor, one finds works on individual metaphors in the context of culture; one also finds treatises applying the theory to the study of human language, dealing with dimensions of language such as word class and meaning, word formation, case and aspect, proper names, noun phrases, predicate and clause constructions, and grammatical meaning (Panther, Thornburg and Barcelona 2009), and the morphology and writing system of Chinese (Chen 2011).

While researchers differ, naturally, on a number of things in metaphor research, the major tenets of the metaphor theory – that conceptual metaphor is a way of knowing, that metaphor is embodied, that metaphor is a process of projection from a source domain to a target domain, and that metaphor is deeply embedded in culture – seem to have been accepted by many students of language.

So, one can say that, by positing metaphor as a way of thought, cognitive linguistics has offered a convincing answer to the question of the existence of metaphor, a question that pragmatics has not been able to address.

While the theory of conceptual metaphor may have assisted pragmatics by offering a convincing explanation for why metaphor is there in the first place, it needs the help of pragmatics to *fully* account for metaphor. Since conceptual metaphor theory sees metaphor as a means for speakers to understand a thing that they do not know in terms of a thing that they do know, the direction of metaphors – the projection of a feature in the source domain to the target domain – should be from the concrete to the abstract, from the more observable to the less observable, from things easier to conceptualize to things that are more difficult to conceptualize.

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7. I consulted, at the time of writing, *Wikipedia* for the definition of *Internet*. The article on the term says “the Internet is the global system of interconnected computer networks that use the Internet protocol suite (TCP/IP) to link billions of devices worldwide”. But within that definition, we find metaphors galore: *computer network, suite*, and – of course! – *Internet*!



In a word, speakers project a feature from the domain that is more familiar to the domain that is less familiar. This has been assumed in most works on metaphor in the past three decades (Barcelona 2000, Lakoff and Johnson 1980, 1999, Panther, Thornburg and Barcelona 2009).

However, there *are* metaphors whereby the direction of projection defies the from-more-familiar-to-less-familiar assumption. For example, consider (14):

- (14) 教师是人类灵魂 的工程师。  
 Jiao shi renlei linghun de gongchengshi.  
 Teacher BE mankind soul DE engineer  
 ‘Teachers are the engineers of the human soul’

Example (14) is a worn-out metaphor, known to most if not all speakers of the Chinese language but used particularly in the context of education. One would utter it when one showers praise on teachers; one would say it when one tells students how important their teachers are; one would say it when one wants to advocate for the interest of teachers; one would say it when one is recruiting candidates for the teaching profession, and one could say it as a means of sarcasm to a teacher, implying “As an engineer of the human soul, how could you have behaved thus?”

In terms of domain, the source domain of the metaphor TEACHER IS ENGINEER OF HUMAN SOUL 教师是人类灵魂的工程师 is engineering, a field in the hard sciences. The target domain is education. Of the two domains, however, the source domain appears to be *less* familiar than the target domain, as it is reasonable to assume that an average speaker knows more about education than engineering. This runs counter to what is predicted by the classical theory of conceptual metaphor, as indicated earlier.<sup>8</sup>

Another way of looking at the issue is this. The “target” of the metaphor is *teachers*. TEACHER seems to be a concept that an average speaker knows well. If the purpose of metaphor is to help the hearer understand a concept, no metaphor seems necessary. The fact that the metaphor TEACHER IS ENGINEER OF HUMAN SOUL exists and is very prevalent, therefore, points to the possibility that metaphor is *not only* a means to help the hearer to understand a thing, *but also to do something else*.

Seen thus, metaphors such as this challenge the contention that metaphor does nothing more than offer speakers a way of knowing. However, this point seems to have gone “missing” in the literature. In my survey of the literature on metaphor,

8. Reading the works on conceptual metaphor, we find examples galore in which the source domain appears less familiar than the target domain. Take the by-now famed ARGUMENT IS WAR metaphor. The source domain, WAR, is clearly less familiar than the target domain, argument, as one can probably say that an average speaker must have experienced an argument or two in her life but one cannot probably say that an average speaker must have experienced a war or two in her life. But again, the issue of projection directionality is left unaddressed.

I have not seen any explicit discussion of the topic, not even in what I thought to be a likely source: cognitive poetics (e.g. Brône and Vandaele 2009), except for a conference presentation by Chen and Yang (2013).

Pragmatics comes in handy in our effort to discover the reasons for this type of metaphor, whose source domain is less familiar than the target domain, and hence “discovering” a particular function of metaphor that appears to have been neglected by conceptual metaphor theorists.

In the metaphor *TEACHER IS ENGINEER OF HUMAN SOUL*, *TEACHER* is to be understood in terms of *ENGINEER*. Baidu Encyclopedia ([www.baikē.baidu.com](http://www.baikē.baidu.com)) devotes three lines of text to the definition of ‘teacher’ (as someone who imparts knowledge).<sup>9</sup> But it spends at least ten times as much space on ‘engineer’, listing seventeen types of things that an engineer does. In the following, I summarize these responsibilities:

- Research on how to design a thing (TH).
- Design TH.
- Determine the materials used in the making of TH.
- Participate in the actual making of TH.
- Coordinate the different aspects of the making of TH.
- Ensure that TH is made according to the design and meets quality standards.

A metaphor is also based on an image schema, according to the classical theories of conceptual metaphor. *TEACHER* conjures up images of someone in the classroom, with a white board in the background, as is seen in Baidu Pictures. *ENGINEER* is associated with a rather large set of images. As a researcher, she is a reader of books and other information. As a designer, she uses pencils and/or other tools to draw blueprints, tests materials for TH in a lab. As an overseer of the TH-making process, she goes about in the job site, with a safety helmet on her head and a blueprint in hand, which she reads at her frequent stops, and issues instructions to workers. As an insurer of quality, she scrutinizes each step of the TH-making process and, when TH is eventually created, subjects it to all sorts of applicable conditions. These images and more are available on Baidu Pictures, too.

Moreover, the source domain of the metaphor in question is not just any engineer; it is the engineer *of the human soul*. Humankind dominates the world but is in turn controlled by its soul. This leads to the idea that the engineer of the human soul – if there is really such a thing! – is possibly the most important profession there is in the human world.

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9. Baidu 百度 is the dominant search engine in China, the equivalent of *Google* elsewhere.

Lastly, the nature and images of the teaching and engineering profession has led to different degrees of prestige attached to them: a teacher just does not have as much bragging rights as does an engineer.

Putting all this together, we end up with mappings between the two professions, such as those set out in Table 1:

**Table 1.** Metaphorical mappings of TEACHER IS ENGINEER OF HUMAN SOUL

	Target: TEACHER	Source: ENGINEER OF HUMAN SOUL
GOAL OF WORK	Knowledge	Human soul
NATURE OF WORK	Passing down	Designing and making
PLACE OF WORK	Classroom	Lab, office, construction sites
TOOLS AND EQUIPMENT	Books, pens, chalk, computer	Tools of all kinds for drawing, testing in the lab, and overseeing constructions
IMAGES	Informative	Glamorous, varied, important
STATUS IN SOCIETY	Lower	Higher

The metaphorical correspondences suggest that engineers are more varied, more glamorous, and more important than teachers. From this, we see the reason for the use of the metaphor TEACHER IS ENGINEER OF HUMAN SOUL. In the sense that metaphor enables the speaker to talk about one thing in terms of another, this metaphor enables the speaker to talk about TEACHER in terms of ENGINEER OF HUMAN SOUL. The reason she wants do so, further, is that she wants her hearer to *think about and see teachers as engineers of the human soul*. This is another way of saying that she uses the metaphor not because she assumes that her hearer does not understand the concept TEACHER, but because she wants the hearer to understand the concept *differently*.

But why? We press on. Looking at the contexts in which the metaphor TEACHER IS ENGINEER OF HUMAN SOUL is used, as outlined above, we find that these are all contexts in which the speaker wants to magnify the importance of the teaching profession. It is therefore reasonable to suggest that the speaker of the metaphor wants the hearer to understand the concept differently for the purpose of highlighting the importance (and even glamor) of the teaching profession. Using the parlance of conceptual metaphor theory, we can say that the TEACHER IS ENGINEER OF HUMAN SOUL metaphor projects features of the source domain ENGINEER onto the target domain TEACHER so as to conjure up the images of ENGINEER in the mind of the speaker when TEACHER is being talked about.

The thrust of the metaphor in question seems therefore to challenge the classical theory of conceptual metaphor but fits well with the tenets of pragmatics, the study of meaning in context. Suppose the speaker of the metaphor has in her mind

the intention to stress the importance and glamor of the teaching profession, she would have an infinite number of ways to do so. She could, for instance, declare: “Teachers are important; teachers are glamorous!” Compare these straightforward declarations with the metaphoric way of “saying” it – using the *TEACHER IS ENGINEER OF HUMAN SOUL* – one sees the advantage of the latter: that it is more effective in driving the point home.

Because pragmatics is more focused on context, the effect of an utterance on the audience has long been recognized. Grice’s Cooperative Principle, for instance, implies a set of maxims but then allows for the breaching of them if there are other goals that the speaker wishes to attend to. The most studied “other goal” has been politeness (Brown and Levinson 1987; Leech 1983): speakers often flout a maxim, hence “compromising” the clarity of the expression for the purpose of upholding the participants’ face. In Chen (1992, 1993), I suggest another “goal” for speakers to breach a maxim, that of “expressiveness”, meaning that a speaker can also violate a Gricean maxim so as to produce a greater impact on the hearer about the point she is attempting to make.

The idea of “expressiveness” also resonates with the tenets of Sperber and Wilson’s relevance theory. For Sperber and Wilson (1986), the different ways of saying more or less the same thing will have different contextual implications, which, combined with contextual factors of a host of kinds, will lead to different contextual effects. The use of metaphors such as *TEACHER IS ENGINEER OF HUMAN SOUL* will help the speaker achieve more contextual effects by, once again, inviting the hearer to see *TEACHER* in terms of the *ENGINEER OF HUMAN SOUL*.

In sum, then, metaphors like Example (14) provide another type of evidence that cognitive linguistics and pragmatics can complement each other. Conceptual metaphor theories in cognitive linguistics say that metaphors exist because they enable speakers to project concepts from one domain to another, i.e., to understand one thing in terms of another. Pragmatics, on the other hand, says that speakers would use metaphors of this kind, when the target concept is already a well-understood concept, to project features in the source domain to the target domain so that the hearer sees the concept differently and more effectively.

#### 4. Conclusion

In this chapter I have attempted to demonstrate that cognitive linguistics and pragmatics, two fields in linguistics that have emerged at more or less the same time but from different theoretical traditions, can benefit from each other. By way of illustration, I first showed that formulaic constructions such as *ni chi le mo?* ‘How are you?’ used in a dialect in Northwestern China can be better accounted for by

means of construction grammar together with a historical analysis of its pragmatic meaning. The second illustration I provided is a metaphor whose source domain is *less*, not *more*, familiar to the hearer than the target domain. The point of the analysis has been to show that a metaphor of this kind cannot be adequately accounted for if one approaches it from only either the conceptual metaphor perspective or the pragmatics perspective. Combing the two offers a fuller understanding of this particular kind of linguistic phenomenon.

Both examples I have used are from Chinese, but there is little doubt that counterparts of these examples are easily found in other languages. The formulaic expression in English, *What's up?*, as a construction of greeting is one example and can be analyzed along the same lines as I did with *ni shi le mo?* 'How are you?'. The expression *Cheers!* said in making a toast at a party is another. As for metaphors like Example (14), one does not have to go very far to find other examples. *That's a homerun* is often heard about something that is *not* related to baseball, and *He was totally torn apart* does not mean that he was, well, physically "torn apart". But in both these examples, the source domain of the metaphor is clearly less familiar than the target domain. In other words, the point I have been making should have wider application than in one single language.

The fact that cognitive linguistics and pragmatics can easily be made to complement each other is due to one shared assumption about language, although they are distinctive disciplines, with their unique approaches and methodologies. Cognitive linguistics treats language as part of human cognition rather than a self-contained system that is separate from other dimensions of cognition (Langacker 1987, 1991; Talmy 2000a, 200b, Lakoff 1987). Consequently, cognitive linguistics seeks explanations from not only within but also from outside language. Pragmatics studies language use in context, and context is often defined to include anything that has a bearing on the production and interpretation of utterances. Obviously, most of these things are outside language. This shared approach to language – to seek explanations from outside language – forms the very foundation for the two disciplines to be working in tandem in the exploration of how language works.

I end this chapter with a general point that has been implied throughout but has not been explicitly stated. That is, the need for and benefit of interdisciplinarity in research. If we have learned anything about language as linguists of different persuasions, we have become aware of its complexity and multi-dimensionality. One particular approach to language is probably not going to offer us a full picture of language. In the sense that our ultimate aim is to understand language in all aspects, we seem to be left with one option: to look at it from different angles. Some approaches seem to be in opposition, at least as their respective opponents believe, such as the division between generativists and functionalists. But apparently each of these two major camps has offered its own insights into language.

Other approaches are “allies”, which complement rather than compete with each other. This chapter has been an attempt to show how two allies – cognitive linguistics and pragmatics – can complement each other and it is my hope that the point is sufficiently illustrated.

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PART III

# Neurocognition and psycholinguistics



# A neurocognitive approach to Chinese idiom comprehension

## An ERP study

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In Chinese, three-character idioms abound, represented by a 'base' form as well as variants according to the context in which they are embedded. How base-forms and their variants are contextually processed is controversial. In the present study, event-related potentials (ERPs) data were collected to investigate time course and neural activity in the processing of Chinese three-character idioms and their variants in discourse dialogic contexts (e.g. literally biased and figuratively biased contexts). The results are discussed in regard to three proposed models of idiom processing and theories of idiom variations elaborated by Cognitive Linguistics, Relevance Theory and Glucksberg's proposals. The data provide neural evidence that different types of discourse context play a facilitative role in the processing of base-forms and variants.

**Keywords:** discourse context, ERP, three-character idioms, idiom variants

### 1. Introduction

In the great storehouse of languages, idioms are not only frequently used linguistic forms but reflect human cognitive mechanisms as well. Together with three other forms of Chinese idioms, three-character idioms play an important role in literary works and daily conversations.<sup>1</sup>

As their name indicates, three-character idioms consist of three orthographically represented characters, occupying a large percentage in the family of Chinese

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1. In the present study, the term 'Chinese idioms' refers to all linguistic forms in Chinese that meet the general criteria of idiomatic constructions, including four-character idioms (四字格成语), proverbs (谚语), two-part allegorical sayings (歇后语) and three-character idioms (三字格惯用语).

idioms. According to the statistics given in Shi (2007: 9), the total number of entries included in the *New Idiomatic Phrases Dictionary* (1996) is 2467, of which 1815 are of the three-character type, i.e. 73.57%. In the *Standard Contemporary Chinese Idiomatic Phrases Dictionary* (2001), 1565 three-character idioms account for 66.15% of the total 2366 entries. The present chapter takes three-character idioms as constituting its linguistic materials.

Chinese three-character idioms are phonologically trisyllabic. In the evolution of the Chinese language, disyllablization is one of the most important historical developments. According to Chi (2004), most trisyllabic idioms consist of a high-frequency monosyllabic Chinese word and a stable disyllabic Chinese word, such as *chui niu pi* (吹牛皮, lit. 'blow the bull skin' and fig. 'boast') with a high-frequency word 吹 ('blow') and a stable word 牛皮 ('bull skin'). In Chinese, the standard prosodic foot contains two syllables. So the most stable structure should be a 2 + 2 mode, just like the four-character Chinese idioms (Zhang et al. 2013). Therefore, three-character idioms do not conform to the Chinese aesthetic law of symmetry. This ostensible instability of structure makes them more flexible and variable when used.

Every idiom has a base-form, which is the simplest morphosyntactic form that an expression can take to activate its specific idiomatic meaning and function (Barkema 1996: 141). According to Langlotz (2006b), any type of formal and/or semantic change of an idiom base-form may be called a variation. And the idiomatic construction resulting from a given variation is an idiom variant. The frequently used variants are the additions that are employed as experimental stimuli in the current study (Sun 1989).

An 'addition' means that new elements are inserted into an idiom in order to make it more vivid, precise and/or humorous. The inserted elements are usually adjectives or adverbs. In the case of VO three-character idioms, the elements are placed between the verb and the object. The addition not only breaks the structure of three-character idioms, but also brings about subtle changes in their figurative meanings.

For example:

- (1) 双方在一些领域仍然存在分歧，美方希望进一步摸清中国军力底牌的意图，最终碰了个软钉子。(《世界新闻报》2011年1月14日)  
 'There still have been divergences in certain fields between two sides. The U.S. hope to know everything about China *meets with a decline*'  
 (*The News of the World*, Jan. 14, 2011)

Example (1) instantiates a variant (underlined) of the idiom *peng ding zi* (碰钉子, lit. 'bump onto a nail', fig. 'meet with a rebuff'). The inserted word adds a subtle and slightly different meaning to the base-form. The adjective *ruan* (软 'soft') in

the variant makes the figurative meaning more precise, appropriate and specific, enabling the idiom to be more congruent with the preceding context.

### 1.1 Models of idiom processing

The contextually-induced idiom variants mentioned above pose a challenging problem to theories concerned with how idioms are analyzed and processed. Three approaches have been proposed, but no satisfactory models have been developed thus far. The first approach is a noncompositional 'look-up' model of idiom comprehension, which considers idioms as long complex and semantically empty words directly retrieved from long-term memory (Bobrow and Bell 1973; Swinney and Cutler 1979). Underwood et al. (2004) employed an eye-tracking technique to explore how idioms and formulaic sequences in general are processed. They found that the terminal words in formulaic sequences were processed more quickly than the same words in non-formulaic contexts, indicating that formulaic sequences are stored and processed holistically. Tremblay and Baayen (2010) examined the word-by-word processing of regular four word sequences using ERP and discovered that whole-string probability sequence-internal word and trigram frequency influenced the results of immediate free recall, suggesting that multi-word strings are stored both as parts and wholes. Their ERP results provided evidence that four-word sequences are retrieved in a holistic manner rather than computed online via a rule-like process, proposing a line of reasoning very close to the noncompositional look-up approach.

A second approach regarded idioms as compositional word strings whose meanings are derived from the meanings of their constituents. Gibbs and Colston (2012) proposed the Idioms Decomposition Hypothesis, claiming that in most idioms the constituent words could be mapped onto the corresponding idiomatic meaning. Zhang et al. (2013) used ERPs to explore the effect of different degrees of compositionality on idiom comprehension. These results showed that the idioms with high compositionality elicited the smallest ERP effects, while those with low compositionality the largest, providing evidence for a distinct effect of compositionality on the activation of figurative meanings.

The third approach is a hybrid model in which the figurative meaning is not derived from the composition of the constituent words as the literal meaning acts as a conceptual background to help activate the figurative one (Langlotz 2006b). Based on the review of linguistic and psycholinguistic studies on compositional and noncompositional approaches, Titone and Connine (1999) argued that the idioms function simultaneously as semantically arbitrary word strings and compositional phrases, with compositional idioms being processed with more difficulty than noncompositional ones.

Caillies and Butcher (2007) proposed another version of the hybrid model of idiom processing based on a general model of text comprehension, the so-called Construction-Integration (CI) model (Kintsch 1998). They argued that from the perspective of the CI model, the processing difference between familiar compositional and noncompositional idioms results from the connectivity of the propositional network representing their meanings. Thus, individual word meaning and idiomatic figurative meaning are connected in a propositional network in the case of compositional idioms, while not so in noncompositional ones. Since they are configurationally different at this level, compositional idioms are processed much faster than noncompositional ones because the rich semantic connectivity between the meanings of constituent words and their figurative idiomatic meanings in compositional idioms facilitates their processing. Sprenger et al. (2006) proposed a superlemma model of idiom production; they conducted experiments, which they discussed within the framework of the hybrid model. The major finding of the study was that idiom production is facilitated when people first read a word that is semantically related to one of an idiom's content words, suggesting that the link between idioms and their lexical lemmas is bi-directional, and the individual constituent meanings are activated during idiom production.

The Configuration Hypothesis (CH) proposed by Cacciari and Tobassi (1988) dealt with how the comprehension of idioms unfolded in time. According to the CH, idioms are processed word by word, just like other non-idiomatic types of language, until enough information accumulates to make the string of words identifiable as an idiom. Only at this key point is the idiomatic figurative meaning accessed from long-term memory. Therefore, the CH posits that recognition precedes access to figurative meaning.

## 1.2 ERP studies of Chinese idiom processing

To my knowledge, until the present time there have been only four ERP studies aimed at the processing of Chinese idioms and four-character idioms in particular. In Lou et al. (1989), Chinese four-character idioms were used as the sole stimuli to disclose similarities and differences of the N400 between phonograph (e.g. English) and ideograph (e.g. Chinese). They recorded the N400 peaking at around 410 ms whenever the mental template to the fourth character in an idiom mismatched the presented character. It was reported that no significant difference existed between LH and RH, but the effects of this component tended to be a bit greater in the LH. Lou et al. (1989) attributed their findings to phonological factors in modulating the size of the N400. Zhou et al. (2004) explored the neural underpinning of Chinese idiom comprehension by asking the participants to decide whether the last characters in four-character idioms or sequences were semantically congruous. In their

experimental design, every idiom was divided evenly into two groups according to whether its last character was congruous or not. The wrong ending character as well as the preceding character did not constitute an acceptable double-character word or a phrase. For example, the idiom *da hai lao zhen* 大海捞针, lit. ‘fish for a needle in the ocean’, fig. ‘be next to impossible’ contrasts with the non-idiom *da hai lao jia* 大海捞家, lit. ‘fish for a house in the ocean’. ERP data showed that incongruous idiom endings induced a larger N400 than the normal idioms.

Zhang et al. (2013) employed a semantic priming paradigm and ERP technique to examine effects of compositionality on the comprehension of Chinese four-character idioms. In light of the degree of contribution provided by individual Chinese character meanings to the stipulated figurative meanings, Chinese idioms with a double V + N grammatical structure could be classified into three types (i.e. Chinese idioms with a high/medium/low degree of compositionality). In a semantic priming paradigm, participants monitored target idioms primed by their literal interpretations and were asked to judge whether there was semantic relevance between the priming sentences and the targets. The results showed that idioms with high compositionality elicited smaller ERP effects (the N250 and N400) than those with medium and low compositionality. In view of some unique features of Chinese characters and functional significance of the two components, this study provided converging evidence for distinct effects of compositionality on activating figurative meanings in processing Chinese idioms and that language users attempt to do some compositional analysis in this process. Another finding that I want to stress here is more relevant to the present experiment. Non-idioms, i.e. the free collocations of four Chinese characters, elicited larger N250 and N400 than idioms. This demonstrates that – compared with non-idioms – even idioms with high compositionality tended to be analyzed as ‘chunks’, a factor that plays a crucial role in idiom processing, resulting in the attenuation of the ERP effects. This argument is discussed further in Section 4.

