THE OPAQUENESS OF CHINESE COMPOUNDS: IN SEARCH

OF CONCEPTUAL MOTIVATIONS UNDERLYING

TRADITIONAL EXOCENTRIC COMPOUNDS AND

CONTEMPORARY NEOLOGISMS IN CHINESE

by

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DECLARATION

I declare that this research project entitled "THE OPAQUENESS OF CHINESE COMPOUNDS: IN SEARCH OF CONCEPTUAL MOTIVATIONS UNDERLYING TRADITIONAL EXOCENTRIC COMPOUNDS AND CONTEMPORARY NEOLOGISMS IN CHINESE" is my own work. It is being submitted for the Masters' degree in Linguistics at the University of KwaZulu-Natal, South Africa.

It has never been submitted for any other purpose. All references used or quoted have been acknowledged by means of referencing.

SIGNATURE……………………………DATE………………………………….
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This study has been approved for submission by the supervisor of this study, Prof. H. M. E. Tappe.

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ABSTRACT

AIM

The aim of this study is to investigate the opacity of Chinese compounds in search of conceptual motivations for traditional exocentric compounds and contemporary neologisms in Chinese.

METHODOLOGY

This research may be characterised as an empirical investigation within the quantitative paradigm. The study contains three tasks. The design of Task 1 and Task 2 replicates the experiment concerning the classification of compound transparency which Libben, Gibson, Yoon and Sandra (2003) used to test English compounds. Task 3 is a kind of word association task that is designed following a suggestion by Gleason and Ratner (1998: 215). A sample of 95 Chinese native speakers for Task 1 & Task 2 is used. A sample of 50 Chinese native speakers for Task 3 is used. None of them has participated in either Task 1 or Task 2.

FINDINGS

The findings are presented with regard to the two types of compounds investigated in the study: 'semantically free' compounds and neologisms. In summary, 'semantically free' compounds may process through their constituents in the mental lexicon. Meanwhile, for some certain reasons 'semantically free' compounds may be recognized from the mental lexicon as whole. In the research, it found that the frequency effect is stronger than the effect of 'semantic transparency' in 'semantically free' compounds, it could mean that lexico-semantic distance (semantic freedom) is much smaller in Chinese exocentric compounds than anticipated by Scalise and Guevara (2006). Neologisms may process through their constituents in the mental lexicon. The effect of semantic transparency may be stronger than the frequency effect in neologisms when compounds are semantically transparent and their constituents' meanings are similarity.

KEY CONCEPTS

Exocentric compounds, endocentric compounds, 'semantically free' compounds, neologisms, opaqueness, semantic transparency, frequency effect, word-superiority effect.

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List of Abbreviations

A	Adjective
ANOVA	Analysis of variance
CP	Completive particle
CRS	Currently relevant state
Endo.	Endocentric
Exo.	Exocentric
N	Noun
NEG	Negative
NOM	Nominal
REL	Relative Marker
SOT	Slips of the Tongue
SPSS	Statistical Package for the Social Sciences
TOT	Tip of the Tongue
V	Verb
WSE	Word superiority effect

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CHAPTER 1
INTRODUCTION

This research sets out to investigate the opacity of Chinese compounds in search of conceptual motivations underlying the meanings of traditional exocentric compounds and contemporary neologisms in Chinese. Necessarily mentioned, Chinese refers to Mandarin Chinese in the context of the current research because there are many dialects (see the section 4.5 in the chapter 4 for detail). In this chapter, the aims and the background of this research are presented, together with the outline of the research problems addressed by this dissertation. Two kinds of compounds are examined in this research, namely neologisms and 'semantically free' compounds. Scalise and Guevara (2006) assume that the two constituents of so called 'semantically free' compounds have been selected at random as, for instance, in the semantically free compound 东西 [*dong+xi*], 'east' + 'west', 'things'. It is hard to find any relation between the meaning of the two constituents: 东 [*dong*], 'east' and 西 [*xi*], 'west' and the overall meaning of the compound. However, contrary to Scalise and Guevara's claim, conceptual motivations for 'semantically free' compounds may exist. The empirical study presented in the current thesis is designed to find conceptual motivations for the 'semantically free' compounds in comparison with current neologisms in Chinese. The study also investigates how a Chinese compound may be represented in the mental lexicon according to the word association in Task 3, which contributes some insight to the question of whether a compound is processed through its constituents or as a whole (see research methodology in chapter 4 for detail).

1.1 RESEARCH BACKGROUND AND RATIONALE OF THE STUDY

This research is to examine specific aspects of compounding in Chinese. Compounding is one of several processes of word formation. There are various reasons for choosing this topic. Firstly, compounding has been identified as the most productive means of word formation in Chinese: Chinese is considered a language of compound words (Arcodia, 2007). Over 80% of all words in Chinese are considered compounds (Norman, 1988; Sun, 2006). This high percentage of compounds in the Chinese lexicon provides an abundant resource for investigating the process of compounding. It is important and necessary to investigate the phenomenon of Chinese compounding which should contribute not only to testing the existing theories (i.e. Bisetto and Scalise, 2005; Scalise and Guevara, 2006; Libben, 1998 and

Jarema, Busson, Nikolova, Taspkini and Libben, 1999) as to whether they are suitable for this language, but also to improve the development of theories of compounding which may be enhanced by their application to a 'compound-rich' language. Although some linguists have already researched the phenomenon of Chinese compounding and have obtained many significant outcomes from their research (Scalise and Guevara, 2006; Bisetto and Scalise, 2005; Ceccagno and Scalise, 2006; Ceccagno and Basciano, in print), few investigations have been conducted from a native speaker's point of view (e.g. Packard, 2000; Tsai, 1996).