Liu et al. (2010) used ERPs to investigate the interplay between syntactic and semantic processing in Chinese four-character idioms by constructing experimental conditions involving congruous and correct idioms (笑里藏刀, *xiao li cang dao*, ‘hiding a dagger behind one’s smile’), synonyms (笑里藏剑, *xiao li cang jian*, ‘hiding a sword behind one’s smile’), semantic violation (笑里藏房, *xiao li cang fang*, ‘hiding a room behind one’s smile’) and combined semantic and syntactic violation (笑里藏投, *xiao li cang tou*, ‘hiding throw behind one’s smile’). The results revealed that N400 reflected graded semantic distances while P600 effects were uniform across the conditions. On the basis of the observation, the study indicates that unlike in other languages, meaning integration does not depend on the intactness of syntactic information in Chinese idioms.



### 1.3 Perspectives on idioms and their variants

There have been several studies that have delved into the processing of idiom base-forms and related variants from both theoretical and experimental perspectives. Results are still controversial. Langlotz (2006a,b) studied English idioms and their variants from a Cognitive Linguistics perspective. In accordance with the Cognitive Grammar proposed by Langacker (1987); Langlotz (2006a) understood idioms as complex scenes with a bipartite semantic structure, i.e. a literal scene and a figurative scene. Langlotz assumes that the lexical constituents of an idiom are not activated to code the idiomatic meaning directly. Rather, they encode part of a literal scene that is evoked to provide a concrete conceptual background to model a figurative scene (Langlotz 2006b: 90). He pointed out that only in the case of compositional idioms can the constituents be attributed autonomous but idiom-specific figurative meaning. Semantic compositionality makes an idiom's constituents become figuratively-denoting elements (Langlotz 2006a). For instance, in the context of the idiom *zou houmen*, *zou* ('walk') and *houmen* ('back door') have become figuratively-denoting elements that mean 'pulling strings' and 'personal connections', respectively. In this way, idiom variants such as *zou le sanci houmen* ('pull strings three times') function as a new, but transitory standard to code the context-specific target conceptualization (Langlotz 2006b: 95). Although this cognitive linguistic approach does not directly explore the online processing of idiom base-forms and their variants, it can be inferred that the variants that code the context-specific target conceptualization are easier to process than base-forms because the former fit the context better than the latter.

Relevance Theory proposes that the meaning communicated by a speaker's use of an idiomatic variant is recognized and understood only because the concept encoded in the idiom is stored in the hearer's mental lexicon and used as a reference point. Unlike an idiom base-form, the meaning of idiom variants cannot be directly retrieved from the hearer's mental lexicon. So some degree of linguistic processing is required. Vega-Moreno (2007) asserted that the additional processing effort that an idiom variant may require must be rewarded with extra effects not afforded by the base-form alone. Thus, a Relevance theoretic approach such as Vega-Moreno's predicts that it is more difficult to process idiomatic variants than their corresponding base-forms.

Glucksberg (2001: 78) proposed another way of interpreting idioms and their variants. According to his view, idioms that permit sensible variants are usually compositional to some extent so that through frequent use, the constituents develop idiomatic meanings while at the same time retaining their literal meanings, resulting in polysemy. He hypothesized that idiom variants should take longer to comprehend than base-forms, since the former must undergo linguistic analysis,

which takes more time than the simple retrieval of the idiom's meaning from memory (Glucksberg 2001: 79). Glucksberg's proposal was supported by three experiments conducted by McGlone, Glucksberg and Cacciari (1994). They showed that context facilitates comprehension of an idiom's base-form and its variant to the same degree and the idiom base-form is understood more quickly than its variant. They also demonstrated that familiar idioms are understood more quickly than their literal paraphrases, suggesting that the latter need more processing than familiar idioms, while the reaction time for processing idiom variants and their literal paraphrases is the same, indicating that idiom variants are processed in the same way as their literal paraphrases.

#### 1.4 The goals and hypotheses of the present study

Given the previous studies on idiom processing and the linguistic specificity of three-character idioms and their variants, the first goal of the present study is to clarify the neural mechanisms and the time course underlying their comprehension and explore how they are processed and represented in natural dialogic contexts. As the above selective literature review has demonstrated, previous ERP studies of Chinese idiom processing focused on the specific type of Chinese four-character idioms (Lou et al. 1989; Zhou et al. 2004; Liu et al. 2010; Zhang et al. 2013), but few experiments were designed to explore three-character idioms.

Almost all previous studies, no matter what languages they focused on, exclusively examined the processing of idioms in isolation or in a sentential context. However, few studies have investigated idioms in discourse dialogic contexts. The second goal of this study, therefore, is to examine how different types of discourse context (literally biased and figurative biased contexts) influence the processing of idiom base-forms and their variants. Idioms are never understood in isolation but are always embedded in everyday communicative interactions. Hence, contextual information is always available to interlocutors and affects the comprehension of familiar idioms, which have both salient figurative and nonsalient literal meanings. Specifically, I predict that, in figuratively biased contexts, the salient figurative meanings of the idioms are preferentially activated and accessed, but in literally biased contexts the salient figurative meanings are accessed automatically, while the nonsalient literal meanings facilitated by the context are more likely to be accessed, thus making the two meanings compete for activation (Giora 2003).

The third goal is to examine what happens to the relatively fixed expressions when they are internally modified. As the previous sections show, we can see that in familiar idioms compositionality, which emphasizes word-by-word processing, and idiomaticity, which accentuates chunk-like processing, often interact and both contribute to the understanding of idioms. In the present study, idioms that

undergo variation are always compositional so that idiom variants may reflect some aspects of word-by-word processing. However, idiomaticity is always at work, demonstrating idioms often function as a chunk. My study investigates the use of idioms and their variants – crucially, in natural dialogic contexts – with the hope that it contributes to more adequate models of idiom comprehension.

The present experiment aims to shed light on how three-character idioms, their variants and contextual information interact over time, with a focus on processing similarities and differences across different forms (base-forms and their variants) and across contexts (literally and figuratively biased contexts).

### 1.5 ERP components in the present study

Two ERP components (i.e. the N400 and sustained late negativity) are found to be particularly relevant for the present study and are hypothesized to reflect distinct underlying neurocognitive processes in the comprehension of three-character idioms and their variants in different discourse dialogic contexts.

The N400 is a well-established language ERP component. It is a negative-going wave, with N for its negative polarity and 400 for its peak latency at 400 ms after the onset of the stimulus, evident between 300 and 600 ms after the presentation of a word (Coulson and Van Petten 2002). Although N400 could be observed all over the scalp, it is largest over centroparietal areas and is usually slightly larger on the right side of the head than the left (Kutas, Van Petten and Besson 1988). The N400 component was discovered by Kutas and Hillyard (1984), who found that a sentence-final word that is incongruent with the preceding context evokes a larger negative wave than a congruent ending. Later experiments showed that the N400 is particularly sensitive to semantic processing. The amplitude of the N400 can be used as an index of processing difficulty. It is generally assumed that increased negativity could reflect more processing efforts (Kutas and Federmeier 2011).

The N400 is highly sensitive to postlexical integration, in which words are semantically integrated with their preceding contexts (Kutas and Federmeier 2011). Its amplitude is related to the ease with which the target word is related to its semantic context (Baggio and Hagoort 2011). Kutas, Van Petten and Kluender (2006: 668–669) argued that the amplitude of the N400 reflects the degree to which “context aids in the interpretation of a potentially meaningful stimulus”. Other than local context, such as word or sentence, the N400 is also sensitive to wider discourses (van Berkum 2008). The N400 is not only simply an anomaly detector but also reflects that the brain can track normal language comprehension (Van Berkum 2008, 2009). Federmeier and Laszlo (2009) suggested that the brain activity observed in the N400 may instantiate a temporally-constrained functional “binding”, wherein semantic information accrued from context and from

bottom-up processing of the eliciting stimulus is linked, through temporal synchrony, to create a coherent representation. They proposed that this binding may be accomplished through timing: the N400 amplitude reflects the joint influences of the temporally constrained semantic activation coming from the bottom-up processing initiated by the stimulus and the activation states previously induced by context information of various types. Particularly relevant to the current study, Camblin et al. (2007); Nieuwland and Van Berkum (2006), and Boudewyn et al. (2012) all discovered that the N400 indicated the rapid and sometimes dominating effect of global discourse contexts on the processing of incoming words (Swaab et al. 2012).

A sustained late negativity, beginning around 500 ms, has a functional significance of ambiguity resolution and reinterpreting the contextual information consistent with the alternate completion, integrating the presented best completion into their mental representation. Wlotko and Federmeier (2012) discovered that in the moderately constraining context, they observed the late negativity with a left frontal distribution after 500 post-stimulus onset. They interpreted it as reflecting reinterpretation of the context frame with regard to the target word. This late negativity is quite similar to the sustained frontal negativity (the Nref effect), which reflects referential ambiguity (Van Berkum et al. 2003; Nieuwland and Van Berkum 2006). Referentially ambiguous nouns that were introduced in the discourse context elicited a frontally dominant and sustained negativity in brain potentials, emerging with 400 ms after acoustic noun onset. Lee and Federmeier (2009) also observed that the ambiguous NV homographs elicited sustained frontal negativity relative to ambiguous words and they believed this frontal negativity of NV homographs seems to specifically reflect processing linked to the semantic ambiguity of these words. They pointed out that the frontal negativity that is elicited by NV homographs preceded by syntactic cues in semantically impoverished context may index a selection-related mechanism recruited in the process of lexical ambiguity resolution. They also demonstrated that the addition of semantic constraints greatly reduced the late negativity, mitigating selection burden among the multiple dominant and non-dominant meanings. What all the studies have in common is that the sustained late negativity would be associated with a process of selecting between alternative interpretations in different contexts in language comprehension.

In this chapter, based on the experiment, I argue that the N400 and the sustained late negativity might reflect two processing stages of how the global discourse contexts influence the processing of idioms (Van Berkum 2009).

## 2. Methods

### 2.1 Participants

A total of 26 self-designated right-handed undergraduates and postgraduates from Jiangsu Normal University volunteered and were paid to participate in the experiment. They are all native speakers of Mandarin Chinese and were completely unaware of the purposes of the present study. None of them had participated in any of the pencil-and-paper pretests. All these subjects had at least one year of college education, with no reading disabilities or neurological/psychiatric impairment. They had normal hearing and vision as established by self-report. The data of 6 participants were discarded in the statistic analysis due to excessive EEG artifacts. This left 20 participants (8 male, 12 female; age range 18–26 years, mean = 22.40 years) who generated sufficient quality EEG data for further analysis.

### 2.2 Materials and design

An original set of 176 three-character idioms with the VO grammatical structure was selected as the basis for constructing the linguistic stimuli for the ERP experiment.<sup>2</sup> Four dimensions, i.e. familiarity, analyzability, predictability and context, have been shown to be influential during idiom processing. Thus the pretests consisted of four rating studies. In the first pencil-and-paper questionnaire, 40 undergraduates were required to rate their familiarity with these three-character idioms listed on pieces of paper through a 5-point scale ranging from 1 (quite unfamiliar) to 5 (highly familiar). Phrases scoring at least 5 by more than 80% of the subjects (i.e. an idiom with an average score  $\geq 4.20$ ) were singled out for later studies. For analyzability, another group of 40 students were asked to assess the degree to which the literal meanings of each character were semantically relevant to the idiomatic meanings of the corresponding three-character idioms, i.e. to what degree the figurative meanings of these phrases can be analyzed.<sup>3</sup> Again there was a 5-point scale from 1 (low analyzability) to 5 (high analyzability). Phrases scoring at least 4 by more than 80% of the subjects (i.e. an idiomatic phrase with an average

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2. The 176 Chinese idioms were selected from the *Xinhua Chinese Idiomatic Phrases Dictionary* (2008) and the *Standard Contemporary Chinese Idiomatic Phrases Dictionary* (2001). In the first three pretests, these idioms were presented in a print-friendly manner on four A4 pages. The quantity is twice or more than twice the quantity of Chinese idiom stimuli in the later ERP experiment.

3. It is worth noting that the participants in this pretest were presented with the figurative meanings of these idiomatic phrases, not including their literal meanings. Their ratings were derived solely on the basis of their own linguistic intuition.

score  $\geq 3.40$ ) were sorted out. In the third pretest, the dimension of predictability was rated by a new group of 40 students with quite similar backgrounds of education compared to the previous two groups. These participants were asked to do a cloze test in which the third characters of the 176 three-character idioms were missing. The task was to fill the blanks according to the meanings presented on paper. Idioms that were predicted by more than 80% of the subjects were singled out.

After the three pretests, 72 three-character idioms with fairly high familiarity, analyzability and predictability were obtained. For the feasibility of the experiment, 29 idioms that are not easily paired with a variant were eliminated. The remaining 43 idioms and their variants served as the basis for constructing the target paragraphs. For each of the 43 phrases, a context was constructed that invited a literal reading and another context that invited a figurative reading. The dialogic discourse comprised four sentences. Each idiom was in the last sentence and the words before and after it were always identical across the two contextual conditions as well as in the contexts of its variants. For the literally biased contexts, care was taken to ensure that the characters of the idioms did not appear in the contexts. This guaranteed that any result found in the literal contexts could not be affected by repetition priming between the characters in the contexts and characters in the phrases. The stimuli were validated with a fourth rating study. In order to ensure that the idiomatic phrases and their variants were equally comprehensible in the literal and the figurative contexts, another 20 students were asked to rate each dialogue for how easy they thought the target words were to comprehend in the contexts (1 = very hard to comprehend, 5 = very easy to comprehend). Finally, 30 idioms and their variants were selected with corresponding literal and figuratively biased contexts, scoring at least 4 by more than 80% of the subjects (i.e. an idiomatic phrase with an average score  $\geq 3.40$ ), to serve as the experimental materials. The total number of dialogue materials was 120. The examples and their approximate English translations are given in the Appendix.

Moreover, 120 filler trials similar in form and length but containing no idiomatic phrases were included in the experiment to create an experimental environment in which all of the items would be listened to in their usual manner, i.e. without inducing a strategy to read for figurative meaning. The fillers would not be employed in further analyses, but were equivalent in status to the other stimuli from the participants' perspective.

### 2.3 Experimental procedure

The entirety of the ERP experiment was conducted in a dimly lit, sound-attenuated, electrically-shielded chamber where the participants were seated on a comfortable chair in front of a 15-inch computer screen located approximately 80 cm from

their eyes.<sup>4</sup> The subjects were offered instructions prior to performing their experimental task. They were required to listen to all the dialogues and then try to understand their meanings. Moreover, they were instructed to answer periodic yes/no comprehension questions. 120 experimental materials and 120 fillers were presented in a pseudo-randomized order in blocks of 30 trials each. There were altogether two lists with four blocks in each list. In addition, care was taken to ensure that the same idioms and their variants would not appear in the same block in order to maximally reduce the effect of repetition on idiom processing. In order to further attenuate this effect, the participants were required to complete two different lists with an interval of five days.

Auditory stimuli were presented via two earphones, visual stimuli in the center of a computer screen, controlled by ERPs software. The dialogue, read by a male and a female native speaker of Chinese, were recorded on a digital audio tape and digitized at 44.1 kHz with a 16-bit sampling rate. The data collection and analysis required that the idioms and their variants be separated with a sound editor (CoolEdit pro. 2.1). The visual stimuli were typed in 80 font size in Courier New font, in silvery text against a gray background with modest contrast.

In this experiment, each trial started with a “+” whose duration was 500 ms and it remained on the screen center until a dialogue ended. Subjects were asked to stare at it, the purpose of which was to reduce the effect of eye-movements. The display of a “?” after about one third of the trials indicated the subsequent yes/no comprehension question. Subjects were required to answer the question after the presentation of a “\*” by pressing buttons “5” for the answer of “Yes” and “6” for the answer of “No”. The percentages of correct “Yes” and “No” responses were 50% respectively. “Yes” and “No” buttons (left vs. right) were counterbalanced across subjects. The time interval between two trials was 3000 ms, during which subjects were encouraged to blink their eyes. In two thirds of the trials without yes/no questions, this eye blink interval started immediately after the acoustic dialogue presentation ended. After 3000 ms, the next trial started with the presentation of a “+”, whose duration was 300 ms too. Then the next trial began.

Before the formal experiment blocks, 12 illustrative trials, not included in the study, were presented as a warm-up procedure to familiarize subjects with the performance task. The total duration of one ERP experiment list was approximately 50 minutes, with time for a break between two blocks. Each experiment session lasted up to 1 hour, including technical preparations for recording the EEGs.

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4. This distance, proportioned to both the size of the computer screen and the size of the Chinese characters presented, made it possible to prevent voltage fluctuations due to excessive eye movements.

## 2.4 EEG recording

The EEGs were continuously recorded with 64-channel Ag/AgCl electrodes referenced against the nose and held in place on participants' scalps by an elastic cap through AC-coupled high input impedance amplifiers (200 k $\Omega$ , Net Amps).<sup>5</sup> EOGs were recorded bipolarly with four electrodes placed above and below the left eye (vertical) and at the two outer canthi (horizontal). EEG and EOG signals were amplified by a NeuroScan amplifier with built-in 30 Hz online low-pass filter and digitized at a sampling rate of 1000 Hz and 32-bit resolution. All electrode impedance was kept below 5 k $\Omega$ . The midline comprised FZ, CZ and PZ. Lateral electrodes were assigned to three (anterior, central and posterior) regions of interest in each hemisphere.

ERP analyses consisted in averaging EEG segments in synchronization with the onset of the "objects" in target idioms or variants in each trial. Signal averages for the objects in VO idiomatic phrases were calculated for 1000 ms intervals using pre-stimulus baselines of 100 ms. Amplitude and latency of ERP components were quantified by employing amplitude averages across representative time windows at all electrode sites. Ocular artifacts were monitored, and the subjects' horizontal, vertical eye movements and blinks were corrected off-line with an automatic algorithm. All epochs resulting in a correct answer were carefully scanned and remaining artifacts were rejected before being averaged to give individual and grand-mean ERPs. All presented linguistic stimuli and behavioral responses were designed, controlled and recorded by the Neuroscan 4.3 software running on a computer. "Triggers" synchronized with the stimulus and response events were also sent by this software, allowing the timing for task-related events and responses to be included simultaneously with EEG recording.

## 3. Results

### 3.1 Visual inspection of ERPs

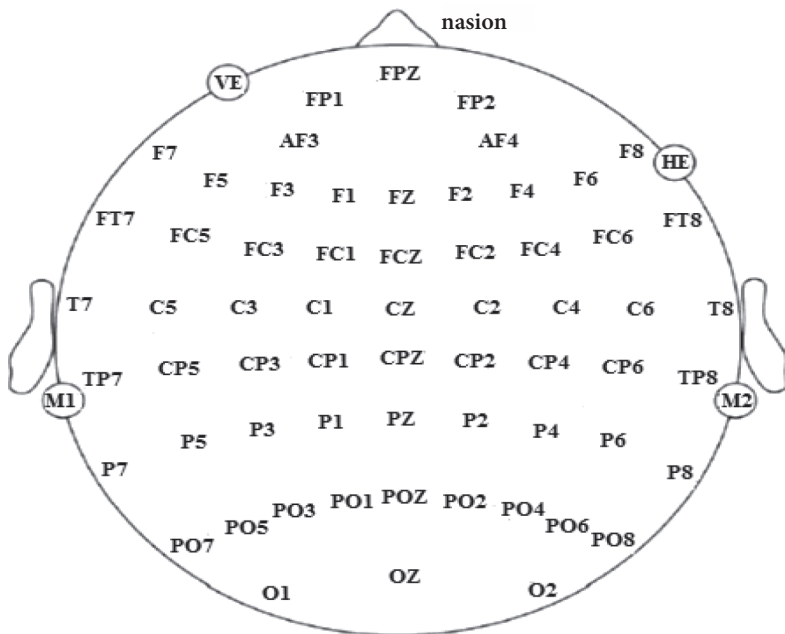
As can be seen in the ERP plots displayed in Figure 2, an initial negative potential appears at about 70 ms after the onset of the targets, followed by a negativity peaking at about 100 ms. After these early components, the most distinguishing feature of the ERP waveforms emerges, i.e. a negative-going deflection with a peak near 400 ms. This negativity was identified as the N400, with its amplitudes showing differential values to different types of linguistic stimuli. In the waveforms

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5. In auditory experiments of ERPs, the reference is always chosen relative to the nose tip, e.g. Horvath et al. (2007); Kayser and Tenke (2006a,b), Reale et al. (2007), and Stauder et al. (2006).



of objects, the objects of three-character idioms in base-form in literally biased contexts (green line) elicited the largest N400, and the objects in variants in figuratively biased contexts (black line) elicited the least. The objects in base-form in figuratively biased contexts induced no larger amplitude than objects in variants in literally biased contexts and the waveform of idiom variants in literal context was almost in parallel, showing no difference. The voltage maps (Figure 3) indicate that the N400 has its largest effect in fronto-central locations, a bit favoring the right hemisphere of the brain (RH) sites. This scalp distribution is basically in accord with previous findings on this ERP component based on western languages (see Section 1).



**Figure 1.** Electrode montage used in the ERP study

Another negative-going deflection (Figure 2), identified as the late negativity, occurs between about 500 ms and 1000 ms post-target onset. For objects, the largest sustained late negativity was elicited by objects in the base-form in literally biased contexts (green line), followed by objects in variants in figuratively biased contexts (blue line). The lowest amplitude was induced by objects in variants in figuratively biased contexts (black line). The scalp distribution of the sustained late negativity is quite obvious at the electrode sites of FZ, FCZ, FC and CZ. As people usually try to adapt idiom semantics to the context in which they occur and familiar idioms almost always appear in figuratively biased contexts, idiom variants in that context are the most natural occurrences. Thus, the idiom variants in figuratively biased

contexts (black line) can be regarded as the baseline. The other conditions were negative-going relative to this baseline.