Secondly, the current research aims to examine two kinds of compounds in Chinese: current neologisms, e.g. 网虫 [*wang+chong*], 'net' + 'insect', 'web enthusiast' and well established opaque compounds[1] 东西 [*dong+xi*], 'east' + 'west', 'things'. In order to avoid confusion, this division between two major categories of Chinese compounds will be clarified before proceeding further. In the current dissertation, compounds are divided into three main groups: neologisms, 'semantically free' compounds and contemporary compounds. The term "neologisms" refers to compounds which exist from the 1990s onwards. The term "semantically free" compounds refers to one kind of exocentric compound for which Scalise and Guevara (2006) state that there is hardly a link between the meaning of the compound and the meanings of its constituents. The term "contemporary compounds" is used as a cover term for the remaining types of compounds after the exclusion of neologisms and 'semantically free' compounds. These include endocentric compounds (transparent compounds) and various types of exocentric compounds (opaque compounds). This study, will, however, focus on neologisms and 'semantically free' compounds. By analysing opaque and transparent neologisms researchers seem to be able to investigate the productive morphological competence of today's speakers, and the morphological patterns in use during a given time period (Ceccagno and Basciano, in print). On the other hand, well established 'semantically free' compounds seem to present a unique set of lexical items with respect to the process of compounding.

'Semantically free' compounds are compounds whose semantic composition is opaque, i.e. the meanings of the constituents do not seem to stand in any comprehensible relation to the meaning of the whole compound, e.g. the German compound *Schneebesen* (snow+broom = egg beater). Opaque compounds are compounds whose meaning is not derivable from the

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[1] These are called 'semantically free' compounds by Scalise and Guevara and throughout the current proposal (see Scalise and Guevara 2006 and below for an explanation of the term).

meaning of its constituents. For example, the meaning of the English compound *hogwash* is neither predictable nor derivable from the meanings of its constituents. In contrast, the meaning of the compound *whiteboard* is not opaque but is rather transparent as the meanings of the two constituents 'add up' to establish the meaning of the whole compound. The group of 'semantically free' compounds is discussed/analysed in some detail by Scalise and Guevara (2006).

1.2 OUTLINE OF RESEARCH PROBLEMS

The idea of choosing this topic comes from Scalise and Guevara's (2006) study on Chinese compounding. The authors maintain that in most European languages[2] the integration of the meaning of the two constituents of a compound rests on an interpretation relation that holds between the meanings of the individual constituents and the meaning of the whole compound. More specifically, the authors claim:

> "In European languages, exocentricity is generally restricted to metonymic conceptual relations between the constituents of the compound and the meaning of the whole (and even more, a relation of inalienable possession, as in the so-called possessive compounds), *very rarely reaching the level of semantic «freedom» observed in Chinese* [my emphasis]" (Scalise and Guevara, 2006, p.199).

In exocentric compounding, the meaning of the whole compound cannot be derived from the meanings of the constituents. Exocentric compounds are compounds with no semantic head. A semantic head is a constituent in a compound that determines the compound's overall semantic type, e.g. the word *dark room* denotes a kind of room, likewise *workman* denotes a kind of man, and *drawing board* denotes a kind of board, etc. There are, however, headless compounds for example *butterfly* which does not denote a kind of fly, or, *walkman* which does not denote a kind of man. While it is generally the case for exocentric compounds that they do not have a semantic head, the authors (Scalise and Guevara, 2006) claim that in the case of Chinese exocentric 'semantically free' compounds, there is hardly any connection between the meanings of constituents of the compounds and the meaning of the compound as a whole; hence they state that Chinese exhibits an exceptionally high degree of what they call (lexico-) semantic 'freedom'.

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[2] The authors do not specify, which languages they include in their a-theoretical term 'European languages', however, from the data corpus they are using it appears that they basically mean Indo-European languages spoken in Europe.

To illustrate this point, consider the previously mentioned examples *butterfly* and *Schneebesen;* in neither of these is the meaning of the compound directly derivable from the meaning of the constituents, yet there seems to be an implicit kind of conceptual 'motivation': Even though a butterfly is not a fly, it is a flying insect, and to many British people prototypical butterflies might be the males of the very common brimstone butterfly (*Gonepteryx rhamni, Pieridae*) which are butter-colored. Also, while a 'Schneebesen' ('snow broom'), i.e. an egg beater, is not a broom, the movement of beating eggs and brushing snow with a broom have a vague similarity. More importantly, however, the end result of beating egg whites is called *Eischnee* ('egg snow') in German, a metaphorical name that is derived from the white fluffy substance of beaten egg whites.

In contrast, the meaning of the Chinese 东西 [*dong+xi*], 'east' + 'west', 'things' seems to be entirely unrelated to its parts (at least from a Non-Chinese point of view). In Chinese 买东西 [*mai+dong+xi*], 'buy' + 'east' + 'west', 'go shopping', is said, but not 买南北 [*mai+nan+bei*], 'buy' + 'south' + 'north'. Why is the translation equivalent for "thing' not 南北 [*nan+bei*], 'south' + 'north'? One possible explanation could be the following: Chinese people often associate '*east*', '*south*', '*west*', '*north*' and '*centre*' with '*metal*', '*wood*', '*water*', '*fire*' and '*earth*' which are the so-called five elements (Yang, 2004). '*East*' refers to '*wood*'; '*west*' refers to '*metal*'; '*south*' refers to '*fire*'; '*north*' refers to '*water*'; and '*centre*' refers to '*earth*'. People think that a basket cannot be used for carrying '*water*' and '*fire*', but it may be used to carry '*metal*' and '*wood*' (Yang, 2004). Also, there is a 'direction' taboo in ancient China (Cheng, 2007). The cardinal directions 南北 'south' + 'north' are always regarded as taboo and this avoidance becomes a constant custom (Cheng, 2007, p.48). So people are accustomed to using 东西 [*dong+xi*], 'east' + 'west', 'things' to refer to things.