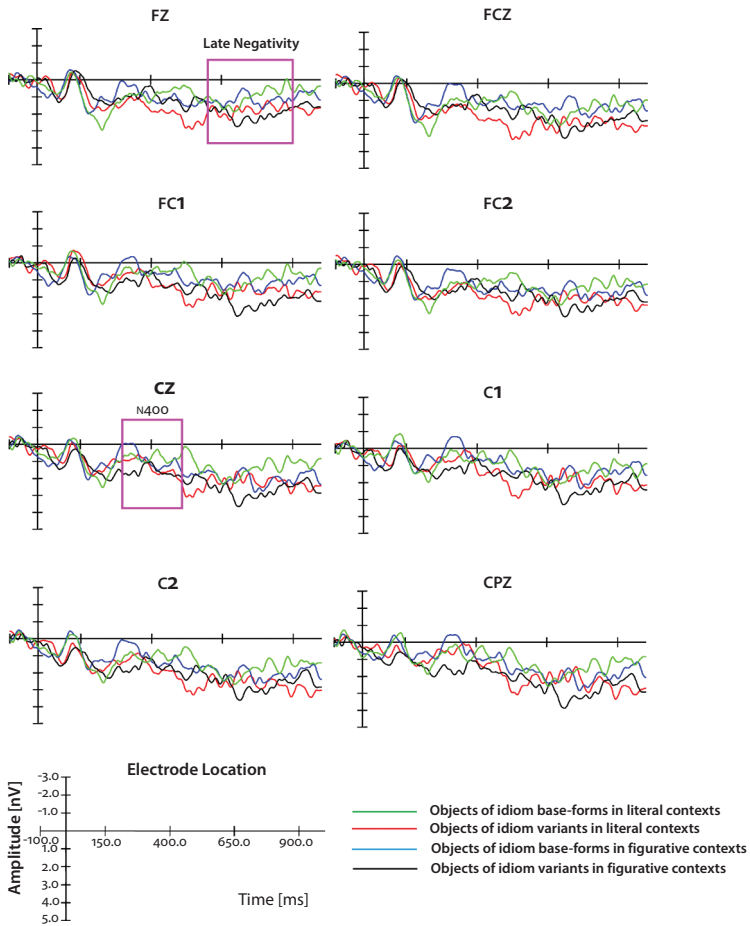
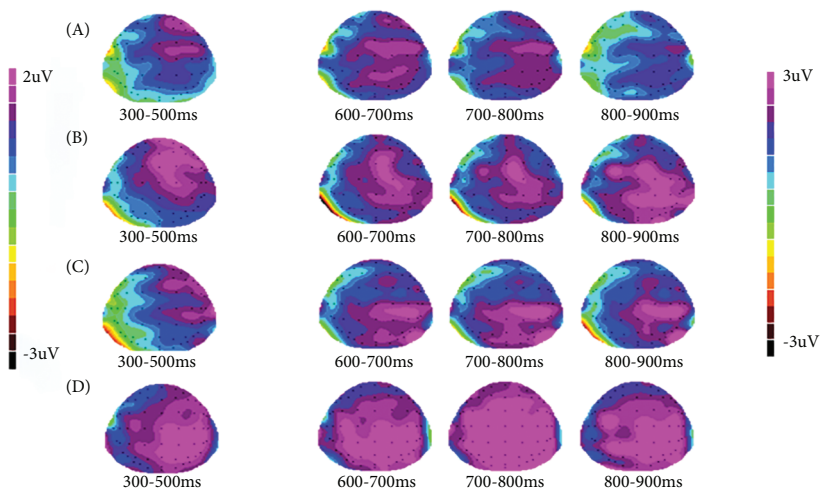


Figure 2. ERP plots of the four stimuli types of objects in VO three-character idioms in 8 electrode sites



**Figure 3.** Voltage maps

In Figure 2, the green and red lines represent idiom base-forms and idiom variants respectively in literal contexts, while the blue and black lines stand for idiom base-forms and idiom variants respectively in figurative contexts.

### 3.2 Results

In order to investigate the N400 and the sustained late negativity, seven separate regions of electrode sites [i.e. C (CZ, C1, C2, C3, C4, C5, C6), CP (CPZ, CP1, CP2, CP3, CP4, CP5, CP6), F (FZ, F1, F2, F3, F4, F5, F6, F7, F8), FC (FCZ, FC1, FC2, FC3, FC4, FC5, FC6), O (OZ, O1, O2), P (PZ, P1, P2, P3, P4, P5, P6, P7, P8), PO (POZ, PO3, PO4, PO5, PO6, PO7, PO8)] were selected, and repeated measures ANOVA with contexts, forms and electrode sites as within-subjects factors were performed on the mean amplitudes of the two ERP components. The Greenhouse–Geisser (1959) correction was applied to F tests with more than one degree of freedom in the numerator for all relevant analyses reported in this chapter. The significance level in the study was set at  $p \leq .05$ .

In dealing with the electrophysiological data to directly compare different neurocognitive processes of the processing of three-character idioms and their variants, repeated-measures ANOVAs were employed to analyze ERP data accrued on two main within-subjects variables respectively, i.e. forms (2 levels: base-form and variant) and electrodes (7 regions with 49 electrodes total) for half of the stimuli, contexts (2 levels: literal contexts and figurative contexts) and electrodes (7 regions with 49 electrodes total) for the other half of the stimuli.

In analyzing the processing of Chinese three-character idiomatic phrases in literal and figurative context, the time window of the critical word “object” in

VO three-character idioms was given particular attention. For N400, using mean amplitude in 300–500 ms latency range after onset of the critical word, a repeated measure ANOVA to assess the effects of forms and contexts at the electrode sites of F,FC,C,CP,P,PO and O was applied. For the sustained late negativity, using the mean amplitude in 600–800 ms and 800–1000 ms latency range after onset of the critical word, the same statistical tools were applied to assess the effects of forms and contexts at the same electrode sites.

### *A. Base-forms VS variants in literally biased contexts*

**300–500 ms time window:** Using mean amplitude in the 300–500 ms latency range (N400) after onset of the critical “object” in VO three-character idiomatic phrases, the ANOVA with the different forms (base-forms VS variants) and the electrodes (F, C, P and O) did not yield significant main effects: Frontal regions [ $F(1,19) = 0.86, p \leq 0.05$ ]; Central region [ $F(1,19) = 1.14, p \leq 0.05$ ]; Parietal region [ $F(1,19) = 0.57, p \leq 0.05$ ]; Occipital region [ $F(1, 19) = 1.10, p \leq 0.05$ ]. Nor did interaction of the forms with the electrodes (F, C, P and O): Frontal region [ $F(1,19) = 0.31, p \leq 0.05$ ]; Central regions [ $F(1,19) = 0.20, p \leq 0.05$ ]; Parietal regions [ $F(1,19) = 0.50, p \leq 0.05$ ]; Occipital region [ $F(1,19) = 1.03, p \leq 0.05$ ].

**600–800 ms time window:** In the latency range of 600–800 ms (sustained late negativity) after onset of the critical “object” in VO three-character idiomatic phrases, the ANOVA and did not yield any significant main effects at F, C, P, O electrode sites: Frontal region [ $F(1,19) = 0.00; p \leq 0.05$ ]; Central region [ $F(1,19) = 0.09, p \leq 0.05$ ]; Parietal region [ $F(1,19) = 0.07, p \leq 0.05$ ]; Occipital region [ $F(1,19) = 1.03, p \leq 0.05$ ]. The ANOVA did not yield any significant interaction effect of different forms with electrodes (the same 4 sites): Frontal region [ $F(1,19) = 0.54, p \leq 0.05$ ]; Central region [ $F(1,19) = 0.21, p \leq 0.05$ ]; Parietal region [ $F(1,19) = 0.49, p \leq 0.05$ ]; Occipital region [ $F(1,12) = 1.44, p \leq 0.05$ ].

**800–1000 ms time window:** In the 800–1000 ms time window (sustained late negativity): the ANOVA revealed no significant main effects at F, C, P, and O electrode sites: Frontal region [ $F(1,19) = 0.45, p \leq 0.05$ ]; Central region [ $F(1,19) = 1.65, p \leq 0.05$ ]; Parietal region [ $F(1,19) = 1.20, p \leq 0.05$ ]; Occipital region [ $F(1,19) = 3.50, p \leq 0.05$ ]. The ANOVA did not reveal any significant interactions: Frontal region [ $F(1,19) = 0.81, p \leq 0.05$ ]; Parietal region [ $F(1,19) = 1.22, p \leq 0.05$ ]; Occipital region [ $F(1,19) = 0.42, p \leq 0.05$ ].

### *B. Base-forms VS variants in figuratively biased contexts*

**300–500 ms time window:** Between 300–500 ms post-stimulus onset, repeated measures ANOVA were performed with the different forms and electrodes (F, C, P and O), which did not yield any significant main effects of the different forms in figuratively biased contexts: Frontal region [ $F(1,19) = 0.50, p \leq 0.05$ ];

Central region [ $F(1,12) = 1.34, p \leq 0.05$ ]; Parietal region [ $F(1,19) = 1.72, p \leq 0.05$ ]; Occipital region [ $F(1,19) = 1.70, p \leq 0.05$ ].

**600–800 ms time window:** No significant main effects were obtained for different forms for sustained late negativity in figuratively biased context at the above mentioned electrode sites: Frontal region [ $F(1,19) = 3.33, p \leq 0.05$ ]; Central region [ $F(1,19) = 1.89, p \leq 0.05$ ]; Parietal region [ $F(1,19) = 1.28, p \leq 0.05$ ]; Occipital region [ $F(1,19) = 0.78, p \leq 0.05$ ].

**800–1000 ms time window:** In the 800–1000 ms time window, the ANOVA for different forms in figuratively biased contexts did not yield any significant main effects at the above-mentioned electrode sites: Frontal region [ $F(1,19) = 1.90, p \leq 0.05$ ]; Central region [ $F(1,19) = 0.85, p \leq 0.05$ ]; Parietal region [ $F(1,19) = 0.72, p \leq 0.05$ ]; Occipital region [ $F(1,19) = 0.34, p \leq 0.05$ ]. Nor were there any significant interactions: Frontal region [ $F(1,19) = 1.43, p \leq 0.05$ ]; Central region [ $F(1,19) = 1.75, p \leq 0.05$ ]; Parietal region [ $F(1,19) = 0.40, p \leq 0.05$ ]; Occipital region [ $F(1,19) = 0.43, p \leq 0.05$ ].

### *C. Base-forms in literally biased context VS in figuratively biased context*

**300–500 ms time window:** Using mean amplitude in this time-window after onset of the critical “object” in idiom base-forms, the ANOVA with different contexts (literal context vs. figurative context) and the electrodes (seven sites) revealed significant main effects of context at the central-parietal site [ $F(1,19) = 4.74, p \leq 0.05$ ]; Central site [ $F(1,19) = 5.80, p \leq 0.05$ ]. However, it did not yield any significant effect of context at the frontal site [ $F(1,12) = 2.88, p \leq 0.05$ ]; Parietal site [ $F(1,19) = 3.21, p \leq 0.05$ ]. A significant interaction for context  $\times$  electrode between idiom base-forms in literally biased context and in figuratively biased context was obtained in the electrode of the Parietal-occipital site [ $F(1,19) = 4.92, p \leq 0.05$ ].

**600–800 ms time window:** The ANOVA for comparisons between the critical “object” in idiom base-forms in literally and figuratively biased context in the electrodes of F, FC, C, CP, P, PO and O revealed marginally significant main effects of contexts at the frontal electrode [ $F(1,19) = 3.14, p \leq 0.05$ ]; Frontal-central [ $F(1,19) = 4.12, p \leq 0.05$ ], demonstrating the different contexts had exerted great influence on the processing of base-forms. And the higher amplitude of the base-forms in literally biased context showed they were processed with more difficulty than those in figuratively biased context. No significant interaction for context  $\times$  electrode was obtained between base-forms in literally biased context and those in figuratively biased contexts at Central-parietal [ $F(1,19) = 0.41, p \leq 0.05$ ]; Frontal-central [ $F(1,19) = 0.46, p \leq 0.05$ ]; Central [ $F(1,19) = 0.22, p \leq 0.05$ ]; Central-parietal [ $F(1,19) = 0.32, p \leq 0.05$ ]; Parietal [ $F(1,19) = 0.35, p \leq 0.05$ ]; Parietal-occipital [ $F(1,19) = 0.78, p \leq 0.05$ ]; Occipital [ $F(1,19) = 0.42, p \leq 0.05$ ].

**800–1000 ms time window:** In this time window, the ANOVA for the base-forms across the literally biased and figuratively biased contexts revealed significant main effects at frontal sites: Frontal region [ $F(1,19) = 5.10, p \leq 0.05$ ]. But no significant interactions can be found in the following electrode sites: Frontal region [ $F(1,19) = 0.69, p \leq 0.05$ ]; Frontal-central region [ $F(1,19) = 0.13, p \leq 0.05$ ]; Central region [ $F(1,19) = 0.44, p \leq 0.05$ ]; Central-parietal region [ $F(1,19) = 0.33, p \leq 0.05$ ]; Parietal region [ $F(1,19) = 0.66, p \leq 0.05$ ]; Parietal-occipital region [ $F(1,19) = 0.16, p \leq 0.05$ ]; Occipital region [ $F(1,19) = 0.40, p \leq 0.05$ ].

#### *D. Variants in literally biased contexts VS in figuratively biased contexts*

**300–500 ms time window:** Analyses of ERP data between idiom variants in literal and figurative contexts yielded no significant main effects of context for N400 at the above-mentioned seven electrodes: Frontal [ $F(1,19) = 0.31, p \leq 0.05$ ]; Frontal-central [ $F(1,19) = 0.04, p \leq 0.05$ ]; Central [ $F(1,19) = 0.55, p \leq 0.05$ ]; Central-parietal [ $F(1,19) = 1.94, p \leq 0.05$ ]; Parietal-occipital [ $F(1,19) = 2.04, p \leq 0.05$ ]; Occipital [ $F(1,19) = 2.07, p \leq 0.05$ ].

**600–800 ms time window:** Significant effects of context for sustained late negativity were obtained at Frontal [ $F(1,19) = 5.31, p \leq 0.05$ ] and Frontal-central [ $F(1,19) = 4.82, p \leq 0.05$ ], reflecting that idiom variants in literally biased contexts recruited more cognitive resources than those in figuratively biased contexts. However, no significant interactions were found at the electrode sites of F, FC, C, CP, P, PO and O.

**800–1000 ms time-window:** In this time window, a marginally significant and a significant effects of contexts were found at the electrode sites of F and FC: Frontal region [ $F(1,19) = 3.72, p \leq 0.05$ ]; Frontal-central [ $F(1,19) = 5.31, p \leq 0.05$ ]. But no significant interactions were found at seven electrodes mentioned above.

## 4. Discussion

In this study, the time-course of processing Chinese three-character idioms and their variants were examined in different contexts using ERPs. Putting the Chinese idioms and their variants in literally biased or figuratively biased dialogic contexts enabled the direct observation of neural activity at the critical word (objects of VO three-character idioms and their variants) – the point at which the alternative interpretation (literal or figurative interpretation of the idioms) was selected by the participants based on the information from the dialogic discourse contexts. Whether in literally or figuratively biased contexts, there were no significant differences in the waveforms observed in the processing of base-forms and their variants in the N400 time window (300 ms – 500 ms) or in the time window of

sustained late negativity (500 ms – 800 ms and 800 – 1000 ms). However, as seen in Figure 2, there was clear divergence in the waveforms evoked in the processing of base-forms of three-character idioms in literally biased contexts relative to figuratively biased contexts: the ERP to base-forms in literally biased contexts (green line) was more negative-going than that to those in figuratively biased contexts (blue line). And the two different contexts also exerted a great influence on the processing of idiom variants. In the time window of sustained late negativity, the ERPs to variants in literally biased contexts (red line) were more negative than those in figuratively biased contexts (black line).

Whether in literally or figuratively biased contexts, the different forms of idioms were processed in a similar way. In the N400 time window, there was a divergence in the waveforms between the base-forms and variants in literally biased contexts, with the former being more negative-going than the latter, although this divergence was not statistically significant. The processing of base-forms vs. their variants in figuratively biased contexts is also similar. No differences are found either in the N400 or in the sustained late negativity. This means that although idiom variants can provide the participants with more information, the enriched and more specific interpretations provided by idiom variants make no difference in the processing in the figuratively biased contexts.

Although the current study was not designed to clear the muddy waters in idiom processing, it may shed light on the models of idiom processing introduced in Section 1. I tentatively offer one explanation with regard to the results of the current experiment. It was found that the idiom base-forms and their variants were processed in a similar way because two important factors, compositionality and idiomaticity, interacted and played a crucial role in the processing of idiom base-forms and their variants. The familiar idioms used in the present study were compositional to some extent because only compositional idioms could be transformed into their corresponding variants. However, these familiar compositional idioms could also be stored as chunks in our mental lexicon; although the adjectival modifier could break the structure of the idiom, it did not break the integrated meaning as a whole.

The results of the current study may be consistent with the hybrid model, which emphasizes that idioms can function simultaneously as parts and a whole. Compositionality tends to analyze idioms toward the end of word-by-word processing like free collocations, while idiomaticity is like chunk processing. Other factors being equal, the above two factors shape the way familiar idioms are processed. The characteristics of idiom processing are weighed between the two factors. As mentioned in Section 1.2; Zhang et al. (2013) found that fully compositional non-idioms were more difficult to process than idioms. This showed that idioms tended to be processed as chunks even if they enjoyed some degree of

compositionality. However, non-idioms had to be processed word by word, leading to the largest ERP effects. Although Liu et al. (2010) did not directly aim at the effect of compositionality and idiomaticity on idiom processing, their study also showed that normal idioms such as *xiao li cang dao* (笑里藏刀) were easier to be processed than their synonymous non-idioms, such as *xiao li cang jian* (笑里藏剑) because the former had the characteristics of idiomaticity and was stored and retrieved as a chunk in our mental lexicon while the latter was not. In the current study, idiom variants were transformed from compositional and familiar idiom base-forms. That is to say, all the idioms used in the study were compositional and susceptible to word-by-word processing. However, although the idioms were formally broken by inserting adjectives between the verbs and the nouns, they were easily recognized and their semantics, which was stored in the mental lexicon, was only slightly changed. Thus, the participants could retrieve the meanings of idiom variants as fast as those of base-forms.

The results of the current study can also be explained in terms of the Configuration Hypothesis. At first, the participants read the phrases and variants embedded in a dialogue word by word until they encountered idioms at the key point. The key point in our study is the object of the VO three-character idioms in which the participants began to retrieve the meanings from their long-term memory even if the simple addition could not interfere with the retrieval processes.

The results obtained in the study did not confirm the predictions made by Cognitive Linguistics (Langlotz 2006a,b), Relevance Theory (Vega Moreno 2007) or Glucksberg's (2001) theory of idiom comprehension. As discussed in the Introduction to this chapter, cognitive linguists such as Langlotz (2006a,b) predict that the emergence of idiom variants is due to the fact that when speakers use idioms, they often have to adapt them to the contextual information provided by the discourse. It is inferred theoretically that the variants that are accommodated more to the context should be processed more easily than idiom base-forms. However, Relevance Theory and Glucksberg's model predicted the opposite, namely, that idiom variants are more difficult to process than base-forms. They offer different explanations for the same phenomena. Relevance theorists (see Vega Moreno 2007: 207–213) contend that idiom variants should engender more contextual effects, which are offset by extra processing efforts. Glucksberg (2001: 79) observed that idiom variants, like literal expressions, require linguistic processing and as a result their processing is prolonged. In the present study, both idiom base-forms and their variants were processed equally easily. And in a similar manner, the reasons are that the stimulus material used in the experiment were all additions (Langlotz 2006a), which merely inserted specific information to modify the nouns in the idioms in order to code a context-specific target-conceptualization (Langlotz 2006a). The type of addition did not extensively alter the idioms' meanings (i.e. a



less creative type of idiom variants) (Glucksberg 2001). When the participants heard the last nouns of idioms (whether in base-form or in variants), the cues from the base-form could quickly alert them to idiomatic figurative meanings stored in their memory so that both base-forms and variants could be comprehended equally fast.

Consistent with previous findings (Nieuwland and Van Berkum 2006; Camblin et al. 2007; Boudewyn et al. 2012), the present study found that different contexts played a facilitative role in the processing of base-forms and their variants. In the N400 time window, base-forms and variants in literally biased contexts elicited more negative-going waveforms than in figuratively biased context. All the stimuli used in the experiment were highly familiar idioms whose salient meanings were idiomatic figurative ones (Giora 2003). When the participants listened to the objects of VO three-character idioms, they tried to integrate the salient meaning of idioms with the different contexts. A literally biased context was in conflict with the salient meaning of the idiom so that more processing effort was needed to integrate the literally biased context with the idiomatic figurative meaning, resulting in the increase of N400 amplitude. The figuratively biased context was consistent with the idioms' salient meanings so that the contexts facilitated the processing of idioms, attenuating the N400 amplitude.

In the time window of sustained late negativity (500–800 ms and 800–1000 ms), the base-form and variants in literally biased contexts evoked more negative-going waveforms than in figuratively biased contexts at the anterior electrodes. One question that arises is whether the ERP effect observed to the idioms in literally biased context reflects a sustained late negativity effect rather than late positivity. This may be for two reasons. First, the late positivity component is typically produced by words that violate a highly lexically constraining context, which was not the case here. Wlotko and Federmeier (2012: 363) pointed out that frontal positivity was elicited by wholly unexpected words, while late negativity observed in the study was evoked in response to the literal meaning and figurative meaning of an idiom competing for the activation in literally biased contexts. Thus, in the present study, this component was linked to cases in which the context was reconsidered so that the idioms' meanings could be selected in order to form message-level representations. Second, as discussed in previous sections, Chinese three-character idioms are used more frequently in their variants in that variants are often the result of usage where speakers try to adapt the semantics of idioms to the figuratively biased context in which the idioms are embedded. The present study considers variants embedded in figuratively biased contexts as the most natural usages, which act as the baseline condition. Thus, Chinese three-character idioms and their variants embedded in literally biased context constitute unusual and special cases. We can see from Figure 2 that the idiom base-forms and their variants in literally biased contexts evoked more negative waveforms than the

variants in figuratively biased contexts. So it appears that the component observed in the present experiment was late negativity rather than late positivity.