In the current research the researcher identifies a specific class of exocentric Chinese compounds that exhibit an exceptional amount of 'semantic freedom', i.e. an apparent un-relatedness between the meanings of the constituents and the meaning of the compound as a whole, as exemplified above. These compounds are characterised by Scalise and Guevara (2006, p.199) and are referred to as 'semantically free' compounds. They constitute a sub-type of exocentric compounds that is restricted to a few compounds which stem from the Han Dynasty during 206 BCE to 220 CE.

1.3 PURPOSE OF THE STUDY

The aim of the current research is to examine how mother-tongue speakers of Chinese 'perceive' the degree of opaqueness in the two kinds of Chinese compounds introduced in this research: current neologisms, e.g. 网虫 [*wang+chong*], 'net' + 'insect', 'web enthusiast' and well established opaque compounds 东西 [*dong+xi*], 'east' + 'west', 'things'. The researcher aims to explore aspects of the morphological competence in today's mother-tongue speakers of Chinese, through the analysis of neologisms. In comparing 'semantically free' exocentric compounds and current endocentric/exocentric neologisms the researcher will attempt to reach the following objectives: to determine whether Chinese is really special in terms of 'semantic freedom' as Scalise and Guevara (2006) claim; to investigate whether the two types of Chinese compounds (well established 'semantically free' compounds and current neologisms) are motivated and/or transparent to Chinese mother-tongue speakers; and to explore what role semantic transparency plays in the formation/understanding of Chinese compounds. In general, the aim is to provide evidence for the assumption that the formation of Chinese compounds is conceptually motivated. Moreover, it is hoped that constraints in Chinese compound formation will be detected.

1.4 OBJECTIVES OF THE STUDY

In this study, the following three main objectives need to be achieved.
- ➢ To investigate how far well-established 'semantically free' compounds are motivated and/or transparent to Chinese mother-tongue speakers
- ➢ To examine how far current endocentric/exocentric neologisms are motivated and/or transparent to Chinese mother-tongue speakers
- ➢ Additionally, to gain an insight into how a Chinese compound may be represented in the mental lexicon, or more specifically, whether 'semantically free' compounds/current neologisms are processed through their constituents or represented as whole.

1.5 RESEARCH QUESTIONS

The broader and specific research questions are investigated in this dissertation. In this study, the researcher revisits whether the relation between the meanings of the two constituents and the meaning of the whole compound in Chinese 'semantically free' compounds is indeed

semantically 'free'; i.e. whether there may be an unlimited lexico-semantic distance between the meanings of the constituents and the meaning of the whole compound in selected historical Chinese exocentric compounds. At the same time, neologisms in Chinese compounds will be investigated in order to observe the role of semantic transparency in the formation/understanding of Chinese compounds and to detect constraints in contemporary Chinese compound formation. Furthermore the researcher will endeavour to find grounds for conceptual motivation and linguistic principles underlying Chinese compounding from an empirical study (see Chapter 4 for details).

The study will invite a group of Chinese native speakers from the *College of ShaanXi Costume & Art* at *XianYang*, *ShaanXi* Province to participate in a series of empirical studies, in an effort to understand how the lexical entries of the whole compound are related to their constituent parts for the selected corpus of well established 'semantically free' compounds and current neologisms. It is hoped that some insight will be gained as to how compounds are represented in the mental lexicon.

Specific Issues: Key Questions:

In this study, the following key issues will be pursued:

- To investigate whether semantic transparency plays a role in the lexical representation and processing of novel compounds (i.e. current neologisms) and well-established 'semantically free' compounds.
- To delineate different types of limitations on the interpretation of Chinese compounds.

In particular, the intent is to answer the following questions:

- Is Chinese really special in terms of 'semantic freedom', and to what extent are the two types of Chinese compounds (well established 'semantically free' compounds and current neologisms) motivated and transparent to Chinese mother-tongue speakers?
- What role does semantic transparency play in the formation /understanding of Chinese compounds?
- Is there evidence for the assumption that the formation of the two types of Chinese compounds under investigation was/is conceptually motivated?

Broader Issues:

Lexical semantics is the study of word meanings and the ways in which words are related to one another in our mental lexicon (Jean Berko Gleason & Nan Bernstein Ratner, 1998, p.13). The broader issues of this research relate to the organisation of the mental lexicon and the

interaction between the lexicon and the conceptual system. The researcher is interested in gaining greater insight into the actual perceptions of native Chinese speakers with respect to the degree of conceptual-semantic transparency they *experience* **vis a vis** exocentric compounds in Chinese. This is meant to challenge and more closely investigate Scalise and Guevara's (2006) claim: "In European languages, exocentricity is generally restricted to metonymic conceptual relations between the constituents of the compound and the meaning of the whole (and even more, a relation of inalienable possession, as in the so-called possessive compounds), *very rarely reaching the level of semantic «freedom» observed in Chinese* [my emphasis]. In this study, the researcher hopes to gain some insight into the following issues regarding Chinese:

- The organisation of Chinese words in the mental lexicon. The intention is to gain some idea of how semantically free, exocentric compounds might be represented in the mental lexicon. In order to control for frequency effects, the researcher intends to include both *high frequency compounds* (which have been hypothesised so as to be stored in the mental lexicon as independent lexical entries) and *low frequency compounds* (which might not be stored in the mental lexicon as whole).

- The processing of Chinese compounds in natural speech. The researcher wishes to establish some idea of how semantically free, exocentric compounds might be retrieved from the mental lexicon. In order to control for the most prominent variables, *semantic transparency, word-superiority effect* and *compound frequency* have been included as factors which might affect the process of Chinese compound formation (see Chapter 3 for discussion of these factors).

1.6 SIGNIFICANCE OF THE STUDY

This research is significant in a variety of ways. Firstly, this study could improve the understanding of how far well established 'semantically free' compounds are motivated and/or transparent to Chinese mother-tongue speakers; and how far modern neologisms are motivated and/or transparent to Chinese mother-tongue speakers. Secondly, in terms of studies on Chinese compounding, scant research has investigated 'semantically free' compounds from a native speaker's point of view (Packard, 2000; Tsai, 1996). Thus, this study may contribute to developing research on Chinese compounding from the view of

Chinese mother-tongue speakers. Lastly, the study may contribute to understanding how Chinese compounds are represented in the mental lexicon.

1.7 OVERVIEW OF THE DISSERTATION

The dissertation aims to explore the opacity of Chinese compounds in search of conceptual motivations for 'semantically free' compounds and current neologisms in Chinese. The experiment is designed to involve three tasks. Both Task 1 and Task 2 are to test the degree of semantic transparency with regard to Chinese compounds according to the design of Libben, Gibson, Yoon and Sandra's (2003) study for English. Task 1 is specifically designed to test the degree of compound transparency and Task 2 is designed to test the degree of constituent transparency. Task 3 is a word association task designed according to Gleason and Ratner (1998, p. 215).

In Chapter One, a brief introduction to this research is presented. This includes the research background, the outline of the research problems, the aim of the research, the broad and specific research questions, and the significance of the research. The reasons for choosing this topic are also described. In general, the two kinds of compounds to be investigated in this research are: well-established 'semantically free' compounds and current neologisms in order to see to what extent these two kinds of compounds are motivated and transparent to native speakers of Chinese.

In Chapter Two, a literature review will provide a comprehensive survey of prior research. There are two major sections. Firstly, a brief description of Chinese and the history of the Chinese language is provided. This includes short overviews of Chinese phonetics, morphology, syntax as well as an explanation of the Chinese writing system. This section gives a general idea of what Chinese looks like to assist in understanding Chinese compounds. The second major section summarises some existing research on Chinese compounds about the classification, headedness and structure of Chinese compounds.

In Chapter Three, the theoretical framework within which the investigation and testing of the researcher's hypotheses is outlined and the motivation for the research is provided. The concept of Semantic transparency is discussed in detail in this chapter. In previous literature, three degrees of processing effects were found according to the extent of compound

transparency, i.e. the processing of fully transparent items (TT) will be different from the processing of partially transparent items (OT & TO), which in turn may be different from the processing of fully opaque items (OO) (Jarema, Busson, Nikolova, Taspkini and Libben, 1999; Libben, Gibson, Yoon and Sandra, 2003). In addition, possible motivations for the meanings of Chinese multi-morphemic words are provided to show that there may be a regular pattern underlying the combination of two constituents in Chinese compounds. Moreover, the frequency effect and the word-superiority effect which are important factors for this research will be discussed in this chapter.

In Chapter Four on research methodology, the researcher will provide a specific and detailed account of how her hypotheses intend to answer her research questions. In this chapter, the appropriate population from which the participants are sampled in the current research is identified. Furthermore, the procedures of data collection used in the current research are described, and the techniques, methods, and instruments used for measurement will be identified.

In Chapter Five on data analysis, the results are reported, the data is presented, and the conclusions drawn from the data are explained. The implications of the obtained findings are elaborated on.

In Chapter Six, the research is summarised, with an emphasis on the results obtained, and recommendations and suggestions for further research are provided. An outline of the limitations of the study is presented.

CHAPTER 2
LITERATURE REVIEW

In this chapter, a brief description of the Chinese language is presented that aids in the understanding of the explanations and assumptions that are relevant to Chinese compounding in this dissertation. As the above-mentioned, Chinese in the context of the current research refers to Mandarin Chinese. To clarify, the writing system within the Chinese language category is the simplified Chinese. In fact, one unitised writing system is used even though there are many dialects within the Chinese language category.

To avoid confusion, it is important to look at Chinese compounds in Chinese morphology, such as the concept of '字' [*zi*], the concept of '词' [*ci*], and 合成词 [*he+cheng+ci*], 'compose /compound /synthetise plus word' and 复合词 [*fu+he+ci*], 'compound /complex plus word'. Moreover, several unique aspects relevant to the Chinese language are presented to provide the reader with a general idea about Chinese as a language. In addition, this dissertation will examine Chinese compounding in the mental lexicon, and it is thus necessary to discuss the mental lexicon and morphological processing generally, especially the access to compounds in the mental lexicon.