The Chinese three-character idioms used in the study have both salient figurative meanings and less salient plausible literal meanings. For instance, *zou houmen* (走后门) has a plausible literal meaning 'get in by the back door' and a salient idiomatic figurative meaning 'get something done by pulling strings and using personal connections'. When the idiom was embedded in a figuratively biased context, the salient idiomatic meaning, foremost in participants' minds, was activated and easily integrated with the context, thus reducing the sustained late negativity. When the idiom occurred in a literally biased context, the context would instead boost the activation of the less salient literal meaning, while at the same time the salient figurative meaning, foremost in mind, would be activated automatically (Giora 2003). In this case, the literal meaning and the figurative meaning were both activated in literally biased contexts, and, as a result, participants had difficulty in selecting the two different meanings, thus eliciting a higher amplitude of late negativity in literally biased contexts than in figuratively biased contexts.

Lee and Federmeier (2009) believed that sustained late negativity with anterior scalp distribution had a bearing on selecting relevant representations among competing semantic attributes. The functional link between the component and selection-related neural activity can be applied to the present study, in which all the idioms used are familiar ones, with their idiomatic figurative meanings being more salient than their corresponding literal meanings. In figuratively biased contexts, the message-level representation built by the participants was consistent with the salient figurative meaning of the idioms, at the same time inhibiting the less salient meanings. In contrast, in literally biased contexts where the less salient literal meaning was intended, the salient figurative meaning was activated regardless of context (Giora 2003). So in this case, both the salient figurative and the less salient literal meanings were activated (Giora and Fein 1999: 1614), leading to competition between the two interpretations. Thus, in literally biased context, whether they were variants or not, the idioms elicited more negative waveforms.

In figuratively biased contexts, the salient figurative meaning was in accord with the context, thus the selection demand was low, and the participants did not need to recruit a selection mechanism indexed by the sustained late negativity, leading to the low amplitude of the component.

Van Berkum et al. (2003) also discovered that, relative to their referentially unique counterparts, referentially ambiguous spoken nouns elicited a widely distributed and frontally sustained negativity emerging at about 500 ms after their acoustic onset. Van Berkum (2008) called this the Nref effect, which was linked to holding ambiguous referents in mind until they could be resolved. Their findings are consistent with the present study in which the salient but context

incompatible figurative meaning and less salient but context compatible literal meaning were active in parallel in the literally biased context, requiring selection of one meaning and inhibition of another in order to form a message-level representation. The situation is similar to the studies of Van Berkum and his colleagues in which two referents were held on mind and needed to be selected based on the discourse contexts.

King and Kutas (1995) found that the sustained late negativity probably reflected the additional working memory effort of maintaining the two meaning representations in order to arrive at a final consistent message-level representation. On the one hand, in the present study, only in the literally biased contexts were the salient figurative but incompatible meanings and less salient literal but compatible meanings activated and held in the participants' minds until one of the meanings consistent with the preceding context was chosen. The heavy working memory load of processing the idioms in literally biased contexts elicited the higher amplitude of sustained late negativity. On the other hand, a higher amplitude of sustained late negativity in the literally biased context confirmed Giora and Fein's (1999) observation that the figurative and literal meanings of the idioms are both activated, resulting in a competition of the two meanings.

## 5. Conclusions and limitations

The two components (the N400 and sustained late negativity) observed in the present study are argued to reflect the two distinct stages of how the discourse contexts influence comprehension of idiom base-forms and their variants because the N400 and sustained late negativity are both sensitive to the global discourse contexts (Nieuwl and Van Berkum 2006; Camblin et al. 2007; Boudewyn et al. 2012; Van Berkum et al. 2003; Van Berkum 2008, 2009; Wlotko and Federmeier 2012; Lee and Federmeier 2009, King and Kutas 1995). In the first stage (300 ms – 500 ms), the base-forms in the literally biased contexts evoked more negative N400 than in the figuratively biased contexts because the familiar idioms whose salient meaning is figurative are more consistent with the figuratively biased contexts, attenuating the amplitude of N400 in this context. In the second stage (600 ms – 800 ms and 800 ms – 1000 ms), as argued above, the literally biased contexts facilitated the activation of less salient literal meanings of the idioms while, according to the Graded Saliency Hypothesis (Giora 2003) the salient figurative meanings should be in mind regardless of the contexts the idioms were embedded in. Thus the two meanings were held in the participants' mind and competed with each other for activation. The participants had to expend more cognitive resources to resolve semantic ambiguity, thus augmenting the amplitude of sustained late

negativity. Following the above account, the N400 and sustained late negativity can be considered as two successive electrophysiological indices of how the two types of context affect the processing of three-character idioms.

This study employed only the simplest type of variation, i.e. addition, as experimental stimuli. Actually, idiom variations can be even more complicated (Sun 1989). For instance, the replacement of a word and a change in word order in three-character idioms may alter their original meanings to a greater extent. The three-character idiom *po leng shui* (泼冷水 ‘pour cold water on somebody’) can be changed into *jiao leng shui* (浇冷水), which emphasizes that the water is poured onto the top of someone’s head, meaning that one’s enthusiasm is dampened more abruptly. As to a change of word order in idiom variation, *tiao da liang* (挑大梁 ‘shoulder a big beam’; fig. ‘play a leading role’) can be transformed into *da liang shui lai tiao* (大梁谁来挑, lit. ‘who will shoulder a big beam’; fig. ‘who will play a leading role’). As demonstrated in these examples, the replacement and a change in word order can more drastically alter idiom structures and semantics, possibly making the idiom identification and comprehension more difficult. Certainly future research will have to develop experiments that use these types of variation as stimuli in order to gain a deeper understanding of the effect of idiom variation on idiom processing.

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## Appendix

### *A sample of experimental stimuli with approximate English translations*

1. 走后门(Zou Houmen, lit. ‘go in by the back door’; fig. ‘pull strings, find an influential person for help’)
  - a. *Literally biased context and base-form*  
 甲:最近单位怎么样?乙:最近学校在搞建设, 修大门。甲:那你要绕远了。乙:是啊, 你说的没错, 我只能走后门了, 没别的办法呀。  
 A: What’s up in the school? B: The school is under construction these days, and the front door is being rebuilt. A: So you have to go a long way? B: Yes, you are right. I have to **go in by the back door**. There is no other way.
  - b. *Literally biased context and variant*  
 甲:最近单位怎么样?乙:最近学校在搞建设, 修大门。甲:那你要绕远了。乙:是啊, 你说的没错, 我只能走几次后门了, 没别的办法呀。  
 A: What’s up in the school? B: The school is under construction these days, and the front door is being rebuilt. A: So you have to go a long way? B: Yes, you are right. I have to **go in by the back door for several times**. There is no other way.

c. *Figuratively biased context and base-form*

甲:最近怎么样?乙:我儿子最近在忙着找工作。甲:让你早点帮他想办法,现在着急了。乙:是啊,你说的没错,我只能**走后门**了,没别的办法呀。

A: What's up these days? B: My son is looking for a job. A: I have told you to help him before. You worry now. B: Yes, you are right. I have to **find an influential person to help him**. There is no other way.

d. *Figuratively biased context and variant*

甲:最近怎么样?乙:我儿子最近在忙着找工作。甲:让你早点帮他想办法,现在着急了。乙:是啊,你说的没错,我只能**走几次后门**了,没别的办法呀。

A: What's up these days? B: My son is looking for a job. A: I have told you to help him before. You worry now. B: Yes, you are right. I have to **find an influential person to help him**. There is no other way.

## 2. 捞油水 (Lao Youshui, lit. 'fish out the oil'; fig. 'reap the profit, be on the take')

a. *Literally biased context and base-form*

甲:这只鸡真够肥。乙:你怎么知道?甲:你光看鸡汤上漂的这一层。乙:还真是这样。那我们可以从里边**捞油水**,不然可惜了。

A: The chicken is very fat. B: How do you know? A: Only from the layer of chicken soup can you see it. B: It is true. We can **fish out the oil** from it, otherwise it is a pity.

b. *Literally biased context and variant*

甲:这只鸡真够肥。乙:你怎么知道?甲:你光看鸡汤上漂的这一层。乙:还真是这样。那我们可以从里边**捞很多油水**,不然可惜了。

A: The chicken is very fat. B: How do you know? A: Only from the layer of chicken soup can you see it. B: It is true. We can **fish out a lot of oil** from it, otherwise it is a pity.

c. *Figuratively biased context and base-form*

甲:这个项目花钱真够多。乙:你怎么知道?甲:你光看这些杂七杂八的开销。乙:还真是这样。那我们可以从里面**捞油水**,不然可异了。

A: The project is expensive. B: How do you know? A: Just look at the miscellaneous expenses. B: It is true. We can **reap the profit** from it, otherwise it is pity.

d. *Figuratively biased context and variant*

甲:这个项目花钱真够多。乙:你怎么知道?甲:你光看这些杂七杂八的开销。乙:还真是这样。那我们可以从里面**捞很多油水**,不然可异了。

A: The project is expensive. B: How do you know? A: Just look at the miscellaneous expenses. B: It is true. We can **reap a lot of profit** from it, otherwise it is pity.

## 3. 和稀泥 (He Xini, lit. 'mix the mud'; fig. 'reconcile differences regardless of principles, try to smooth things over')

a. *Literally biased context and base-form*

甲:到砖瓦厂做学徒多久了?乙:才去一星期。甲:那儿的活儿是不是又脏又累呀?乙:别提了,这段时间学着**和稀泥**,真是没办法。

A: How long have you been an apprentice in the brick and tiles plant? B: Just a week. A: Is the work there dirty and tiring? B: Don't mention it. At this moment I am learning to **mix the mud**. I have no way out.



b. *Literally biased context and variant*

甲:到砖瓦厂做学徒多久了?乙:才去一星期。甲:那儿的活儿是不是又脏累呀?乙:别提了,这段时间学着和了几天稀泥,真是没办法。

A: How long have you been an apprentice in the brick and tiles plant? B: Just a week. A: Is the work there dirty and tiring? B: Don't mention it. At this moment I am learning to *mix the mud for a few days*. I have no way out.

c. *Figuratively biased context and base-form*

甲:到居委会实习多久了?乙:才去一星期。甲:是不是常有两口子闹别什么的来找你调解呀?乙:别提了,这段时间学着和稀泥,真是没办法。

A: How long have you worked on the neighborhood committee? B: Just a week. A: Do the couples often bicker and ask you to arbitrate? B: Don't mention it. At this moment I am learning to try to *smooth things over*. I have no way out.

d. *Figuratively biased context and variant*

甲:到居委会实习多久了?乙:才去一星期。甲:是不是常有两口子闹别扭什么的来找你调解呀?乙:别提了,这段时间学着和了几天稀泥,真是没办法。

A: How long have you worked on the neighborhood committee? B: Just a week. A: Do the couples often bicker and ask you to arbitrate? B: Don't mention it. At this moment I am learning to try to *smooth things over for a few days*. I have no way out.

## 4. 搅浑水 (Jiao Hunshui, lit. 'muddy the water'; fig. 'intend to create clashes')

a. *Literally biased context and base-form*

甲:河里有好多鱼啊?乙:是的啊,我们抓一些回去吧。甲:如何?哎呀,这个小孩拿棍子干什么?乙:哎,他在这搅浑水,我们都看不清了。

A: There are a lot of fish in the river. B: Yes, we can catch some fish and return home. A: OK. What is the child doing with a stick? B: Oh, he *is muddying the water* and we can see the fish clearly.

b. *Literally biased context and variant*

甲:河里有好多鱼啊?乙:是的啊,我们抓一些回去吧。甲:如何?哎呀,个小孩拿棍子干什么?乙:哎,他在这搅了半天浑水,我们都看不清了。

A: There are a lot of fish in the river. B: Yes, we can catch some fish and return home. A: OK. What is the child doing with a stick? B: Oh, he *is muddying the water for half a day* and we can see the fish clearly.

c. *Figuratively biased context and base-form*

甲:选举的趋势怎么样?谁会当选?乙:小王和小李吵了起来,谁都不服谁甲:那小赵在干什么?乙:哎,他在这搅浑水,我们都看不清了。

A: What about the election? Who will be elected? B: Xiao Wang and Xiao Li are arguing. They will not give in to each other. A: What is Xiao Zhao doing? B: Oh, he *is creating clashes*. We can see it clearly.

d. *Figuratively biased context and variant*

甲:选举的趋势怎么样?谁会当选?乙:小王和小李吵了起来,谁都不谁。甲:那小赵在干什么?乙:哎,他在这搅了半天浑水,我们都看清了。

A: What about the election? Who will be elected? B: Xiao Wang and Xiao Li are arguing. They will not give in to each other. A: What is Xiao Zhao doing? B: Oh, he *is creating clashes for half a day*. We can see it clearly.

5. 开夜车 (*Kai Yeche*, lit. 'drive at night'; fig. 'burn the midnight oil, stay up all night working')
- a. *Literally biased context and base-form*  
 甲:最近怎么样? 乙:货运生意不错, 很多货要运。甲:那要多保重身体注意安全。乙:是啊!你说得不错, 我 开夜车, 比平时累多了。  
 A: How are you doing these days? B: Freight business is good and a lot of cargo needs to be transported. A: You should take more care of your health and be safe. B: Yes, you are right. I **drove at night** and am much more tired than ever.
- b. *Literally biased context and variant*  
 甲:最近怎么样? 乙:货运生意不错, 很多货要运。甲:那要多保重身体, 注意安全。乙:是啊!你说得不错, 我 开了一周的夜车, 比平时累多了。  
 A: How are you doing these days? B: Freight business is good and a lot of cargo needs to be transported. A: You should take more care of your health and be safe. B: Yes, you are right. I **drove at night for a week** and am much more tired than ever.
- c. *Figuratively biased context and base-form*  
 甲:最近怎么样?乙:考试比较多, 许多作业要做。甲:平时让你努力学习, 现在着急了呢。乙:是啊, 你说的没错, 我 开夜车, 比平时累多了。  
 A: How are you doing these days? B: There are a lot of exams to take and homework to do. A: I asked you to study hard at ordinary times and you are now worried. B: Yes, you are right. I **burned the midnight oil** and am much more tired than ever.
- d. *Figuratively biased context and variant*  
 甲:最近怎么样?乙:考试比较多, 许多作业要做。甲:平时让你努力学习, 现在着急了呢。乙:是啊, 你说的没错, 我 开了一周的夜车, 比平时累多了。  
 A: How are you doing these days? B: There are a lot of exams to take and homework to do. A: I asked you to study hard at ordinary times and you are now worried. B: Yes, you are right. I **burned the midnight oil for a week** and am much more tired than ever.
6. 揪辫子 (*Jiu Bianzi*, lit. 'seize one's queue'; fig. 'catch someone in the wrong')
- a. *Literally biased context and base-form*  
 甲:你儿子在学校表现怎么样?乙:嗨, 别提了, 老师昨天又把我叫去了。甲他又欺负女孩子了?乙:可不是么, 他就喜欢 揪辫子, 气死我了。  
 A: How about the behavior of your son in the school? B: Oh, don't mention it. Yesterday the teacher asked me to go to school. B: Did he bully the girls? A: Yes, he likes to **seize the queue**. I am very angry.
- b. *Literally biased context and variant*  
 甲:你儿子在学校表现怎么样?乙:嗨, 别提了, 老师昨天又把我叫去了甲:他又欺负女孩子了?乙:可不是么, 他就喜欢 揪别人的辫子, 气我了。  
 A: How about the behavior of your son in the school? B: Oh, don't mention it. Yesterday the teacher asked me to go to school. B: Did he bully the girls? A: Yes, he likes to **seize the others' queue**. I am very angry.
- c. *Figuratively biased context and base-form*  
 甲:你最近工作怎么样? 乙:嗨, 别提了, 单位新来了个小心眼的领导甲:那没有好日子过了。乙:可不是么, 他就喜欢 揪辫子, 气死我了。  
 A: How about your job recently? B: Oh, don't mention it. Here comes into my office a narrow-minded leader. B: You are very much out of luck. B: Yes, he likes to **catch you in the wrong**. I am very angry.

d. *Figuratively biased context and variant*

甲:你最近工作怎么样? 乙:嗨,别提了,单位新来了个小心眼的领导甲:那没有好日子过了。乙:可不是么,他就喜欢**揪别人的辫子**,气我了。

A: How about your job recently? B: Oh, don't mention it. Here comes into my office a narrow-minded leader. B: You are very much out of luck. B: Yes, he likes to **catch others in the wrong**. I am very angry.

## 7. 抱佛脚 (Bao Fojiao, lit. 'clasp Buddha's feet'; fig. 'make a hasty last-minute effort')

a. *Literally biased context and base-form*

甲:昨天去山上那寺里烧香了? 乙:是啊,我看来挺唬人的。甲:怎么说?乙:那儿的和尚每天念经时有个习惯,开始之前总要**抱佛脚**,不过我看没什么用。

A: Yesterday you went to the temple in the mountains to burn incense and pray. B: Yes, I think it is bluffing. A: What do you mean? B: The monk there has a habit of **claspng Buddha's feet** before he begins to recite the scriptures. But I think it is useless.

b. *Literally biased context and variant*

甲:昨天去山上那寺里烧香了? 乙:是啊,我看来挺唬人的。甲:怎么说?乙:那儿的和尚每天念经时有个习惯,开始之前总要**抱次佛脚**,不过我看没什么用。

A: Yesterday you went to the temple in the mountains to burn incense and pray. B: Yes, I think it is bluffing. A: What do you mean? B: The monk there has a habit of **claspng Buddha's feet for another time** before he begins to recite the scriptures. But I think it is useless.

c. *Figuratively biased context and base-form*

甲:马上项目要验收,其没把握。乙:那怎么办? 甲:我们老板已经去找做工作了。乙:你们老板就这习惯,开始之前总要**抱佛脚**,不过我看也没有什么用。

A: The project is going to go through an acceptance check. We are not confident about it. B: What can you do? A: Our boss has found a person to pull strings. B: Your boss has a habit of **making a hasty last-minute effort** before it. But I think it is useless.

d. *Figuratively biased context and variant*

甲:马上项目要验收,其没把握。乙:那怎么办? 甲:我们老板已经去找人做工作了。乙:你们老板就这习惯,开始之前总要**抱一次佛脚**,不过我看也没有什么用。

A: The project is going to go through an acceptance check. We are not confident about it. B: What can you do? A: Our boss has found a person to pull strings. B: Your boss has a habit of **making a hasty last-minute effort for another time** before it. But I think it is useless.

## 8. 吃独食 (Chi Dushi, lit. 'eat one's food alone or privately'; fig. 'not share benefits with others')

a. *Literally biased context and base-form*

甲:你没觉得小李这个人有点怪? 乙:你指的什么?甲:在食堂他总是一个吃饭。乙:是的,他就是这样的人,只知道吃独食。别的一概不管。

A: Do you think Xiao Li is a little odd? B: What do you mean? A: He always eats alone in the canteen. B: Yes, he is such a person. He only eats food privately and cares about nothing.

b. *Literally biased context and variant*

甲:你没觉得小李这个人有点怪? 乙:你指的什么?甲:在食堂他总是一个吃饭。乙:是的,他就是这样的人,只知道吃自己的独食。别的一概不管。

A: Do you think Xiao Li is a little odd? B: What do you mean? A: He always eats alone in the canteen. B: Yes, he is such a person. He only eats his own food privately and cares about nothing.

c. *Figuratively biased context and base-form*

甲:你觉得小李这个人有点怪?乙:你指的什么?甲:这次中标是大家集体的功劳,最后荣誉全成了他一个人的。乙:是的,他就是这样的人,只知道吃独食,别的一概不管。

A: Do you think Xiao Li is a little odd? B: What do you mean? A: Winning the bidding this time is due to the team, but at last all the honors belong to him. B: Yes, he is such a person, **never shares benefits with others** and cares about nothing.

d. *Figuratively biased context and variant*

甲:你觉得小李这个人有点怪?乙:你指的什么?甲:这次中标是大家集体的功劳,最后荣誉全成了他一个人的。乙:是的,他就是这样的人,只知道吃自己的独食,别的一概不管。

A: Do you think Xiao Li is a little odd? B: What do you mean? A: Winning the bidding this time is due to the team, but at last all the honors belong to him. B: Yes, he is such a person, **never shares his own benefit with others** and cares about nothing.



# The role of metaphor in categorization

## A time course study

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This study is concerned with the processing of metaphor in real time for the purpose of elucidating metaphor categorization. We distinguish between attributive metaphors such as *THE SURFACE OF THE LAKE IS A MIRROR*, in which the attributes of a lake are likened to those of a mirror, and conceptually complex relational metaphors like *HISTORY IS A MIRROR*, which exhibit a structural resemblance between the topic *HISTORY* and the metaphorical vehicle *MIRROR*. We conducted an experiment that provided evidence that for attributive metaphors only literal meanings of the vehicle are activated, while in relational metaphors they are activated only for 300 ms, but then actively suppressed. Our experimental data suggest that, for relational metaphors, structure-mapping and schema induction underlie metaphorical categorization.

**Keywords:** attributive similarity, relational similarity, schema induction, structure mapping

### 1. Introduction

The role of metaphor in category formation and extension has, for some time now, been recognized as a central concern of cognitive linguistics and cognitive models of embodiment. Studies on the role of metaphor have significant theoretical implications for our understanding of categorization (Johnson 1987; Lakoff 1987; Lakoff and Johnson 1999). Previous cognitive linguistic studies have focused on the analysis of concrete language data, failing to systematically investigate the underlying cognitive mechanisms of metaphorical categorization. Even today, there exists no comprehensive theoretical framework to account for the role of metaphor in category extension and metaphorical categorization. To address this lacuna, the present research, based on the frameworks of structure-mapping and schema-induction within a psycholinguistic research paradigm, sets out to

determine how a metaphor topic and vehicle become associated categorically and how the metaphor vehicle obtains an abstract categorical meaning.<sup>1</sup>

The cognitive approach to metaphor constitutes a major breakthrough in the philosophy of mind and linguistics (see especially Lakoff and Johnson 1999). Contrary to Objectivism, Lakoff and Johnson claim that human reasoning has a bodily basis (known as the Embodiment Hypothesis). According to them, figures of thought and language such as metaphor and metonymy, as well as mental imagery, are central to human cognition. In this philosophical view, categorization is seen as an essential tool used by humans to make sense of experience and for organizing conceptual systems. What distinguishes Objectivism and Embodied Philosophy from each other are their assumptions concerning the role of metaphor in categorization. According to Objectivism, things are in the same category if and only if they share certain properties; i.e., category membership is defined in terms of necessary and sufficient conditions. Imaginative features, which play a role in metaphor and metonymy, are not involved in the Objectivist view of categorization. In contrast, the theory of Embodiment posits that category boundaries are fuzzy, and metaphor and metonymy function as crucial cognitive mechanisms in category extension (Taylor 1995). Thus, the study of the relation between metaphor and categorization has come to be regarded as a testing ground for these two dramatically different philosophies (Lakoff and Johnson 1980; Lakoff 1987).