2.1 COMPOUNDING FROM A PSYCHOLINGUISTIC PERSPECTIVE

Due to the fact that one of the objectives of this dissertation is to gain an insight into how a Chinese compound is represented in the mental lexicon, it is necessary to depict the concept of the mental lexicon and the process of lexical access.

2.1.1 THE MENTAL LEXICON AND SEMANTICS

The mental lexicon is the store for a language's vocabulary (Ratner, Gleason and Narasimhan, 1998). It is a more dimensional network of activated neural notes which "provides meanings for the words of a given language and provides labels for concepts that speakers wish to discuss" (Ratner, Gleason and Narasimhan, 1998, p.13). The term 'mental lexicon' refers to the means by which words, morphemes and templates and ready-made phrases and their meanings in a given language are memorised in the mind (Ratner, Gleason and Narasimhan, 1998). This research focuses on morphemes, words and their meanings in the Chinese

language. Lexical semantics is the study of word meanings and the ways in which words are related to one another in the mental lexicon (Ratner, Gleason and Narasimhan, 1998, p.13).

2.1.2. WORD ORGANIZATION IN THE MIND

Words stored in the mind are regarded as being connected to one another. The various connections between words influence word access and word organisation. Word nodes can be connected by meaning and by form in various ways (e.g. frequency of co-occurrence, semantic similarity, phonological similarity, conceptual associations, identity in the first syllable, identity in the first letter, rhyme). According to multiple studies, there are five principles or factors influencing word access and organisation in the mind (Reeves, Hirsh-Pasek and Golinkoff, 1998, p.167-170).

The first one of these is the principle of frequency. This principle is located in lexical decision tasks (Rubenstein, Garfield, & Millikan, 1970) and naming tasks (Forster & Chambers, 1973) which show that we tend to response to high-frequency words more quickly than low-frequency words. Common words, such as "apple", are responded to more quickly in the lexical decision than are uncommon words, such as "petal".

The second one is the principle of imageability and concreteness. This principle indicates that if words are easy to visualise, they are more easily retrieved. Obviously, tangible words are easier to imagine, while abstract words are less easy to conjure images for. For example, the word "apple" is easier to construct an image of than the word "happiness", because "apple" is a tangible word and names an object that can be seen, smelled, touched and tasted.

The third one is the principle of semantics. This assumes that words in the mind are categorised according to similarities in meaning. The evidence supporting this principle comes from word association experiments. The basic findings from word association experiments show that words seem to be organised based on meaning. Specifically, words may be organised according to superordinate categories, such as FAMILY RELATIONSHIPs, BUILDINGS, and MAMMALS (Field, 2003). If they belong to the same superordinate family, words may be hyponyms, for example "orange" may be a possible reaction to the prime word "apple" because "orange" and "apple" are hyponyms of FRUIT. Following the same reasoning, the word "fork" will probably immediately come to mind if the priming word is "knife".

Words seem to be linked through similarities and differences of meaning. For example, they can be synonyms, namely words denoting to the same referent (even though many scholars argue there do not exist complete synonyms); they can be antonyms, denoting opposites in terms of their referents, e.g. "good" and "bad". There are several types of antonyms. They might be binary antonyms ("alive"/ "dead"), gradable antonyms ("hot"/ "cold"), converses ("buy"/ "sell"), and multiple incompatible words ("summer"/ "winter") (Field, 2003, p. 60).

The fourth principle underlying lexical access is grammatical class. Content words are more easily accessed from the mental lexicon than function words, and content words are much more readily influenced by frequency effects than function words (Reeves, Hirsh-Pasek and Golinkoff, 1998, p.169). More pointedly, Bradley (1983) finds no frequency effects at all for function words in a lexical decision task.

The last is the principle of phonology. Evidence comes from Slips of the Tongue (SOT) and Tip of the Tongue (TOT) experiments, which have shown how words are linked in the mind by form. Words may sound alike or have similar beginnings and endings (Reeves, Hirsh-Pasek and Golinkoff, 1998, p.170). Additionally, evidence for words being associated according to grammatical class − which makes grammatical class a lexical organising principle – is also derived from speech errors and the tip-of-the-tongue phenomenon. It is assumed that words are categorised in the mind as nouns, verbs, adjectives, etc. (Reeves, Hirsh-Pasek and Golinkoff, 1998, p.169).

Even though the evidence shows that there are several principles for word organisation in the mind, some principles such as frequency and meaning, seem to permeate all other principles (Reeves, Hirsh-Pasek and Golinkoff, 1998). For example, the principle of imageability often interacts with frequency effect (Reeves, Hirsh-Pasek and Golinkoff, 1998, p.168). The word "apple" is not only easy to produce an image for, but it is also a common word.

2.1.3 MORPHOLOGICAL PROCESSING

The term morphological processing is commonly used to include all types of lexical processing (Libben & Jarema, 2004, p.4). A brief description of morphological processing will be provided before a more in-depth analysis of morphological processing is given. Levelt's (1989) speech production model is generally accepted as a model of how humans

produce spoken language in real time. It consists of three stages: conceptualising, formulating (grammatical encoding and phonological encoding), and articulating. Each stage contains several procedures. When someone wants to speak, the information is processed and reaches the stage of conceptualising (Levelt, 1989). The output of the conceptualiser is the so-called preverbal message, which is 'handed over' to the formulator for grammatical encoding, and grammatical encoding then begins. As a result of the process of grammatical encoding – which includes access to the mental lexicon − a surface structure emerges, which undergoes phonological encoding based on information in the form components (lexemes) of words. In the last step, the articulator transforms the phonetic plan produced by the phonological encoder into overt speech (Levelt, 1989, p. 8-13).

Levelt (1989) describes the morphological processing in a general way. Libben and Jarema (2004) investigate more specifically the relationship relevant to "the nature and organisation of the potentially meaningful subunits within words" (Libben & Jarema, 2004, p.4). In the domain of morphological processing research, Libben and Jarema (2004, p.4) summarise three linguistic relations: (a) Relations between morphologically complex and morphologically simple strings; (b) Relations among morphologically complex strings; and (c) Relations among morphologically simple strings (2004, p.4). The first relationship examines that complex words are recognised through their constituents or that the activation of complex words results in the activation of their morphologically simpler substrings (Libben & Jarema, 2004, p.4). The second relation investigates the differences among types of morphologically complex words, namely whether these complex words are semantically transparent or opaque, derivationally affixed or inflectionally affixed, and regular or irregular (2004, p. 4). The last relation examines the effects of the role of frequency, family size, abstractness of simple strings, etc. (Libben and Jarema, 2004, p.4). In this case, the term "simple strings" is equivalent to the Chinese technical term '字' [zi] and the term "complex strings" is equivalent to Chinese compound words (for more details see the following sub-sections in this Chapter).

With regard to the three relations, Libben, Gibson, Yoon, & Sandra (2003) found that compounds might be decomposed into their constituents during word recognition for both transparent and opaque compounds at least at the level of form. Moreover, there are several studies which found that semantically opaque compounds are processed more slowly than semantically transparent compounds (Chen & Chen, 2006; Ji, 2008). Gagné and Spalding

(2009) think that the reason might be that the constructed meaning through a combination of the meanings of the compounds' constituents is quite different from the conventional meaning of the compounds. In addition, according to Gagné and Spalding (2009), morphological processing might be influenced by frequency and morphological structure such as relational structure (especially for endocentric compounds). Gagné and Spalding (2009) presume that the conceptual representation of a compound word might be based on a relational structure (i.e. in a compound one constituent may serve as the head and the other as the modifier). In their study, Gagné and Spalding found that the response to a compound (e.g., "snowball") is faster when the compound is preceded by a compound using the same relational structure (e.g. "snowfort"−MADE OF) than those instances preceded by a compound using a different relational structure (e.g., snowshovel−FOR) (Gagné & Spalding, 2009, p. 20).

2.2 OVERVIEW OF SOME ASPECTS OF THE CHINESE LANGUAGE

From the above explanations on morphological processing, it is not difficult to see that morphological processing might be different because of morphological differences across languages. It may therefore be necessary to provide an introduction into some general aspects of the Chinese language. This insight could assist a better understanding of how Chinese compounds are processed in the mental lexicon.

Chinese belongs to the Sinitic subgroup of Sino-Tibetan languages in Asia (Sun, 2006). Chinese is one of a very few contemporary languages with an unbroken line of recorded history which has lasted for more than three millennia (Norman, 1988; Sun, 2006). It has roughly experienced five stages of language development in its history: Oracle and Bronze inscriptions (sixteenth century to 771 BCE), Old Chinese (771 BCE to 220 CE), Middle or Ancient Chinese (220 CE to 960), Early Modern Chinese (960 to 1900) and Modern Chinese (1900-present) (Norman, 1988; Sun, 2006). Oracle and bronze inscriptions are the earliest records of written Chinese; these were carved on turtle shells and oxen shoulder blades for the purpose of divination (Sun, 2006). The Old Chinese stage was developed during the *Spring and Autumn Period* and the *Warring States Period*[3]. The canonical writings of

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[3] Major chronological divisions of Chinese history: Xia dynasty (twenty-first to sixteenth centuries BCE); Shang dynasty (sixteenth to eleventh centuries BCE); Western Zhou dynasty (eleventh century to 770 BCE); Spring and Autumn period (770 to 403 BCE); Warring States period (403 to 221 BCE); Qin dynasty (221 to 207 BCE); Han dynasty (206 BCE to 220 CE); Three Kingdoms period (220 CE to 265); Jin dynasty (265 to 420); Northern and Southern dynasty (420 to 589); Sui dynasty (589 to 618); Tang dynasty (618 to 907); Five Dynasties period (907 to 960); Northern Song dynasty (960 to 1127); Southern Song dynasty (1127 to 1279); Liao dynasty (916 to 1126); Jin dynasty (1115 to 1234); Yuan dynasty (1279 to 1368); Ming dynasty (1368 to1644); Qing dynasty (1644 to 1911).

Confucius, which have a profound and continuing influence on all kinds of social and cultural aspects even today, emerged during this period. After that the language of Chinese underwent the Middle or Ancient Chinese stage and the Early Modern Chinese stage. During these stages, emperors of each dynasty engaged in their own language planning and language policy implementation according to the given historical situation (e.g. in the Sui dynasty the sound system was standardised to meet the need of an imperial examination system in order to recruit government officials. Such government officials were selected on the grounds of their ability to compose poems) (Sun, 2006). After two thousand years of language planning , Modern Chinese is quite different from the older stages of Chinese.