In cognitive linguistics a number of studies have focused on the role of metaphor in category extension, e.g. polysemy created by metaphor. Sweetser (1990) investigated metaphorically induced polysemous senses of prepositions (e.g. *over*), modal verbs (e.g. *must*) and nouns (e.g. *mother*). She concludes that polysemous meanings emerge as categories with fuzzy boundaries, and the relatedness of these polysemies is most often motivated by metaphors. The significance of the relation between metaphor and categorization also finds its way into studies of the nature of metaphor apprehension. In this regard, a metaphor is often considered to be “a juxtaposition of two concepts conventionally belonging to two distinct categories in a taxonomical fashion” (Shu 2000: 42, 2008: 3), or “replacing the fourth term of a proportion with the second” in a proportional analogy (Ricoeur 1977: 63). In both views, categorical conflict or deviation between the topic and the vehicle is taken as the basis for identifying a metaphor, and the tension evoked by metaphor (or *metaphoricity*) is caused primarily by the disparate nature of the two concepts compared.

In addition to studying the nature of metaphor *per se*, researchers have looked more closely at the *relation* between metaphor and categorization to explain

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1. In cognitive linguistics the terms ‘target’ and ‘source’ are used instead of ‘topic’ and ‘vehicle’, respectively.

metaphor interpretation. It has long been believed that metaphor comprehension can be accounted for by analyzing the nature of the conceptual conflict between metaphorical topic and vehicle. For example, in the cognitive linguistic tradition, the two most widely recognized metaphor theories – Mapping Theory (Lakoff 1993) and Blending Theory (Fauconnier 1994; Fauconnier and Turner 1998) – despite their theoretical differences, agree that metaphors essentially involve some kind of *interaction* between two different categories.

In the psycholinguistic tradition, researchers have also centered their analyses on the relation between metaphor and categorization. In fact, the major psycholinguistic models of metaphor are based on theoretical assumptions about the categorical relation between the topic and vehicle. The Comparison Model (Malgady and Johnson 1976; Miller 1993; Ortony 1979, 1993; Tversky 1977) argues that metaphor topic and vehicle belong to two distinct categories and metaphors are comprehended through a pragmatic three-stage interpretive mechanism. The Categorization Model (Glucksberg 2006; Glucksberg and Keysar 1990) posits that the metaphor vehicle is dual-referent in nature; that is, it has a literal concrete referent and simultaneously an abstract categorical referent. Hence, metaphor comprehension is regarded as the same as property attribution in literal categorization. The Career Model (Bowdle and Gentner 2005; Wolff and Gentner 2000) attempts to reconcile the two previous competing models, positing that whether metaphors involve category violation or category inclusion depends on the degree of conventionality of the vehicle. In this view, the abstract categorical referent is not an inherent property of the vehicle, but rather the outcome of a reinforced association between the vehicle and a categorical referent.

In addition to the recognition of the significance of psycholinguistic empirical evidence, it is increasingly recognized that further metaphor study should diversify its linguistic samples to include metaphors with different semantic characteristics, such as “conventional”, “frozen” or “dead” metaphors, which mostly interest philosophers and linguists, and “novel”, “imaginative” or “creative” metaphors as found in poetry and literature. The importance of the appropriate choice of linguistic samples has been noticed by Stern (2000: 25): “...theories of metaphor are often a function of their authors’ examples”. It is assumed that a specific theory of metaphor can account for only certain groups of metaphors with specific characteristics, and there is still much room for further investigations into different kinds of metaphors.

In contrast to the plethora of studies on the relation between metaphor and categorization, there are but few experimental studies that have explicitly attempted to find evidence for the role of metaphor in the process of categorization. Thus, it is our aim in this study to provide psycholinguistic insights into the relation between metaphor and categorization. In particular, we examine the underlying



dynamic mechanisms of how people process metaphorical vehicles in real time. Since metaphor has been assumed to be an important source of polysemy, we hope that our findings shed light on the motivation underlying diachronic processes of metaphorically induced sense extensions. Such findings will likely have pedagogical implications for the teaching of metaphorical polysemy.

## 2. Theoretical assumptions

### 2.1 Attributive similarity vs. relational similarity

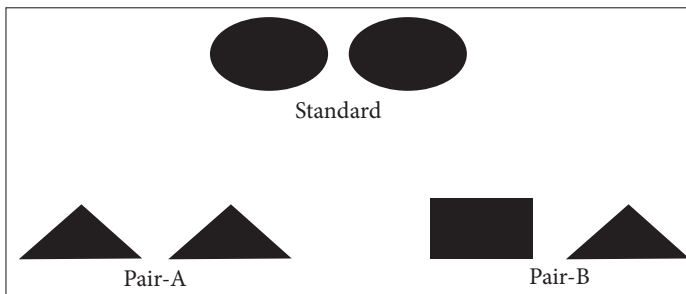
Similarity is viewed as central to categorization, which includes metaphorical categorization with no exception. In general, similarity can be described in terms of two types of information: individual features and structural relations among these features (Blanchette and Dunbar 2000). The literature on similarity is very rich with terminology pertaining to these two types of similarity, and there is even lack of consistency in the use of terminology by the same researchers across various publications in the same period of their research career.<sup>2</sup> The present study, following the tradition of categorization in cognitive science, adopts the most commonly used terms “attributive similarity” vs. “relational similarity”.

Attributive features or perceptual features make a more intuitive contribution. That is, the more perceptual features two things have in common, the more similar they are usually considered to be. This intuition is initially theoretically formalized in the Contrast Model of similarity (Tversky 1977), which construes the similarity of two concepts as a function of their common features weighed against their distinctive features. Similarity increases as the number of commonalities increases or the number of differences decreases. However, a number of important studies have discovered that perceptual features alone are not sufficient for determining similarity and that judgments of similarity are more influenced by shared relational structure than mere perceptual features. Consequently, recent research has paid more attention to relational categories, whose membership is determined by extrinsic relationships among items (Gentner, Anggoro and Klibanoff 2011; Gentner and Kurtz 2001; Goldwater and Markman 2011; Goldwater, Markman and Stilwell 2011; Tomlinson and Love 2010; Christie, Gentner and Haun 2016). It is increasingly recognized that “abstract relation(s)” take(s) the upper hand in

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2. For example, among many others, there are *overall, concrete or object* similarity vs. *relational* similarity in Loewenstein and Gentner (2005); *surface, literal* similarity vs. *deep, relational* similarity in Gentner and Kurts (2001); *intrinsic* similarity vs. *extrinsic* similarity in Barr and Caplan (1987); *direct or element* similarity vs. *structure* similarity in Holyoak (2005), and *structural* vs. *superficial* similarity in Blanchette and Dunbar (2000).

determining similarity and thus categorization (Christie et al. 2016; Goldwater et al. 2016) and that relational categorization constitutes the foundation of higher cognition (Halford, Wilson and Phillips 2010; Goldwater and Markman 2011; Goldwater and Gentner 2015; Goldwater, Markman and Stilwell 2011; Rottman, Gentner and Goldwater 2012). Generally, an abstract relation has two layers of meanings. First, identifying similarity, i.e. the categorizing process, depends on the abstract relation between certain “internal” individual features. This notion can be demonstrated directly and explicitly by some classical empirical studies. Take the pairs of geometric forms in Figure 1 for example (from Holyoak, Gentner and Kokinov 2001: 3). In Figure 1, it is obvious that pair A is similar to the standard pair in a way in which pair B is not. In fact, pair A is judged to be more similar to the standard pair rather than to pair B.

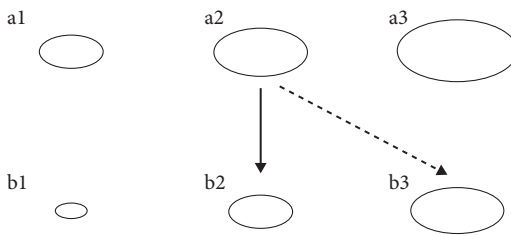


**Figure 1.** Relational similarity illustrated by Premack (from Holyoak, Gentner and Kokinov 2001: 3)

This phenomenon cannot be explained through the feature-based notion of similarity because pair A has at least one shared perceptual feature, i.e., a triangle, with pair B, while having no identical features at all with the standard. That is to say, if similarity resides merely in perceptual features, then pair A and B should be considered to be more similar to each other than pair A is with the standard. However, experimental findings have shown that pair A and the standard are considered to be in the same category (Holyoak, Gentner and Kokinov 2001).

A theoretical question arises here: what is the similarity that mediates pair A and the standard pair? It does not reside in the physical, perceptual forms, which do not overlap at all. Rather, it abstractly resides in the *relation* between the two triangles in pair A and the *relation* between the two circles in the standard. That is, both pairs exhibit the same abstract relation *sameness of shapes*.

Another account of obtaining the abstract relational similarity relies on the abstract relation between certain object and certain “external” objects. This notion can be illustrated by Goswami’s study (1995: 880) as depicted in Figure 2.



**Figure 2.** Relational similarity illustrated by Gentner and Markman (1995: 125). (labels added by authors of the present chapter)

As shown in Figure 2, the circle in the middle of the top row (a2) is considered to be equally similar to two of the circles (b2 and b3) in the lower row as indicated by the arrows. On the one hand, the dashed arrow indicates an exact similarity relation where a2 is mapped onto b3 based on the perceptual feature of size. On the other hand, the solid arrow shows a relational cross-mapping where perceptual identity is ignored and the similarity is based on the *relational* size of the objects. In the same vein, when categorizing, subjects tend to take a1 and b1, a2 and b2, a3 and b3 as three categories respectively. Goswami's study empirically demonstrated that the perception of *relational* size tacitly outweighs mere perceptual size, even for 4-year-olds.

In light of the drawbacks of feature-based similarity theories, the Structural Relation Model (Bassok and Holyoak 1989; Gentner and Markman 1997; Haun and Call 2009; Mareschal and Richard 2008) posits that concepts are structured representations that encode features as well as the relations among the features (i.e. structural relations). A striking property of the Structural Relation Model, which differentiates it from Feature Matching Comparison Theories, is that the key similarities reside tacitly in the relations that hold within two conceptual domains rather than concrete features of individual objects.

## 2.2 Schema induction as categorization

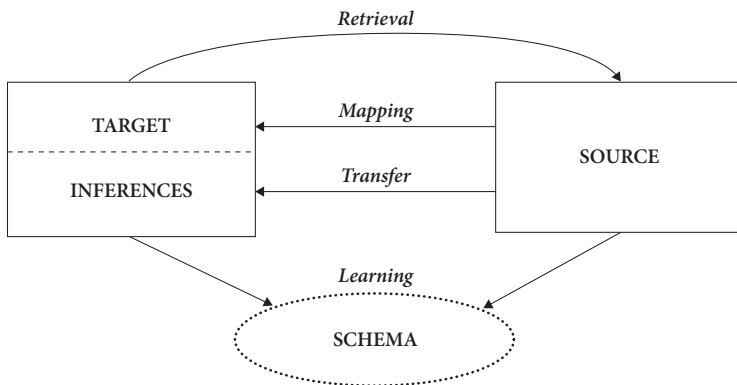
As to the nature of the dynamic process of categorization in metaphor, the present study attributes it to the process of schema induction in analogical reasoning, which is based mainly on the mapping of relational similarity between the topic and the vehicle.

'Schema' has been an important notion in cognitive linguistics. Johnson (1987: 29) defines a schema as follows:

A schema consists of a small number of parts and relations, by virtue of which it can structure infinitely many perceptions, images, and events. In sum, image schemata operate at a level of mental organization that falls between abstract propositional structures on the one side and particular concrete images on the other.

A schema is a recurrent representative pattern, shape and regularity of the ongoing experiences in life. To understand the notion of schema, several points should be borne in mind: First, schemas are dynamic rather than static in nature. Second, schemas have gestalt properties. That is, although they may contain components and relations among components, their meanings can only be interpreted in a holistic way. Third, as Lakoff (1987: 456) proposes, schemas are the basis for abstract reasoning and the mechanism in which abstract concepts are represented. Categorization is often interpreted as an abstract representation that captures what instances have in common. We refer to such abstract representations as schemas. A schema might specify a number of exemplars. Once a schema has been acquired, it can support several kinds of inferences. A schema can be used to make predictions about hidden aspects of examples already observed.

As for the induction process of a schema in metaphor processing, we rely mainly on Holyoak's argument for schematic learning through comparison (2004), illustrated in Figure 3.



**Figure 3.** Schema inductions in analogical reasoning (Holyoak 2005: 118)

As depicted in Figure 3, in a comparison (e.g. man-wolf), the target analog (e.g. man) initially provides certain meaningful retrieval cues for a potential source analog (e.g. wolf), after which a structure mapping or a set of systematic correspondences is established that serves to align the elements of the source and target (Falkenhainer, Forbus and Gentner 1989; Gentner 1983). On the basis of the mapping between structural relations, new inferences about the target may be developed, as a result of which new information is conveyed. What is of more significance for human cognition is the fact that based on such analogical reasoning about a pair of analogs, some form of relational generalization may take place, yielding a more abstract schema for a category of situations, in which the source and the target are both included. This induction of the abstract representations paves the way for the schema, which can be applied to new experiences in life.

This process has been regarded mainly as the basic mechanism of learning. We hold that schema induction also serves as the mechanism for how the vehicle in a metaphor acquires its abstract categorical referent and thus instantiates an act of categorization.

### 3. Working hypotheses

To understand the role of metaphor in categorization, a central issue concerns how and when a vehicle gains an abstract categorical referent in the process of categorization. Different theories have different predictions regarding the mechanism and the time course for the vehicle to attain the level of categorical referent abstractness. According to the Comparison Model, at the outset of metaphor comprehension, metaphor vehicles do not yet attain their categorical referents, and metaphor topic and vehicle are at the same level of abstractness. Metaphors are processed through a comparison mechanism that evaluates the degree of overlap of the concrete features shared by the two terms. On this view, metaphors are processed indirectly in a sequential manner: they are initially recognized as anomalous, i.e. as a category mistake and subsequently comprehended through property-matching (Tversky 1977). On this account, metaphors are processed via retrieving and matching the concrete literal meanings of the topic and the vehicle. Throughout the time course of metaphor processing, there is an even activation of the literal meanings in the vehicle.

According to the Categorization Model, metaphor comprehension begins with direct property attribution, with the vehicle providing abstract properties from an ad hoc category and the topic providing dimension(s) to receive property attribution. On this view of categorization, metaphor-related abstract features in the vehicle are initially activated, and metaphor-unrelated concrete features are actively suppressed (Gensbacher, Keysar and Robertson 2001). Throughout the time course of metaphor comprehension, there is always an activation of the abstract referent and a suppression of concrete literal meanings in the vehicle. Moreover, similar to the Categorization Model, the Comparison Model also fails to take into account the role of the topic, i.e. the type of similarity between the topic and the vehicle; that is, the role of the metaphor topic in constraining the induction of the abstract referent in the vehicle is not specified.

We posit that if an abstract superordinate category is created on the fly as the by-product of schema induction based on structure-mapping between the topic and the vehicle, as the structure-mapping process entails the property of first-matching-later-mapping in the time course, then metaphorical categorization will occur at later stage in the time course of metaphor processing. Operationally, this

tendency can be detected through testing priming effects of various metaphors with distinct types of similarity on various targets at different stages of metaphor processing. More specifically, there will be a positive priming effect for a concrete target at an early stage of metaphor processing (e.g. 375 ms SOA) and increasingly positive priming effects for an abstract categorical target at later stages (e.g. 750 ms SOA and 1500 ms SOA).<sup>3</sup> The choice of these three SOAs is based on the consideration that they stand respectively for three qualitatively distinct phases in the course of language processing. What is more, 375 ms represents the opportunity to assess automatic processing of simple linguistic information, such as basic conventional semantic features. A time period of 1,500 ms is long enough to permit attentional processing of complex linguistic information, such as syntactical reconstruction and sentence-level reanalysis. A period of 750 ms constitutes an intermediate, transitional stage between these two extremes (Neely 1991). We assume that as we hypothetically propose, if metaphor is processed through a structure-mapping and schema-induction mechanism, then the initial stage of concrete feature alignment can be tentatively detected by investigating the activation of various semantic features at the 375 ms SOA, and the induction of abstract features, which are crucial for metaphor understanding in terms of abstract attribute projection at the 1500 ms SOA. And the intermediate stage at the 750 ms SOA may reflect a transition between the two stages. Moreover, since the present study hypothesizes that metaphorical categorization takes structure mapping as the basis, the nature of the similarity between the topic and the vehicle should exert influence on the induction of the relational referent in the vehicle.

Based on the above reasoning, we formulate two hypotheses concerning the pattern of the time-course of metaphorical categorization:

Hypothesis 1:

If metaphorical categorization results from abstract schema induction based on structure or relational mapping between the topic and the vehicle, then, since structure-mapping and schema induction is characterized by first-alignment-later-projection in the processing time course, there will be an early-concrete-late-abstract tendency in priming effect in metaphor processing. Operationally, this tendency can be detected through testing the priming effects of metaphor vehicles on various targets with different levels of abstractness throughout the time course. More specifically, there will be a positive priming effect for the concrete literal target at an early stage of metaphor processing (375ms SOA) and increasingly positive priming effect for the abstract categorical target at later stages (750ms SOA and 1500ms SOA).

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3. SOA is the abbreviation for Stimulus Onset Asynchrony, and refers to the interval between the onsets of the prime and the target.

### Hypothesis 2:

If metaphorical categorization relies on structure mapping between the topic and the vehicle, then it can be predicted that only those that convey structural or relational similarity have the pattern of priming effect described in H1. For those conveying attributive similarities, throughout the time course, only concrete meanings in the vehicle will be evenly activated, which will be reflected through an even priming effect for the literal senses in the vehicle.<sup>4</sup> Accordingly, there should be no priming effect for the abstract senses throughout the time course.

## 4. The experiment

### 4.1 Research aim

The goal of this study is to explore the mechanism concerning the role of metaphor in categorization. To this end, we conduct an experiment to elucidate how the vehicle in a metaphorical relation achieves a categorical interpretation in the time course of abstract schema induction.

### 4.2 Method

#### 4.2.1 *Participants*

There were 96 voluntary participants initially, 28 males and 68 females, recruited from undergraduate students in a university. The ages of these participants ranged from 18 to 24 years, with an average age of 21.5 years. They all spoke Chinese as their first language with normal or corrected-to-normal vision. They were rewarded a small gift for their participation.

#### 4.2.2 *Design*

Three independent variables were considered: priming metaphor type, target type and different SOA. Thus a 2 (priming metaphor type: attributive metaphor; relational metaphor)  $\times$  3 (target word type: abstract, concrete, unrelated)  $\times$  3 (SOA: 375 ms, 750 ms, 1500 ms) mixed design was adopted. SOAs were manipulated between subjects while priming metaphor type and target type were manipulated within subjects. The dependent variables were reaction time and accuracy rate.

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4. Metaphors conveying attributive similarities and those conveying relational similarities are abbreviated as attributive metaphors and relational metaphors respectively in the rest of this chapter.

### 4.2.3 Material development

A. *Manipulation of priming metaphor similarity.* A sample of 30 pairs of metaphors was taken from previous studies or generated by the authors. Each pair was designed to have the same vehicle yet different topics, e.g. 湖面-镜子 'lake surface - mirror' and 历史-镜子 'history - mirror'. In each pair, one metaphor exhibited attributive similarity between the topic and the vehicle (e.g. lake surface - mirror), while the other exhibited relational similarity (e.g. history - mirror).

B. *Manipulation of target words.* The target words for each pair were generated through four steps as follows: First, 20 undergraduates participated in a property generation task, the aim of which was to identify the two target words that are most commonly semantically associated with each vehicle. The two metaphors in a pair were presented simultaneously, and each participant generated two words (no constraints on word class), which were most closely related to the two metaphors respectively and the first that came to mind (e.g. 湖面-镜子---平静 'lake surface - mirror---flat' and 历史-镜子---反思 'history - mirror---reflective'). The task was conducted at their full leisure. Second, all the words generated in the first step were subjected to a statistical analysis of frequency. For each metaphor, the most frequently created word was chosen as the target word. The words for the attributively similar metaphors were taken as the concrete literal targets, and the ones for the structurally similar metaphors were taken as the abstract metaphorical targets. Third, the unrelated target for each metaphor pair was initially created by the authors, and then subjected to a 7-point scale rating with 1 denoting "not related at all" and 7 denoting "very closely related". Twenty subjects participated in the rating task independently. The result showed that the intended unrelated words had a mean of 2.3. Fourth, 90 nonword filler targets were generated by the authors.

In order to control the frequency of the target words, all of them were further subjected to a 7-point scale frequency rating with 1 denoting "not frequently encountered at all" and 7 denoting "very frequently encountered". The scores of the three critical conditions of target words were subjected to a one-way ANOVA test, and the results showed that there were no significant differences among the three critical groups of target words ( $F = .330, p = .720$ ), with the means as 5.44, 5.46 and 5.56 respectively.

For each critical experimental pair, there were three types of targets, thus yielding 180 trials in total. All the nonword targets were paired with the filler metaphors, which were an independent group of 90 metaphors presented twice. So there were in total 180 trials in the formal experiment. A sample of the stimuli is presented in Table 1.