In old Chinese a morpheme is basically monosyllabic. Today, many monosyllabic morphemes can still be used as single words, but they are mostly used to combine with other morphemes to create new words (so-called compounds) (Sun, 2006). For instance, the single word/morpheme 水 [*Shui*] in Old Chinese refers to water, and nowadays this word/morpheme is still used to indicate '*water*', but it can also combine with other words/morphemes; e.g. combined with the word 源 [*Yuan*], 'source' it may be used to indicate '*the source of wate*r', i.e. 水源 [*Shui+Yuan*]. Another example shows a similar phenomenon: The single word/morpheme 月 [*Yue*] in the Old Chinese refers to the moon whereas Modern Chinese uses 月亮 [*Yue+Liang*]. 'moon' + 'bright' to refer to the same planetary body, i.e. the moon. As a consequence, the word/morpheme 月 [*Yue*] is hardly used as a single word in Modern Chinese, hence it is obvious that Modern Chinese often uses two morphemes whereas Old Chinese used one morpheme. This process has been called *disyllabification* in the literature (e.g. Zong & Wang 2008). As a result, Modern Chinese uses more words/morphemes to express semantic meanings that were expressed with strings of monosyllabic morphemes in Old Chinese. Compare the following examples (2.1a) and (2.1b):

(2.1a) **Traditional Chinese**

人	之		初	性	本	善
Ren	zhi		chu	xing	ben	shan
Human	REL (relative marker)		begin	nature	origin	good

"When a human was born, (his) nature was good originally."

(2.1b) **Contemporary Chinese**

人	生	下来	的	时候	本性	是	善良	的
Ren	sheng	xia-la	de	shi-hou	ben-xing	shi	shan-liang	de
Human	bear	down-come	REL	time-time	origin-nature	be	good-good	NOM

"When a human was born, (his) nature was good originally."

Obviously in the Old Chinese sentence only 6 characters are used, while 13 characters need to be used to express the same meaning in Modern Chinese. There are many reasons for this change. One important factor is the strong tendency to disyllabification in Modern Chinese (Sun, 2006). In its evolution towards its modern version, the lexicon of Chinese has undergone a massive process of disyllabification. It is the primary reason why Chinese has been defined as a "language of compound words" (Arcodia, 2007, p.9). The reasons for disyllabification are complicated. In short, as social development occurred, more and more new concepts arose, however the quantity of syllables in Chinese remained limited. If a syllable contains too many different concepts, many homonyms will emerge and this could result in confusion (Zhang, 2009). Disyllabification is a good way to solve this conflict, because disyllabic words can contain more information (Zhang, 2009, p.165).

2.3 PARTICULAR ASPECTS OF MODERN CHINESE

Morphological differences across languages may cause differences in the processing of compounds. It is necessary to explain several particular aspects of Modern Chinese. There are many differences between Chinese and Indo-European languages. Roughly this is illustrated by the following examples: Regarding phonetics, Modern Chinese has no consonant clusters in comparison to Indo-European Languages such as English, for example 'thanks', 'construction', 'bright', etc. (Huang & Liao, 2007). Moreover, vowels play a dominant role in the construction of a syllable in Modern Chinese (Huang & Liao, 2007, p.7). A syllable in Chinese can be composed of a single vowel or a compound vowel, but not of a consonant which needs to be combined with a vowel or compound vowel. For instance, the consonant 'k' cannot be used individually as a syllable, whereas both the single vowel 'e' as well as the compound vowel 'ai' may be syllables, e.g. '饿' [e],'hungry' and '爱' [ai], 'love', respectively. If the consonant 'k' combines with the compound vowel 'ai', it will be [kai] − i.e. the syllable '开' [kai], 'open'. Additionally, each syllable has tones (Huang & Liao, 2007). Tone plays an important role in distinguishing different syllables from one another. The tonal mark is always above a vowel or a compound vowel.

Regarding the lexicon, morphemes in modern Chinese are short and monosyllabic. As elements, these morphemes consist of monosyllabic words or disyllabic words (Huang &

Liao, 2007). Compounds have a dominant position in the Chinese lexicon (Huang & Liao, 2007, p.7) because modern Chinese is characterised by *disyllabification* as discussed above. Neologisms are normally created through a combination of two morphemes because most monosyllabic morphemes in Chinese can be used as roots (Huang & Liao, 2007, p.7).

Regarding the grammar; one striking feature of modern Chinese is that it has no inflections. This means that "Words used in a sentence show no morphological change for meaning, mood, aspect, gender, register, or tense" (He, Jiao & Livaccari, 2010, p.5). In contrast, function words play a key role in expressing grammatical relationships, and in encoding the grammatical meanings of sentences in Chinese. See for instance the sentence, '昨天谁来了?' [*Zuotian shei lai le*?], 'Who came yesterday?' (He, Jiao & Livaccari, 2010, p.5); the function word [*le*] indicates that the action 'come' has been completed. This is in contrast to verbal inflection in Indo-European languages because, in Chinese, the verb [*lai*] remains uninflected. In contrast to the other languages, to a great extent Chinese relies on word order when conveying a phrase or sentence meaning. For instance, the meanings of the two phrases: '不很好' ,'not very good', '很不好', 'very not good' vary as a function of word order (Huang & Liao, 2007). The latter phrase '很不好', 'very not good' indicates that something is 'not good' to a greater extent than something for which the phrase '不很好', 'not very good' would be appropriate.

The grammatical structure of words/compounds, phrases and sentences in modern Chinese and in Indo-European languages are basically similar (Huang & Liao, 2007). Compare the following examples (compound, phrase and sentence):

(2.2a)   地震 (compound)
        di-zhen
        'Earthquake'
(2.2b）   地面震动 (phrase)
        di-mian-zhen-dong
        earth-surface-shake-move
        'Earth shaking'
(2.2c)   地面震动了(sentence)
        di-mian-zhen-dong-le
        Earth-surface-shake-move- CP (completive particle)
        'The earth is shaking'   (Huang & Liao, 2007:8)

From the above (2.2a) example, obviously the grammatical structure of the compound 地震, the phrase 地面震动 and the sentence 地面震动了 are similar (i.e., the grammatical structure is

subject-predicate).