**Table 1.** Composition of the stimuli used in the experiment

Priming metaphorical pairs	Target word types		
30 attributive metaphorical pairs (e.g., 湖面-镜子 <i>lake surface-mirror</i> )			
30 relational metaphorical pairs? (e.g., 历史-镜子 <i>history-mirror</i> )	literal concrete  (e.g., 光滑 <i>smooth</i> )	abstract metaphorical  (e.g., 反思 <i>reflective</i> )	unrelated word  (e.g., 曲调 <i>melody</i> )
90 fillers (e.g., 爱情-游戏 <i>love-game</i> )		nonword	

### 4.3 Procedure

Subjects were instructed to comprehend a metaphor presented visually on the computer screen and then to fulfill a lexical decision task. The procedure was run by E-prime software. A red fixation “+” was initially presented for 500 ms, then a stimulus metaphor was presented sequentially. That is, a metaphor topic, e.g. 湖面 ‘lake surface’, was presented for 500 ms, and then the copula verb 是 ‘is/are’ was presented for 200 ms. Following this, the vehicle, e.g. 镜子 ‘mirror’ was presented for 375 ms, 750 ms or 1500 ms, respectively, within subjects as manipulation of target SOAs. Upon the offset of the vehicle, a target, e.g. 光滑 ‘smooth’ was presented for 2000 ms. The participants were instructed to carefully read and figure out the similarity conveyed by the topic and vehicle pair, and make a key press as quickly and accurately as possible as to whether the target word was a meaningful Chinese word or not. The reaction time between the onset of the target and the key press was recorded as the dependent variable. Reaction times longer than 2000 ms were regarded as invalid responses. After the key press, a 1-second blank was presented as trial interval. The participants were informed that a cloze test related to the experimental stimuli would be conducted to guarantee that they had fully attended to the experiment tasks.

## 5. Results

Data from 8 subjects were excluded from further analyses due to their failure to reach an accuracy rate of 80%. Only correct responses were recruited for further statistics. On each condition, reaction times falling out of 2.5 standard deviations were considered as outliers and excluded from further analyses, resulting in a rejection of 4.08% of all responses. The data from the remaining 88 subjects, 30 in the 375 ms SOA condition, 31 in 750 ms SOA and 27 in 1500 ms SOA, were

included in the following analyses. The descriptive data of mean response times and mean accuracy rate for each condition are presented in Table 2.

**Table 2.** Mean lexical decision RT (in ms) and ACC (%)

Metaphor Similarity Type	Attributive			Relational			N
	Literal	Metaphorical	Unrelated	Literal	Metaphorical	Unrelated	
375 ms SOA	544(95.7)	563(95.4)	560(95.2)	539(95.7)	557(94.2)	563(94.3)	30
750ms SOA	546(95.3)	578(93.4)	563(93.4)	588(90.7)	545(95.6)	573(93.7)	31
1500 ms SOA	520(93.3)	542(96.3)	545(95.4)	541(92.4)	521(96.1)	541(95.2)	27

The overall results from the three-factor analysis of variance (metaphor prime type, target type, and SOA) using subjects as a random factor are reported first. There was no significant main effect of metaphor similarity type on target lexical decision time,  $F_{(1, 85)} = .085$ ,  $MSE = 82.716$ ,  $p = .771$ . Collapsing across all conditions of target types and SOAs, subjects were equally fast in the attributive similarity condition ( $M = 552$  ms) as in the relational similarity condition ( $M = 553$  ms). The main effect of target type reached significance,  $F_{(2, 170)} = 3.709$ ,  $MSE = 5417.185$ ,  $p = .027$ . Collapsing across conditions of metaphor similarity type and SOAs, responses were equally fast in the concrete target condition ( $M = 546$  ms) and the abstract target condition ( $M = 551$  ms); and the two in turn were significantly faster than in the unrelated target condition ( $M = 558$  ms). The main effect of SOA was also significant,  $F_{(2, 85)} = 4.171$ ,  $MSE = 40570.008$ ,  $p = .019$ . Responses were faster when targets were presented at 1500 ms ( $M = 535$  ms), and were slower at the 375 ms SOA ( $M = 554$  ms) and 750 ms SOA ( $M = 566$  ms). The interaction between metaphor similarity type and SOA was not significant,  $F_{(2, 85)} = 1.042$ ,  $MSE = 1013.104$ ,  $p = .357$ . The interaction between target type and SOA was not significant either,  $F_{(4, 170)} = 1.732$ ,  $MSE = 2530.015$ ,  $p = 0.145$ . However, the interaction between metaphor prime type and target type was significant,  $F_{(2, 170)} = .17.868$ ,  $MSE = 17287.853$ ,  $p < .000$ . Collapsing across three SOAs, when primed by the metaphors with attributive similarity, the concrete targets were responded faster than the unrelated control targets, ( $M = 537$  ms and  $M = 556$  ms respectively). The responses for the abstract target words were slower than the unrelated control targets ( $M = 561$  ms and  $M = 556$  ms respectively). However, for the abstract target words, when primed by the metaphors with relational similarity, the priming pattern was reversed. That is, the abstract target words were faster than the unrelated control targets, ( $M = 541$  ms and  $M = 559$  ms respectively), yet the concrete target words were not significantly slower than the unrelated control targets ( $M = 556$  ms and  $M = 559$  ms respectively). The three-way interaction

with SOA also reached significance,  $F_{(4, 170)} = 5.546$ ,  $MSE = 5365.592$ ,  $p < .000$ , and indicated that the pattern of the interaction between metaphorical similarity and the target words altered across the three levels of SOAs.

The ANOVA on the ACC rate yielded a significant main effect in target word type,  $F_{(2, 170)} = 3.728$ ,  $MSE = 0.008$ ,  $p = 0.026$ , and a marginally significant main effect in SOAs,  $F_{(2, 85)} = 2.761$ ,  $MSE = 0.01$ ,  $p = 0.069$ . The two-way interaction effect between the target word type and the SOA, and the three-way interaction effect between metaphor similarity type, target word type and the SOA both reached significance,  $F_{(4, 170)} = 3.605$ ,  $MSE = 0.007$ ,  $p = 0.008$  and  $F_{(4, 170)} = 3.273$ ,  $MSE = 0.007$ ,  $p = 0.013$ , respectively.

To test the predicted effects of metaphor similarity on different targets at the three SOA, several planned comparisons were conducted. When presented at the shortest SOA (375 ms) and primed by metaphors with attributive similarities, subjects responded to concrete literal targets ( $M = 544$  ms) marginally significantly faster than to the unrelated control targets ( $M = 560$  ms),  $t_{(29)} = -1.894$ ,  $p = 0.068$ ; subjects responded almost equally slowly to abstract targets ( $M = 563$  ms) as to the unrelated control targets ( $M = 560$  ms),  $t_{(29)} = .549$ ,  $p = 0.587$ . A similar pattern of priming effect was detected when primed by metaphors with relational similarities, i.e., subjects responded to concrete literal targets ( $M = 539$  ms) significantly faster than the unrelated control targets ( $M = 563$  ms),  $t_{(29)} = -3.514$ ,  $p = 0.001$ . Although the mean reaction times for the abstract metaphorical targets ( $M = 557$  ms) was faster than for the unrelated control targets ( $M = 563$  ms), the difference did not reach a level of statistical significance,  $t_{(29)} = -1.193$ ,  $p = .242$ . This pattern of data showed that at an early stage of metaphor processing, no matter whether the metaphor had attributive similarity or relational similarity, there were similar patterns of priming effect for the concrete literal target words. That is, at the outset of metaphor processing, the concrete features of the vehicle were activated in both similarity conditions. This is unsurprising for the metaphors with attributive similarity. However, for metaphors with relational similarity, this finding is of more significance. This finding seemed somewhat counter-intuitive in that the initial retrieval of lexical knowledge also involves concrete literal features even for relational metaphors that ultimately have abstract interpretations.

These findings also have important implications for the nature of structure mapping. As we described above, structure mapping is assumed to have the characteristic of first-matching-later-projecting in terms of the time course of processing. While the nature of this processing remains unsolved in previous research, our study provides new theoretical insights in this regard. Recall that 375 ms SOA is generally considered as a stage at which automatic processing of simple semantic information occurs, we can then tentatively conclude that the

initial stage based on concrete semantic feature matching in metaphor processing is automatically processed.

When the targets were presented at 750 ms SOA, the pattern of response times in this longer delayed decision condition is quite different from that in the 375 ms SOA. When primed by attributive metaphors, subjects responded to concrete literal targets ( $M = 546$  ms) marginally significantly faster than the unrelated control targets ( $M = 563$  ms),  $t_{(30)} = -1.378$ ,  $p = 0.078$ . Different from the 375 ms SOA condition, subjects responded now to abstract metaphorical targets ( $M = 578$  ms) more slowly than to the unrelated control targets ( $M = 563$  ms),  $t_{(30)} = 1.733$ ,  $p = 0.093$ . These results indicate that when primed by attributive metaphors, the concrete literal features remain activated till 750 ms SOA. Contrary to the 375 ms SOA, in which the abstract target words were not responded to significantly faster, despite the fact that the mean response time was slower than for the unrelated control target words, the abstract lexical features become actively suppressed at this stage of processing. The pattern of priming effect was roughly in an opposite direction for metaphors with relational similarity. Although the concrete literal targets ( $M = 588$  ms) had a slower mean response time than the unrelated control condition ( $M = 573$  ms), the difference did not reach significance  $t_{(30)} = -2.651$ ,  $p = 0.13$ , indicating that the relational metaphors exerted no priming effect for the concrete target words at the intermediate 750 ms SOA. In contrast, the abstract targets ( $M = 545$  ms) were responded to significantly faster than the unrelated control targets ( $M = 573$  ms), ( $M = 563$  ms),  $t_{(30)} = -3.694$ ,  $p < .001$ , indicating a strong priming effect on the abstract targets in this condition.

When the SOA was 1500 ms, in the condition of attributive metaphor, subjects responded to concrete literal targets ( $M = 520$  ms) faster than to the unrelated control targets ( $M = 545$  ms),  $t_{(26)} = -2.335$ ,  $p = .028$ ; yet the difference between the abstract target words and the unrelated control targets did not reach significance ( $M = 542$  ms and  $M = 545$  ms respectively),  $t_{(26)} = -.357$ ,  $p = .724$ . When primed by relational metaphors, there was no significant priming effect for the concrete targets ( $M = 541$  ms) in comparison with the unrelated control condition ( $M = 541$  ms),  $t_{(26)} = -.0267$ ,  $p = .979$ ; yet the priming effect for the relational target words ( $M = 521$  ms) was marginally significant,  $t_{(26)} = -1.900$ ,  $p = .069$ . These results indicate that at the later stage of metaphor processing only the senses related to the final interpretation of the metaphor are activated, and those that are irrelevant to the final interpretation are not activated.

Further t-tests indicated that when primed by attributive metaphors, response times for concrete literal targets in the 375 ms SOA were as fast as those in the 750 ms SOA ( $M = 544$  ms and  $M = 546$  ms respectively),  $t_{(59)} = -.147$ ,  $p = .884$ , and they were both significantly slower than those in the 1500 SOA ( $M = 520$  ms),  $t_{(55)} = 2.506$ ,  $p = .015$  and  $t_{(56)} = 2.117$ ,  $p = .039$  respectively. This result indicates

that when primed by attributive metaphors, the prime effects for the concrete literal targets remained evenly strong in both the 375 and the 750 ms SOAs, and became greater in the longest 1500 ms SOA. Response times for abstract target words were as fast in the 375 ms SOA as in the 750 ms SOA ( $M = 563$  ms and  $M = 578$  ms respectively),  $t_{(59)} = 1.292$ ,  $p = 0.201$ . The difference between the response times for abstract target words in the 375 ms SOA and in the 1500 ms SOA did not reach significance either, ( $M = 563$  ms and  $M = 542$  ms respectively),  $t_{(55)} = 1.421$ ,  $p = 0.161$ , indicating that throughout the time course, the abstract targets were not significantly primed in the attributive metaphor condition. It should be noted that although the response times for the abstract target words were faster in the 1500 ms SOA than in the 750 ms SOA, ( $M = 542$  ms and  $M = 578$  ms respectively),  $t_{(56)} = 2.273$ ,  $p = 0.027$ , which seemingly indicated a significant priming effect for the abstract metaphorical target words at later stages of the processing course of metaphors with attributive similarity, a deeper look into the data at the 1500 ms SOA would prevent us from drawing such a conclusion. That is, as shown in the analysis of the above results, at the 1500 ms SOA, response times for the abstract metaphorical targets were not significantly faster than those for the unrelated control ( $M = 542$  ms and  $M = 545$  ms respectively),  $t_{(26)} = 2.273$ ,  $p = 0.724$ ).

When primed by relational metaphors, the priming effect for the concrete literal target words was different from that primed by attributive metaphors. Response times for the concrete literal target words in the 375 ms SOA ( $M = 539$  ms) was significantly faster than that in the 750 ms SOA ( $M = 588$  ms),  $t_{(59)} = -4.128$ ,  $p < 0.000$ , and as fast as that in the 1500 ms SOA ( $M = 541$  ms),  $t_{(59)} = -.174$ ,  $p = 0.863$ . These results demonstrate that for metaphors with relational similarity, the concrete meaning of the vehicle is immediately activated at an early stage of processing and is suppressed at later stages. Since the 375 ms in the time course of metaphor processing generally involves automatic processing, it could be tentatively concluded that the activation of the attributive feature in metaphor is automatically motivated. And as the hypothetical structure-mapping initially entails processing that is based on feature alignment, we assume these experimental results speak strongly for our hypotheses.

With regard to the response times for the abstract metaphorical target words primed by relational metaphors across different SOAs, the findings were quite different. Subjects responded to the abstract metaphorical target words in the 375 ms SOA ( $M = 557$  ms) as fast as in the 750 ms SOA ( $M = 545$  ms),  $t_{(59)} = 0.940$ ,  $p = .351$ . And both the response times for the abstract metaphorical targets in the two SOAs were significantly slower than those in the 1500 ms SOA ( $M = 521$  ms)  $t_{(55)} = 3.335$ ,  $p = 0.002$  and  $t_{(56)} = 1.960$ ,  $p = 0.055$ . These results indicate that when primed by relational metaphors, abstract metaphorical targets were evenly activated at relatively early stages of processing, and were most robustly activated at the

latest stage of processing. As 370 ms is presumably considered as a stage at which lexical information is automatically processed in the time course of comprehension, it could then be assumed that the early stage of structure-mapping, i.e., the stage of feature alignment involves an automatic retrieval of abstract metaphorical senses. It is interesting to note that at the 1500 ms SOA, all response times become significantly shorter, indicating lighter cognitive load under this condition.

## 6. Discussion

Two relevant interesting findings emerged from this study: (1) metaphor similarity type had significant influence on the priming pattern of various target words; (2) for different types of metaphors with different natures of similarity, there were very different patterns of activation over time for concrete literal and abstract metaphorical target words. These findings provide crucial support for the basic hypotheses formulated for the present experiment. On the one hand, as to the foundation of metaphorical categorization, the present experiment hypothetically took structure-mapping between the topic and the vehicle as the basis for the abstract schema induction, which is taken as crucial for metaphorical categorization. In this respect, the first major finding reported above shows that only those metaphors that are of relational similarity exerted priming effect on the abstract target words, indicating that the induction of the abstract schematic referents in the vehicle can be attributed to the structure mapping, i.e. to the analogical relations holding between the topic and the vehicle. Recall that in the present experiment, when primed by attributive metaphors, the concrete literal target words were consistently primed to a greater degree across the time course, yet the abstract target words were not activated throughout the time course. It is worthwhile noting that at the stage of 750 ms SOA, the abstract target words were processed even significantly slower than the unrelated control target, indicating an active suppression of the abstract sense retrieval in metaphor comprehension.

Even more interesting and significant are the findings in the relational metaphors condition. When primed by this type of metaphor, the concrete literal target words were initially activated at an early stage of comprehension (375 ms SOA), yet the activation fades as time passes, and in a few milliseconds until 750 ms SOA, the activation for the concrete target words disappears. In the latest stage of processing (1500 ms SOA), the concrete target words still remain suppressed. Contrary to the concrete literal targets, the abstract metaphorical target words were not primed at an early stage of processing, and yet, in no more than four hundred milliseconds, namely, at 750 ms SOA, they were significantly activated, and the activation remained until the later stage of processing (1500 ms SOA). We assume

that these patterns of priming cohere with our hypothesis concerning the time course of the induction of the abstract categorical representation. Recall that we recognize schema induction as the basis for metaphorical categorization. Schema induction is assumed to have the time course of first-matching-later-projecting (Gentner and Markman 1997). That is, comparisons (even those with relational similarity) at the initial stage of processing involve the emergence of the concrete literal meanings. At a later stage, the alignment of these concrete literal senses will lead to the induction of a more abstract representation that can include both the topic and the vehicle as its co-members.

The present experiment generally provides evidence that contradicts two metaphor comprehension models, i.e., the Comparison Model and the Categorization Model. First, the Comparison Model together with its corresponding similarity theoretical foundation, i.e., the Contrast Model of similarity (Tversky 1977) posits that metaphor comprehension involves only the matching of concrete features and that the outcome of metaphor comprehension depends on the overlapping of the literal features that are matched. According to this view, metaphor interpretation does not lead to the emergence of any abstract properties, so a metaphor is always considered as a “category violation”. Comparison Theory cannot account for the phenomenon of abstract property emergence and attribution in metaphor comprehension. In light of the empirical findings of the present experiment, we can at least assume that the Comparison View is not comprehensive in that it can serve only as the theoretical explanation for the topic and vehicle pairs with attributive similarity. In a similar vein, the Contrast Model (Tversky 1977) of similarity also merely accounts for metaphors with attributive similarities.

Nor do the results, at least to some extent, support the Categorization Theory, which posits that metaphor understanding is as natural as the understanding of literal category inclusion assertions. According to this model, metaphor comprehension starts with the retrieval and projection of the abstract representation in an existing category denoted by the vehicle. Readers do not encounter an anomaly when they read a metaphor sentence because the vehicle stands for the superordinate *ad hoc* category; i.e., the sentence is understood as a normal category statement. This view cannot solve the problem pertaining to the source of metaphoricity. The logic is, if metaphor is totally the same as a literal category inclusion assertion, then what makes a metaphorical category inclusion assertion a metaphor rather than a literal categorical assertion?

Our results shed new light on our understanding of the phenomenon of metaphoricity, which presumably arises from the tension between category inclusion and category violation in metaphor comprehension and has been regarded as an essential property for an assertion to be a metaphor. In this respect, recall that in the experiment, even when primed by relational metaphors, the concrete literal

meaning of the vehicle was initially primed at an early stage of processing, indicating an early activation of the attributive property in the vehicle. Actually, this finding can better explain the source of the “metaphoricity” in metaphor processing, which has always been considered a pitfall for the Categorization view. That is, if metaphors, as the Categorization Model claims, are processed directly through projecting abstract properties from the vehicle to the topic, then the metaphorical category-inclusion will not be recognized as different from literal category-inclusion assertion. Our tentative account for metaphoricity is as follows. As literal meanings would not lead to legitimate understanding in metaphor reading, they would be judged as semantically “defective” (Searle 1979: 103). This will tax the listeners’ cognitive resources to actively search for a meaningful interpretation of the metaphor based on world knowledge. According to this view, metaphoricity can be accounted for by the tension arising from the additional cognitive effort in competitively suppressing the literal concrete senses initially automatically activated and searching for an alternative metaphorical reading at later stages.

Besides the issue of metaphoricity, which arises from the tension between category aberration and category construction, another crucial problem is the time course of the category construction process *per se*. In this respect, the findings in the present study also shed significant light on the process of metaphorical categorization in terms of its time course. Although several previous studies have initially explored the mechanism underlying categorization in metaphor processing (Gentner and Bowdle 2001; Bowdle and Gentner 2005), these studies were mainly theoretically oriented and did not empirically investigate the dynamic aspect of this process, especially its time course. The present experiment, on the one hand, coheres with Wolff and Gentner’s study (2000), exploring the initial stage of metaphor processing; on the other hand, it looks further into later stages of the process. Besides the time course, our study also complements previous studies in that we manipulated the similarity type of the metaphors used in the experiment.

Another insight provided by the present experiment regards the nature of metaphorical categorization when the time course is analyzed in the framework of enhancement and suppression mechanisms of general language processing. Several studies (Gernsbacher 1989, 1997; Gernsbacher et al. 2001) have shown that language comprehension is enabled by modulating two mechanisms, i.e. enhancement and suppression. Enhancement is the increase in activation of memory nodes that represent information central to the on-going comprehension. Suppression is the active reduction in activation of the memory nodes that represent information potentially confusing or irrelevant for understanding. Gernsbacher et al.’s study (2001) suggests that metaphor comprehension also unexceptionally involves these two mechanisms. Based on a series of priming experiments, their study concludes that suppression plays a crucial role in arriving at an ultimately intended meaning



of metaphors. That is, the readers can infer an intended metaphorical meaning in context by actively suppressing a literal meaning.

It is noteworthy that Gernsbacher et al.'s study demonstrates that the literal meaning of the metaphor is *actively* suppressed, which implies that the literal meaning is to some extent activated so that it is cognitively effortful to actively suppress it. Indeed, Blasko and Connine (1993) provide evidence for the activation of the literal meaning of metaphor vehicles as people hear metaphorical sentences. Using a cross-modal priming paradigm, they demonstrate that immediately following the vehicle of the metaphor (e.g. *Hard work is a ladder*), the concept *rungs* is activated. Blasko and Connine's findings suggest that the literal meaning of *ladder* was available for the readers during comprehension. In contrast to Blasko and Connine's study, other studies strongly claimed that metaphor comprehension involves merely the activation of the abstract superordinate meaning of the metaphor (Glucksberg and Keysar 1990). Based on the findings of the present experiment, we can reasonably suspect that these contradictory findings were due to the failures in manipulating the latency of the priming effect on the one hand and in manipulating the similarity nature of the topic and vehicle on the other.

Specifically, Glucksberg and Keysar (1990) did not report whether the priming effect for the literal meaning was detected or not at later stages of processing. Thus their results showed that only the abstract superordinate meanings of the vehicle were activated. In contrast, Blasko and Connine's study (1993) mainly examined the initial stage of processing; thus their result showed a priming effect for the literal meanings. All these inconsistent results revealed by the present study against previous studies can be tentatively attributable to the fact that previous studies did not manipulate the types of similarity of the topic-vehicle pairs or the SOAs. In this regard, the present experiment, via manipulating SOAs of priming, can serve as a more comprehensive study on various priming effects for various target words at different stages of processing.

Our hypotheses are generally supported. In attributive metaphors, only literal meanings of the vehicle are activated, and the activation persists throughout the entire time course. That is, the abstract meanings, which are irrelevant to ultimate metaphor understanding, are suppressed from the beginning to the end. However, for relational metaphors, although the literal meanings of the vehicle are irrelevant to the ultimate interpretation, they are still activated at the outset of processing, and after a delay of approximate 300 ms, these activations are actively suppressed, and the suppression is maintained until the later stage of processing.

In conclusion, metaphors play a very important role in categorization. Metaphors conveying relational similarity have a priming effect for the abstract target referent words in categorization, yet the same priming effect is not discovered in metaphors with attributive similarity. This finding can be interpreted

as evidence that metaphorical categorization takes structure-mapping based on abstract relational structures as its basic mechanism. As for the time course of the priming effect on various types of target words, there is a first-concrete-matching-later-abstract projecting feature in the time course of the induction of the abstract schematic meanings in the categorical vehicles.

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# Linguistic and mental representations of caused motion in Chinese and English children

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This study examines (non)linguistic representations of caused motion by Chinese and English children in two cartoon-based experiments. Findings of the language production task reveal that typological properties influence the semantic density of children's utterances. Regardless of age, children express denser semantic information in Chinese than in English. In the non-linguistic match-to-sample task, children of 3 years are found to be predominantly path-oriented, as evidenced by their significantly longer fixation on path-match (rather than manner-match) videos. The analysis of reaction time indicates that children of 8 years and adults show significant variations in spatial cognition that can be related to linguistic differences: English speakers tend to be more manner-oriented while Chinese speakers are equally manner- and path-oriented.

**Keywords:** match-to-sample task, reaction time, spatial cognition

## 1. Introduction

The relationship between language and cognition has been, and remains, an intriguing and challenging question across disciplines such as linguistics, philosophy, anthropology and cognitive science. This question has been intensely discussed and debated in the particular domain of space in recent years. On the one hand, the concept of space is traditionally a universal cognitive primitive: the ability to locate an entity and to follow the track of a moving entity is basic and essential to human beings as well as other species. On the other hand, the linguistic systems that encode our spatial experience demonstrate considerable diversity. This stark contrast contributes to the special status of space in linguistics and its contrasting properties lead to a number of fundamental questions in the study of language,

space and cognition, which include “the nature of space in language, the linguistic relativity of space and the relation between spatial language and cognition” (as summarized by Hickmann and Robert 2006).

In this context, the present study aims to investigate the effect of motion event typology at both linguistic and cognitive levels in two cartoon-based experiments. The first task aims to reveal whether, and how, striking language – specific differences affect the course of children’s acquisition of spatial language. In our experimental situation, participants are asked to describe animated cartoons involving caused motion events (e.g. *The boy pushed the ball down the hill*). We investigate the expression of motion events in Chinese children, aged between 3 and 10 years, and adults as the control group and compare it to the expression of motion in age-matched English speakers. Our second experiment is a match-to-sample task aiming to reveal the relationship between language and cognition, as shown in the particular domain of caused motion events. Different age groups of monolingual speakers of English and Chinese are invited to watch short video clips illustrating a specific type of caused motion events and to judge the similarity between motion scenes. We test whether the developmental pattern attested in motion language acquisition in the first experiment manifests itself in the maturation of children’s spatial cognition.

## 2. Representing motion events at linguistic and cognitive levels

The study of language in space can be traced back to the pioneering work developed by Talmy (1985, 2000), who proposes that there are a number of central conceptual components for motion that include figure (moving entity), ground (spatial reference of motion), path (directionality), motion *per se* and two motion co-events, *viz.* manner and cause of displacement (Talmy 1985). These semantic components are expressed in different grammatical categories across the world’s languages with some being more frequently encoded, and thus highlighted, in a given group of languages. Talmy builds his bipartite motion event typology from these crosslinguistic systematic variations: the satellite – framing type and the verb – framing type. The former frames manner in the main verb of an utterance, leaving path to be encoded outside the verbal domain in a particle, preposition or affix (e.g. English, German and most Germanic languages). The latter, in contrast, frames path in the main verb, leaving manner to be expressed in subordination (French, Spanish and most Romance languages).<sup>1</sup>

1. See also Slobin’s (2004) “equipollently-framed” languages in which manner and path are believed to be encoded in grammatical elements with equal formal force and significance.

A number of studies have reported a clear effect of motion event typology in the domain of first language acquisition (Allen et al. 2007; Berman and Slobin 1994; Bowerman 1999; Hendriks et al. 2008; Hickmann 2003, 2006; Ji et al. 2011a; Levinson 2003; Peyraube 2006; Slobin 1996, 2004). Language-specific properties have a detectable influence at the lexical, syntactic and even discursive level. To give an example, Hickmann (2003) compared picture-elicited narratives by children in four languages (English, French, German and Chinese) and found that there were robust crosslinguistic differences in how children represented motion from the age of 4 onwards. French (verb-framing) children tended to encode path alone in their early predicates, whereas children in the other three languages (satellite-framing) typically expressed both manner and path in their predicates, thus leading to a significantly higher semantic density of their early utterances.

Allen et al. (2007) reported that children can detect and acquire even subtle language-specific distinctions at the semantics-syntax level. English speakers distinguish two ways of expressing motion events. They typically use a single clause to encode motion events in which manner is causally related to path (e.g. *The ball jumps down the hill*), but a matrix-subordinate construction to encode events in which manner does not cause the change of locations (e.g. *The ball jumps while falling down from the hill*). They found that, from as early as 3 or 4 years onwards, English children's acquisition of packaging semantic elements into syntactic units was clearly guided by such language-specific syntax-semantic mappings.

On the discourse level, Slobin (2004) looked at children's expression and acquisition of spatial information in a wide range of typologically diverse languages (e.g. Spanish, French, Turkish, Italian, Hebrew, Dutch, German, English, Mandarin, Thai and Russian). He found that the type of information encoded in the discourse and the linguistic means readily available for this encoding can engender further differences in the overall rhetorical style of a narrative discourse (2004: 219–240). English discourses tended to be dynamic, focusing on actions and processes of motion scenes, whereas Spanish and French narratives were more static, emphasizing the situational and resultative aspects of motion events.

Studies, as briefly reviewed above, reveal strong language-specific influence in language acquisition and production, thus reviving, to some extent, the Whorfian hypothesis (Whorf 1956), which claims that differing semantic representations can entail differing conceptual representations in cognition. However, the question of whether the effect of motion event typology goes beyond the level of language use and functions at the deeper level of cognition remains undecided. Some scholars hold that linguistic and non-linguistic representations are relatively independent from each other and the effect of language typology is limited to language behavior only. Seen in this way, the significant crosslinguistic variations in motion encoding are nothing but varied surface realizations of a common



underlying conceptual framework (e.g. Durst-Andersen 2011; Jackendoff 1996; Lucy 1992, Mandler 1992, McWhorter 2014; Spelke 2003). Evidence in support of this view comes mainly from infant studies that show some innate core knowledge that infants display from a few months onwards. In contrast, the alternative view stresses that linguistic and non-linguistic representations cannot be dissociated from each other. Language, as a semiotic system, has major implications for ontogenetic development. It can “filter” or “channel” the flow of information and invite its speaker, from her infancy onwards, to pay habitual attention to particular aspects of events and experiences, thus exerting influence on her modes of cognitive organization (e.g. Berthele 2013; Boroditsky 2001; Boroditsky and Gaby 2010; Blomberg and Zlatev 2009; Bohnemeyer et al. 2004; Finkbeiner et al. 2002; Lupyán 2012; Wolff and Holmes 2011; Zlatev 2011; Zlatev and Blomberg 2015).

The hypothesis of linguistic relativity has been widely examined by cognitive linguists in the particular domain of motion in various languages. Due to major divergences in theoretical basis and research methodology, empirical studies in this regard have produced quite discordant findings. Some scholars report findings that show speakers of typologically contrasting languages (e.g. English vs. Spanish/Greek) conceptualized motion events in a similar way despite their great differences in verbal description of these events (e.g. Gennari et al. 2002; Papafragou et al. 2002). Interestingly, when indicating the existence of a language-independent mode of motion conceptualization towards a given semantic component, these findings differed considerably between a cognitive preference for manner (e.g. Bohnemeyer et al. 2004; Finkbeiner et al. 2002) or for path (e.g. Gennari et al. 2002). These divergent results are obtained in a similar set of experimental formats, including similarity judgment using triadic stimuli, categorization, recognition and memory tasks, thus suggesting that understanding domain conceptualization is a highly dynamic and complex epistemological process, during which more factors need to be taken into account.

Other cognitive linguists find significant language-related differences in modes of motion conceptualization, which provide strong support for the hypothesis of linguistic relativity. Levinson (2003) identified three kinds of frames of reference across languages: (i) an intrinsic framework in which entities are located with reference to the inherent features of the ground object (e.g. *He is in front of the house*); (ii) a relative framework in which coordinates are determined relative to the speaker's point of view (e.g. *He is to the left of the house*); (iii) an absolute framework in which references are established using fixed bearings such as north, south, east and west (e.g. *He is north of the house*). By conducting a number of cross-cultural studies exploring spatial memory and way-finding abilities, Levinson clearly demonstrated that frames of reference in language

constrained spatial thinking in non-linguistic modalities, thus putting forward his neo-Whorfian claim.

Hohenstein (2005) investigated the relationship between spatial language and cognition from a developmental perspective, linking children's acquisitional pattern of typical motion language with regularities in their cognitive maturation. In a match-to-sample task, she found that 7-year-old English speakers fixated on videos matching the manner (rather than path) of a target video more often than Spanish-speaking 7-year-olds and the groups of 3.5-year-old for both languages, suggesting that some non-linguistic thought may be linked to, among other things, linguistic structure.

Realizing some methodological problems in previous studies, Pourcel (2005) used a novel task of spatial inference to test whether English and French speakers showed similar conceptual representations towards the same motion scenario. Her findings support a strong effect of language-based relativity of spatial thinking: English speakers recalled manners more accurately and drew more inferences concerning active processes; their French counterparts memorized paths more accurately and drew more inferences concerning resultative states of events. As Pourcel (2005: 6) points out, motion conceptualization is not static across events and individuals, and can be influenced by a number of variables such as:

- a. the number of stimuli and participants (important conclusions concerning the relationship between language and cognition need to be based on a sufficiently large dataset);
- b. type of figure performing motion (i.e. human, object or animal - speakers tend to conceptualize more on human motion);
- c. type of path followed (i.e. telic or non-telic);
- d. type of manner (i.e. a relatively universal set of major motor patterns, such as walking vs. running, or a fine-grained distinction regarding manner, like striding vs. limping);
- e. type of motion (i.e. spontaneous or provoked);

The list, of course, is not meant to be exhaustive. Many other factors can contribute to the striking divergence in findings from previous studies, for instance, the medium via which motion events are presented (static pictures/photos or dynamic video clips), the nature (naturalistic or imaginary), and context (isolated scenes or in a scenario), of motion, and the variety of cognitive processes investigated (e.g. recall, inference, recognition, similarity judgment).

### 3. Representing caused motion events in English and Chinese

According to Talmy's bipartite motion event typology, English is typically satellite-framing, in which a caused motion event is typically represented through a "cause-and-manner verb + path particle" combination (e.g. *roll up*). The situation in Chinese is far more complicated, largely due to the fact that no verb inflection or any other morphological devices are available in this language to differentiate a verb from its supporting elements, hence Slobin's (2004) proposal for a new "equipollently-framed" language (see also Chen and Guo 2009; Ji 2015; Ji et al. 2011b).

In Chinese, the specific type of caused motion events – as presented in the study here – is encoded, in the first instance, in a Resultative Verb Compound (RVC) with the following constituents in sequence: V1 (manner verb) + V2 (path verb) + V3 (deictic verb) (e.g. *gun3* 'roll'-*shang4* 'ascend'-*lai2* 'come'). The verb compound as a whole is intransitive in nature and cannot readily take its object (\*'He roll-ascend-come the ball'). Two syntactic constructions are recruited to remedy this problem: (i) a simplex *ba* structure in which the object is prefixed to the front of the verb compound: 'He *ba* the ball roll-ascend-come'); (ii) a matrix-subordinate structure in which the transitive V1 in the RVC is singled out to take the object, suffixed with a durative aspectual marker *zhe* and presented as a background scenario against which the motion event unfolds (i.e. analogous to the English *V-ing* form: 'He, rolling the ball, ascend-come'). Relevant previous studies confirm that Chinese speakers equally frequently use an RVC in conjunction with either *ba* or *zhe* structure for caused motion expression in oral and written media (e.g. J. Chen 2007, L. Chen 2005; Chief 2004; Chu 1987; Ji et al. 2011b; Li and Thompson 1976; Zhao 2005).

### 4. Experiment 1: The elicited language production task

#### 4.1 Research question and hypotheses

We aim to investigate, in the first linguistic task, which factor (i.e. universal or language-specific) has a larger role to play in children's acquisition of the characteristic pattern for caused motion expressions in their native language. Two hypotheses are put forward:

- a. If the cognitive universal has a decisive impact on acquisition, we expect the semantic density of children's utterances to significantly increase with age within a given language group, but to remain comparable between age-matched English and Chinese children (i.e. clear effects of age);

- b. If language-specific factors largely determine children's acquisition, we then predict that the utterance density will be significantly higher in Chinese than in English at a given age level, but will not undergo substantial increase with age in a given language group (i.e. clear effects of language typology).

## 4.2 Methodologies

### 4.2.1 Participants

A total of 168 speakers participated in Experiment 1 and were divided into two language groups (English and Chinese; 84 participants per group) and seven age levels (3 years, 4 years, 5 years, 6 years, 8 years, 10 years and adults; 12 participants per level). Participants were recruited from nurseries, primary schools and universities in Qingdao (China) and Cambridge (UK), respectively.

### 4.2.2 Stimuli

The stimuli comprised 32 short video clips showing a particular type of caused motion events in which an agent named Hoppy performed a specific causing action that caused an object to move along a certain path. Meanwhile, Hoppy accompanied the object throughout the course of its movement.

This set of stimuli was designed and developed by Hickmann et al. (2009) who analyzed each stimulus as representing a set of particularly rich semantic components for motion: (i) motion *per se* (applicable to all stimuli), (ii) cause (the causing relation between the agent and the object; applicable to all stimuli), (iii) path (congruently applicable to both the agent and the object: *up*, *down*, *across*, *into*), (iv) three manners – manner of cause (either *pushing* or *pulling*), manner of the agent's motion (*walking*) and manner of the object's motion (either *rolling* or *sliding*). In all stimuli, manner and path were demonstrated as equally salient and occurring simultaneously.

### 4.2.3 Procedures

Participants were invited to describe the short video clips to an imaginary addressee who had no visual access to the cartoons but would like to know as many details as possible. A training item was provided at the start of each testing session to familiarize the participants with varied types of information they were expected to offer. The experimenter always asked the participant "What happened?" at the beginning of each presentation, but did not seek to interrupt the participant's narration during the rest of the session. If the participant failed to provide any specific caused motion component (e.g. *A boy and a balloon here*), questions would be asked such as "How about this boy?" and "What happened to this balloon?" (see Hickmann et al. (2009) for details).

#### 4.2.4 Data coding

All narration was transcribed into CHAT format of CHILDES (MacWhinney 2000). Two sets of analyses were conducted. In the quantitative analysis, a single target clause was determined for the speech of each participant for the sake of statistical operations. The analysis focused on the number of information types that had been selected for expression by the speaker (i.e. utterance density). Following Hickmann et al. (2009), two main criteria were recruited in determining the target clause: *richness* (i.e. which clause contained the largest number of caused motion components) and *path salience*, in cases where an equal number of components were expressed across clauses (i.e. the clause encoding path of motion was preferred over clause expressing any other component; see Example 1, below).

- (1) a. Hoppy was walking [manner] down [path] the hill [target clause] and he was pushing [manner] a ball. [criterion: *richness*]
- b. The boy was walking [manner], and he went down [path] the hill [target clause]. [criterion: *path salience*]

In the second part of the qualitative analysis, all speech of the participants was taken into account. Apart from the information type, other aspects such as the information locus (i.e. where a given component was encoded across an utterance: within the main verb or outside it) and syntactic strategy beyond clause level (simplex sentence, complex sentence, coordinated clauses, etc.) were examined in detail.

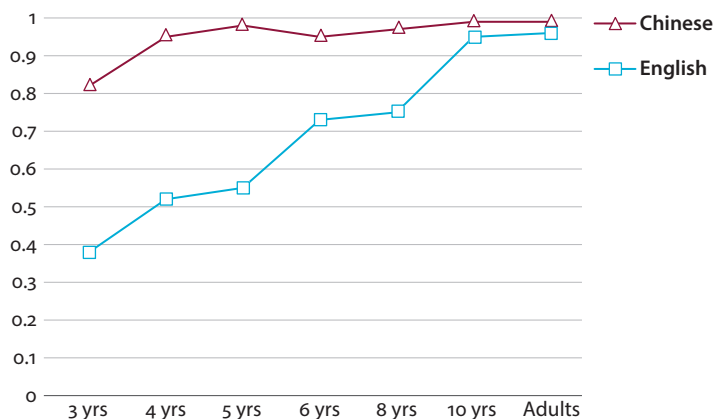
### 4.3 Results

#### 4.3.1 A quantitative analysis of the semantically rich utterances

The first part of the analysis focused on utterance density (UD), which was defined in the present study as the number of information types encoded across an utterance. It was revealed, first of all, that participants across ages tended to produce semantically rich responses (UD = 3 or 4) in predominating proportions, as illustrated in Figure 1. Utterances encoding two or only one type of motion component were found to be occasional even among groups of the youngest children.

- (2) a. He pulls [cause+manner] a trolley into [path] the cave. [UD = 3]
- b. *ta1 la1* [cause+manner] *zhe xiao3che1 zou3-jin4* [manner+path]  
s/he pull DUR trolley walk-enter  
*shan1dong4*. [UD = 4]  
cave  
‘S/he, pulling a trolley, walked into the cave’

Further examinations were conducted regarding the semantically dense responses with the aim of revealing how the mean frequency of utterances with UD = 3 or 4 varied across age levels and between language groups.



**Figure 1.** The mean frequency of utterances with UD = 3 or 4 as a function of language and age

Two observations are particularly noteworthy. First, utterance density significantly increased with age in English. It was after the age of 8 years that the responses produced by English children approached the adult-like semantic density (English 10-year-olds: 95% = English adults: 96%). In stark contrast, such a developmental progression was almost absent in Chinese where the children of 3 years already started producing responses encoding multiple types of semantic information. In fact, children’s utterance density in Chinese struck a “ceiling level” soon after the age of 3 (ages 4–10: 95%–99%).

Secondly, between the ages 3 to 8, the utterance density was significantly higher for Chinese children than for the age-matched English children (CH03: 82% > EN03: 38%; CH04: 95% > EN04: 52%; CH05: 98% > EN 05: 55%; CH 06: 95% > EN06: 73%; CH08: 97% > EN08: 75%). This tendency was found to be highly systematic across individuals and across different types of path (i.e. *up*, *down*, *across*, *into*).

A closer look at the data revealed that the high utterance density in Chinese was realized through the combined use of an RVC and the syntactic construction with a durative marker *zhe*. To illustrate, we examine (2b) in Section 4.3.1 (‘S/he, pulling a trolley, walked into the cave’). The main verb *zou3-jin4* ‘walk-enter’ of the sentence assumed the form of a compound word with the first constituent denoting the agent’s manner of motion (i.e. *walking*) and the second constituent the trajectory of motion (i.e. *entering*). In the periphery of the sentence, via a subordinated clause signaled by *zhe*, the manner of cause (i.e. *pulling*), along with

the causal relation *per se*, was expressed. Seen in this way, the response encoded up to four types of semantic components for motion, although these information types were not presented as being of the equal prominence. Those expressed in subordination were rendered a focus in semantics, but a demotion in syntax and a background in pragmatics (i.e. *pulling a trolley*) (please see Ji 2015: 208-213 for a more detailed discussion).

In comparison, a characteristic caused motion expression in English assumes a “manner-and-cause verb + path particle” combination, and can express, at most, three kinds of motion components (i.e. *pulling into*). Although the encoding of four types of semantic information is not impossible in English (e.g. *He walked into the cave pulling a trolley*), the atypical pattern incurs syntactic complexity and the presupposed extra cognitive load. It is therefore not favored, even by the English adults.

To sum up, our quantitative analysis of the data suggests clear effects of language typology rather than strong effects of age. In the particular type of experimental condition as presented in this study, the Chinese participants have manipulated varied lexical and syntactic devices that are readily available in their own language to achieve the communicative goal of being maximally informative.

#### 4.3.2 *A qualitative analysis of participants' responses*

The second set of analyses reveals that children's performance differed greatly from that of adults in a qualitative sense, though quantitatively the 3-year-olds (as in the case of Chinese) were able to encode as many information types in an utterance as the adults.

Two aspects of children's responses merit further discussion. First of all, although both English and Chinese children have mostly grasped the typical patterns for motion expression in their own language, their production is far from stable and systematic. English children frequently used the conventional “verb + particle” combination but their ability to use lexically specific motion verbs, *viz.* “manner-and-cause” verbs, was still limited, as evidenced by their substitution of *move* and *bring* for manner-of-cause verbs *push* and *pull* from time to time (e.g. *He moved* [vs. *pushed*] *the balloon down the hill*).

The Chinese children produced RVCs robustly and had established a sensitivity for linking a constituent verb in an RVC with a semantic function (e.g. V1 for the expression of manner information). However, their ability to fully understand the structural and semantic restrictions in connection with RVCs needs to be further refined, as demonstrated in their swapping of subordinated verb for the V1 in an RVC (e.g. ‘The boy, walking, pushed the balloon down the hill’ vs. ‘The boy, pushing [subordinated verb] the balloon, walked [V1 in RVC] down the hill’).

The second observation mainly concerns the Chinese 3-year-olds. In the quantitative analysis, we have seen that they could produce utterances with comparable semantic density to that of adults. A further look at the data, however, reveals that their performance deviated from that of adults in a qualitative sense. Specifically, these Chinese young children tended to express path of motion in an indirect way, which is particularly obvious in caused motion events denoting paths of *across* and *into*.

- (3) a. *Ta1 ba3 che1 cong2 ma3lu4 zhe4 bian1 la1 dao4 na4 bian1.*  
 s/he BA cart from street this side pull to that side  
 (Chinese 3-year-olds)

‘He pulled the cart from this side of the street to that side’

- b. *Ta1 ba3 che1 la1-guo4 ma3lu4.* (Chinese adults)  
 s/he BA cart pull-cross street  
 ‘He pulled the cart across the street’

In Example (3), the Chinese 3-year-old did not express directly the path of *across*. Instead, he provided the source of motion (i.e. *cong2* ‘from’) and the end point of motion (i.e. *dao4* ‘to’), thus leaving the proper trajectory to be inferred on the part of the hearer. Seen in this way, although both sets of 3-year-old children resemble adults in being able to use typical language patterns for motion description, their grasp of these patterns is not yet comprehensive and stable, and shows frequent deviation from the conventional use.

Children’s mastery of typical language patterns for motion expression matures with age. Around the age of 8 years, children’s responses resembled that of adults both quantitatively and qualitatively. They produced semantically rich utterances as frequently as the adults, and these responses were qualitatively similar to that of adults in at least two aspects: the systematic recruitment of the “manner-and-cause” verb and the accumulation of path details apart from a proper trajectory.

- (4) a. Hoppy pushed [manner+cause] the trunk along [path detail] the trail  
 into [path] the cave.  
 b. *Ta1 ba3 xiang1zi yan2* [path detail] *zhe zao3cong2 cong2* [path detail]  
 s/he BA trunk along DUR brushwood from  
*shan1 jiao3 tui1* [manner+cause]-*shang4-qu4*.  
 hill foot push-ascend-go  
 ‘He pushed the trunk upward from the foot of the hill along the  
 brushwood’

Our language production task shows that the cognitive universal factor has little role to play in children’s acquisition of motion expression because it is only



evidenced by the developmental tendency in utterance density attested in English children. In contrast, language-specific properties exert substantial influence on children's acquisitional course. Chinese children achieved significantly higher utterance density than the age-matched English children due to the existence of a verb compound that can simultaneously package multiple motion components for expression. Furthermore, our findings suggest two "critical periods" for developmental progression in children's acquisition. One is the age of 3 years, when children start using typical language patterns for caused motion in their own language, but their performance remains unsystematic and frequently deviates from the adult pattern in important qualitative aspects. The other is the age of 8 years, when children are observed to have fully acquired the characteristic motion expressions in their native language as reflected not only from their "ceiling level" utterance density but also from their fine distinctions of semantic meaning such as manner specificity and path aggregation.

## 5. Experiment 2: The similarity judgment task

### 5.1 Research question and hypothesis

In the second match-to-sample task, we attempt to focus on whether, and how, the developmental pattern as attested in children's acquisition can go beyond the level of linguistic analysis and manifest itself at a deeper level of spatial cognition.

Our research findings in Section 3 have revealed that language-specific factors play an important role in children's acquisition, and that there are two "critical ages" in development, one signifying the onset of the acquisitional process (i.e. 3 years) and the other the maturation of children's language skills (i.e. 8 years). Given these findings, we hypothesize that there will be a "mixed" influence of universal and language-specific factors on children's spatial cognition. Specifically, when children haven't fully acquired the typical patterns for motion expression in their own language, the cognitive universal of "path salience" will be predominant, as previously revealed by Talmy (2000), and both English and Chinese children of 3 years will be significantly path-oriented. However, when children have fully acquired typical motion expressions in their own language, divergences in the pattern of spatial thinking will surface, reflecting typological differences between the two languages (i.e. satellite- vs. equipollently-framed): English children of 8 years as well as adults will be manner-oriented, whereas their Chinese counterparts will be equally manner- and path-oriented.

## 5.2 Methodologies

### 5.2.1 Participants

Participants in this study were native speakers of Chinese and English at the age of 3 years (mean age = 3.2), 8 years (mean age = 8.25) and adults (mean age = 22.6), who were recruited from nurseries, primary schools and universities in Beijing and London.

### 5.2.2 Materials

The stimuli included 16 triads of caused motion events, which largely followed the model of caused motion as developed by Hickmann et al. (2009) (see Section 4.2.2 for details).<sup>2</sup> Each triad consisted of three short video clips (5 sec in duration). The target clip showed a boy performing a specific causing action (e.g. *pushing, throwing*) that resulted in the movement of an entity in a specific manner (e.g. *rolling, sliding*) and along a specific path (e.g. *up, into, towards, around*) (see the Appendix). The other two items in the same triad showed important changes in either manner of motion only, or path of motion only, compared with the target (e.g. Target: The boy pushed his toy car across the icy lake; Manner-alternate: The boy *dragged* his toy car across the icy lake; Path-alternate: The boy pushed his toy car *around* the icy lake).

### 5.2.3 Procedures

Adults and older children of 8 years were invited to sit in front of a MacBook Pro and watch the video stimuli, which were played to them via a stimulus presentation software “SuperLab”. Video clips in each triad were presented in a synchronized series with the target item being played in the central position of the screen. The two alternates immediately followed the target and were played side by side on the screen. There was a 0.5 sec black screen between the target and two alternates within a triad, and a 1 sec interval between triads. The whole testing session lasted approximately 6 min.

Adults and older participants were asked to listen to the audio instruction carefully and judge the similarity between motion scenes as quickly as possible. At the start of each triad, they heard a recorded voice say, “This is 1, which is most like 1”? The time constraint for their response was set to be 1 sec. Further, they were asked to perform a counting task while watching the videos, in which they counted

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2. Hickmann et al.’s (2009) model involved four types of path: *up, down, into* and *across*. The present study extends its investigation to eight dimensions of path, which fall into four categories: (i) Vertical: *up* and *down*; (ii) Boundary-crossing: *across* and *into*; (iii) Deixis: *towards* and *away from*; (iv) Path parallel to Ground: *along* and *around*.

backwards from 100 to 1 and repeated the cycle until the completion of the testing session. This “shadowing” condition aims to prevent older participants from verbalizing motion scenes subconsciously, thus eliciting strict “non-linguistic” responses. Their decisions and the time (in milliseconds; ms hereafter) they used to make their choices were recorded, among other things, in a file automatically generated by SuperLab at the end of each testing session.

A “preferential looking” scheme was utilized with the youngest children of 3 years. The video stimuli were projected onto a 16:9 projection screen and the 3-year-olds were invited to watch the stimuli with the teacher of their class who sat behind the child and provided reassurance only. A video camcorder was placed behind the screen and right above it in a central position to record children’s eye movements while viewing the videos.

#### 5.2.4 *Data coding*

Two types of data were collected from adults and older children of 8 years: categorical data (manner-matched preference or path-matched preference) and behavioral data (reaction time [RT] in millisecond). The behavioral data of viewing time (in ms) was gleaned from younger children of 3 years. Children’s choices were determined by subtracting viewing time of path-matched scenes from that of manner-matched scenes. Thus, positive numbers represented manner-matched judgments while negative numbers indicated a preference for the path-match.

### 5.3 Results

#### 5.3.1 *Categorical preferences and RT across participant groups*

Our first set of analyses focused on which criterion was predominantly used in the judgments of the participants. The choices of adults and the 8-year-olds were determined according to the button on the computer keyboard they pressed during their viewing, which indicated either manner-match or path-match. The preferences of the younger children were calculated by the difference value between the fixation time on manner-matched scenes minus that on path-matched scenes. Table 1 shows the mean number of different types of choices across six groups.

A set of chance analyses regarding path-match responses was conducted and it confirmed that the number of path-match responses fell above chance levels across groups, which seems to indicate a systematic tendency on the part of participants to attend more to path-similarity than manner-similarity between caused motion scenes. Furthermore, a two-way ANOVA was performed with language (Chinese, English) and age (3 years, 8 years and adults) as two between-subjects factors to test whether the number of path-match preferences varied with language and/or age. The results revealed no main effect of language ( $F(1, 192) = .001, n.s.$ ) or

**Table 1.** Mean number of manner-match and path-match preferences across participant groups

Participant groups	Mean no. of manner-match	Mean no. of path-match	No. of triads
C03	6.00	10	16
C08	5.50	10.50	16
CAD	6.06	9.94	16
Total	5.85	10.15	16
E03	5.66	10.34	16
E08	6.25	9.75	16
EAD	5.75	10.25	16
<b>Total</b>	5.89	10.11	16

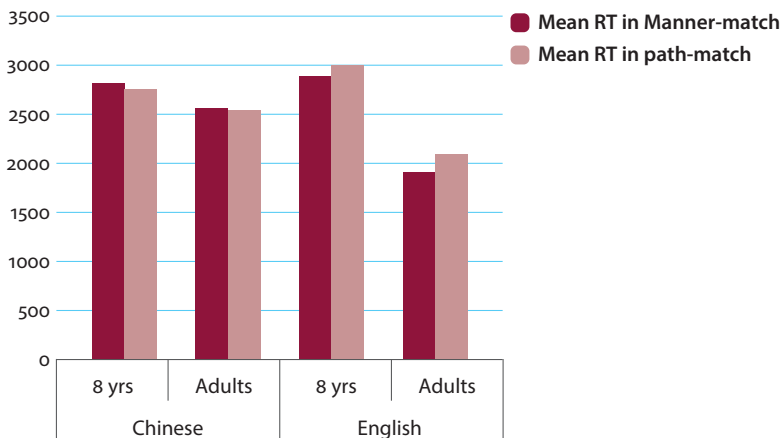
\* C03 = Chinese 3-year-olds; C08 = Chinese 8-year-olds; CAD = Chinese adults; E03 = English 3-year-olds; E08 = English 8-year-olds; EAD = English adults

age ( $F(2, 192) = .004, n.s.$ ), nor any significant interaction between the two ( $F(2, 192) = .715, n.s.$ ).

The above analysis was complemented with an examination of RT amongst adults and older children of 8 years. The RT for a given triad was calculated from the onset of alternates to the completion of a triad with the theoretically longest value of 6000 ms. A prior screening for outliers was conducted by excluding 8 observations that were at a distance of more than two standard deviations from the mean of the distribution. Given the typological difference between English and Chinese (satellite-framed vs. equipollently-framed) in motion description, and its presumed psychological implications (i.e. more habitual attention to manner variations in English vs. equal amount of habitual attention to manner and path changes in Chinese), it is likely that English mature speakers will react quicker in making manner-match judgments while their Chinese counterparts will react equally quickly in making manner- and path-similarity judgments.

Figure 2 shows the mean RT (in ms) in manner- and path-match judgments as a function of language and age. It seems that the difference between RTs was trivial in Chinese; in English, the RT in manner-matched responses was shorter than in path-matched decisions.

This observation was corroborated in a two-way factorial ANOVA test, which was performed with language (Chinese, English) and age (8 years, adults) as two independent variables; the difference in values between RT to the manner-match minus that to the path-match was the dependent variable. The results revealed a main effect of language only ( $F(1, 116) = 4.53, p = .036$ ). English participants responded significantly more quickly in judging manner-similarities (mean RT = 2401.01 ms) than in judging path-similarities (mean RT = 2547.30 ms)



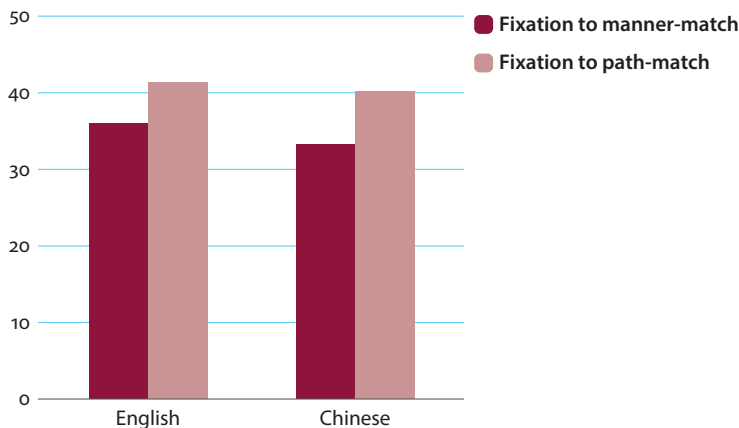
**Figure 2.** Mean RT (in ms) in manner- and path-match judgments by language and age

whereas Chinese speakers used an approximately equal amount of time in judging manner- and path-similarities (mean RT = 2688.96 ms and mean RT = 2652.71 ms, respectively). Unlike the categorical measurement, which showed a shared preference for the path-similarity across groups, the continuous measurement of RT revealed a subtle difference in the pattern of spatial thinking among adults and children of 8 years between English and Chinese (please see Ji & Hohenstein 2018: 62–64 for a different perspective on the results).

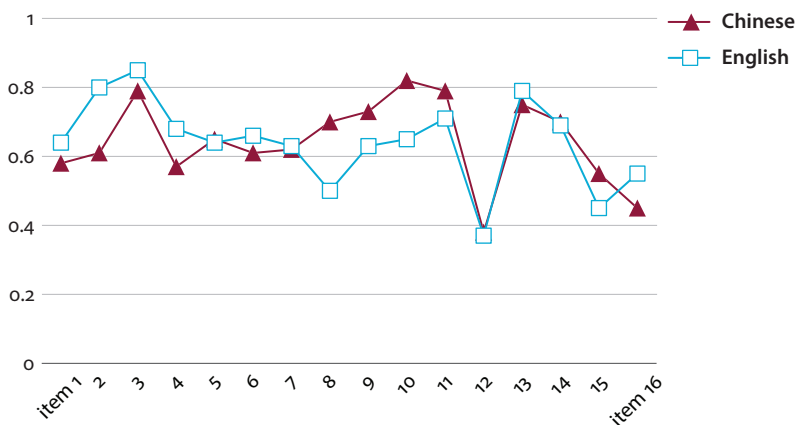
In addition, the youngest children's performance was measured by the time they fixated on manner- vs. path-matched motion scenes. An independent *t*-test had been conducted to see whether the difference scores between the looking time (in sec) to the manner-match minus that to the path-match varied between languages. The results indicated that 3-year-old Chinese children, like their English counterparts, were more oriented towards path dimension (Chinese: mean fixation on path-match: 40.14 sec > mean fixation on manner-match: 33.20 sec; English: mean fixation on path-match: 41.31 sec > mean fixation on manner-match: 36.03 sec;  $t(62) = -1.127$ , *n.s.*; See also Figure 3).

### 5.3.2 Categorical preferences as a function of language, age and test item

To complement findings from previous subsections, further investigations were conducted to see how systematic the preference for path-match was across individual test items. Figure 4 presents the mean frequency of path-match responses across 16 items.



**Figure 3.** Mean fixation time (in sec) on manner- and path-matched scenes between English and Chinese 3-year-olds



**Figure 4.** Mean frequency of path-match responses as a function of language and item

Figure 4 shows that path-match responses to items were far from uniform. Some caused motion events seemed to yield more manner-matched responses. For example, a chance analysis regarding item 12 revealed that the path-match response to this particular item fell below the chance level (i.e. more manner-matches):  $t(191) = -4.379$ ,  $p < .001$ , indicating that certain aspects in the design of this item had constantly directed speakers' habitual attention to the manner dimension, irrespective of language and age.

A repeated measures ANOVA was conducted with language (English, Chinese) and age (3 years, 8 years and adults) as two between-subjects factors and test items (16 in total) as a within-subjects factor. The results confirmed a significant difference in the frequency of path-match responses between items:

$F(15, 2790) = 14.202, p < .001$ . More importantly, a significant interaction effect was detected between language and item:  $F(15, 2790) = 2.370, p < .01$ .<sup>3</sup> A simple effect analysis of language  $\times$  item interaction revealed that the frequency of path-match responses to item 2 was significantly higher in English than in Chinese:  $F(1, 186) = 8.644, p < .01$ . In contrast, the frequency of path-match preferences to item 8 and item 10 was significantly higher in Chinese than in English:  $F(1, 186) = 5.346, p < .05$ , and  $F(1, 186) = 6.525, p < .05$ , respectively. This suggests that the judgment of the similarity between some caused motion scenes systematically varied with language.

Such observations can be explained from multiple perspectives, including the language-specific pattern of expression. To give an example, test item 8 (target: dragging toy car across icy lake; manner-alternate: *sliding* toy car across icy lake; path-alternate: dragging toy car around icy lake) and item 10 (target: rolling sack towards escalator; manner-alternate: *sliding* sack towards escalator; path-alternate: rolling sack *up* escalator) involved path of deixis (i.e. *towards*) and of trajectory parallel to the ground of motion (i.e. *around*). In Chinese, these two types of path require periphrastic means for expression. Instead of using “spatial locatives” (i.e. directional complements) immediately after the main verb (e.g. *la1-guo4* ‘drag-across’, *gun3-shang4* ‘roll-up’), the periphrastic means of expression prefixes spatial locatives such as *wei2* ‘around’ and *chao2* ‘towards’, placing them in front of the main verb and suffixing them with a durative marker *zhe* (e.g. ‘The boy, *around* the lake, was dragging a toy car’; ‘He, *towards* the escalator, was rolling a sack’). In a sense, ‘towards’ and ‘around’ are treated very much like verbs in Chinese rather than prepositions, reflecting the fact that these two constituents were once full verbs in Archaic Chinese, which was typically verb-framing (Peyraube 2006). Such important differences in the expression of path, such as *around* and *towards* versus those of *up* and *across*, might have some cognitive implications. They might have directed more attention to the path dimension on the part of Chinese speakers and thus prompted them to perceive, and judge, relevant caused motion events on the basis of path similarity.

## 6. Discussion and conclusion

The present study administered two cartoon-based tasks, a linguistic task of online motion description and a non-linguistic task of similarity judgment, to explore

3. A significant interaction effect was also found between age and item:  $F(30, 2790) = 13.813, p < .001$ , indicating that there was a pattern in which some particular items were viewed as more salient in path by the 3-year-olds as compared to older children and adults.

whether, and to what extent, language-specific properties influence the oral expression and mental conceptualization of motion events.

In the first experiment, the developmental analysis of the data shows, first of all, that typological properties influence the semantic density of children's utterances. Regardless of age, speakers express denser semantic information in Chinese than in English because of the availability in Chinese of an easily accessible resultative verb compound, which facilitates the simultaneous encoding of varied semantic components for caused motion. Secondly, a striking developmental tendency occurs in English between the ages of 3 to 8 and adulthood, whereas a developmental tendency is significantly less pronounced in Chinese. Thirdly, evidence is provided for certain universal aspects of development, according to the finding that utterance density is significantly lower in young children than in adults in English. Generally, these findings highlight the implications of typological constraints for the debate concerning universal versus language-specific determinants in first language acquisition.

The second match-to-sample task tests how Chinese and English speakers respond to visual caused motion stimuli. The results show, first of all, that the two youngest groups of 3-year-olds are both predominantly path-oriented, as evidenced by their significantly longer fixation on path-match videos rather than manner-match videos in a preferential looking scheme. Such results confirm Talmy's "Basic motion scheme" (2000) in which path is the most essential and indispensable element for displacement without which a motion event simply does not exist. Using categorical measurement of preferences, speakers share a tendency of being more path-oriented, irrespective of language and age. This universal preference can be explained on varied grounds. For example, it might be the case that Chinese and English are at least partially similar and the language difference is too minimal to be detected at the cognitive level. Or it is likely that the categorical preference (A or B) as a means of measurement is not sufficiently sensitive and subtle to detect language-engendered behavioral differences. When using continuous measurement of RT, however, relatively mature speakers show significant variations in spatial cognition that can be related to linguistic differences: English speakers tend to be more manner-oriented while Chinese speakers seem equally manner- and path-oriented, thus suggesting that linguistic and non-linguistic representations of motion events may be associable with each other.

To summarize, findings from the similarity judgment study suggest a pattern which links typological differences in linguistic encoding of motion with regularities in spatial thinking: children may have the same pre-linguistic potential for conceptualizing path as the most salient and central ingredient for motion. However, as they develop linguistically, they are selectively prompted by the structure of their respective input to view manner and/or path as more salient. These



observations are important in several senses. Firstly, they are obtained in a truly “non-linguistic” condition, thus exempting the study from falling into the logical loophole of “circularity”. Also, with a one-sec time limit established for response time, any transient behavioral variations resulting from language differences can be captured (see Hohenstein 2005). Secondly, the significant behavioral differences obtained under the continuous measurement of RT involve two languages that are only partially different, thus suggesting that the effect of language typology might be strong enough to present in pairs of languages with minimal difference. Given that previous studies reveal the effect of linguistic relativity only in Indo-European languages with contrasting typological features (e.g. English vs. Spanish/French), this set of results is of particular significance.

As for the debate concerning universal versus language-specific influence in language acquisition and cognition, our results indicate that there seems to be a co-functioning of the two factors. The impact of the cognitive universal factor is evidenced mainly by the significant increase of utterance density with age in the language production task and a shared preference for the path-matched scenes in the similarity judgment task. The impact of language-specific factors is seen clearly from the significant difference in utterance density between age-matched children from different language groups (experiment 1) and the language-dependent variations in similarity judgment under the continuous measurement of RT (experiment 2). On the whole, these results seem to support a weak or mild version of linguistic relativity (see Slobin’s [1996] “Thinking for Speaking” hypothesis). As demonstrated in the particular domain of space, language differences might indeed influence acquisition and cognition, but this influence occurs only under some conditions, for instance, when a language signal has been recruited as a medium in online production or when language-dependent variations in behavior are analyzed using a specific measurement.

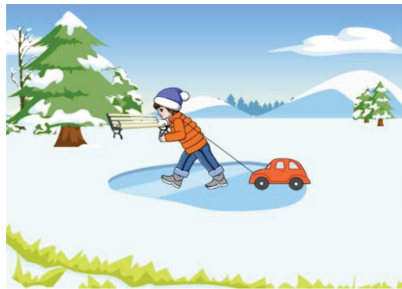
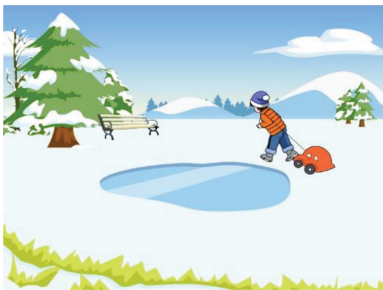
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## Appendix

a. dragging toy car across icy lake

b. dragging toy car *around* icy lakec. *pushing* toy car across icy lake

Participants will hear: “This is x, which is most like x?”

An illustration of caused motion stimuli in similarity judgment task

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Bringing together contributions from a group of prominent researchers, within a cognitive-linguistic framework, this volume sheds light on linguistic structures and usages characteristic of the Chinese language, including noun-verb inclusion, the conceptual spatialization of actions, existential constructions, conceptual structures and coherence, idioms and metaphors, language acquisition of caused motion, etc.

The contributions are committed to the principle of “converging evidence” that has been advocated in Cognitive Linguistics since its inception. Some studies in this volume combine introspective methods with theoretical analysis, while others rely on corpus-based, experimental and neuroscientific methods. Featuring diverse topics and multiple methods, this collection will be useful to readers who are interested in the grammatical and conceptual structure of Chinese, as well as in the state-of-the-art of Cognitive Linguistics in China.

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