2.4 CHINESE MORPHOLOGY

2.4.1 MORPHEME TYPES[4]

In this dissertation, classification of Chinese morpheme types has been conducted by adopting Packard's assumption in which morphemes are categorised based on the groups of 'free' versus 'bound' and 'content' versus 'function'(Packard, 2000). These four features may be combined to yield four types of morphemes. The four possibilities are: If a morpheme is a 'content' and 'free' morpheme, it is a root word/word; if it is 'content' and 'bound', it is a bound root; if it is 'function' and 'bound', it is an affix; if it is 'function' and 'free', it is a function word (Packard, 2000). Of these four types, only the last one (i.e. a function word) is not productive (Packard, 2000, p. 69).

2.4.2 DEFINITIONS OF COMPOUND

Traditionally any word written with more than one character is considered to be a compound word in Chinese (Basciano, 2009, p. 2). Two Chinese technical terms will be introduced before proceeding further: 合成词 [*he+cheng+ci*], 'compose /compound /synthetize plus word' and 复合词 [*fu+he+ci*], 'compound /complex plus word'. Shao and Feng (2009) as well as Basciano (2009) think that there are differences between these two terms (to avoid confusion, the English translation of the technical term 合成词 [*he+cheng+ci*] is used COMPOSITE WORD and COMPLEX WORD is used to refer the technical term 复合词 [*fu+he+ci*] in this dissertation). The combination of two or more morphemes is considered as a composite word. COMPOSITE WORDS include two sub-categories: COMPLEX WORDS and DERIVED WORDS. A complex word is a combination of two root words, root word plus bound root, or two bound roots (Shao & Feng, 2009). A derived word is a combination of a bound root or root word plus word-forming affix (Shao & Feng, 2009).

In this dissertation, the compounds investigated are disyllabic words, which are a subcategory of COMPOSITE WORDS (in this case character, syllable and morpheme are co-respondents).

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[4] Morpheme types will be discussed when analyzing data in Chapter Five.

2.4.3 THE CONCEPTS OF 'WORD' AND 'MORPHEME' IN CHINESE

Packard (2000) thinks that a character (i.e. the Chinese technical term '字' [*zi*]) has two distinct meanings. It can be considered as morpheme in the spoken language and it can mean a written Chinese character (Hoosain, 1992, p.112 cited in Packard, 2000, p. 15). However, as mentioned above, most Chinese speakers consider that 'word' and 'character' are one and the same thing in Chinese, because they do not distinguish between these two meanings of '字' [*zi*]. In fact, the concept of 'word' is based on the structure of western-type languages (Packard, 2000), it is hard for Chinese speakers to find an exact equation of the notion in Chinese because of linguistic and cultural differences between Chinese and so called 'western-type' language and speech communities. However, in this dissertation, the concept 'word' refers to a written Chinese character/morpheme (i.e. the character, syllable and morpheme are equivalent). The differences between morphemes and characters in Chinese will be explained even though we do not distinguish between these two meanings of '字' [*zi*] in this dissertation.

In Chinese, each morpheme can be represented by one or more Chinese characters, but not every Chinese character is a morpheme (Shao & Feng, 2009, p. 221). The various types of relationships between morphemes and Chinese characters are the following: (a) One character represents one morpheme (Shao & Feng, 2009), for instance, '删' [*shan*], 'delete'; (b) One character represents several morphemes (e.g. 花^1[*hua*], 'flowers'; 花^2 [*hua*], 'consume'); (c) One character does not represent a morpheme but a syllable in polysyllabic words (Shao & Feng, 2009), for instance, '葡' [*pu*] and '萄' [*tao*] are not morphemes, but '葡萄' [*pu+tao*], 'grape', where these two characters are combined, represents one morpheme; and (d) Some characters are morphemes in certain cases, but not in others (Shao & Feng, 2009, p. 221). For instance, '布' [*bu*], 'fabric' is a morpheme in '布帛' [*bu+bo*], 'textiles', '布匹' [*bu+pi*], 'clothing' and '布料' [*bu+liao*], 'fabric material', but '布' [*bu*], 'fabric' is not a morpheme in '布尔什维克' [*bu+er+shi+wei+ke*], 'Bolshevik'; '布达拉宫' [*bu+da+la+gong*], 'Potala Palace'; and in '布鲁塞尔' [*bu+lu+sai+er*], 'Brussels' (these three words are phonetic 'translations').

2.4.4 A FURTHER CHINESE TERM FOR "WORD" 词 [*ci*]

When discussing Chinese morphology, another Chinese technical term for 'word' 词 [*ci*]

needs to be mentioned. Packard (2000, p.18) presumes that this term "Is very close to the notion of 'wordness' as defined in linguistic theory, i.e. 'a syntactic word is a form that can stand as an independent occupant of a syntactic form class slot, in other words, a syntactically free form, commonly designated in the literature as X" (Packard, 2000, p.12). In Chinese 词 [*ci*] is constituted by morphemes, and is the smallest linguistic unit containing sound and meaning which can be independently utilised (Huang & Liao, 2007, p. 218). For example:

(2.3)

他又来送信了

Ta-you-lai-song-xin-le

He-again-come-deliver-letters- CP (completive particle)

'he came and delivered letters again.'

<div align="right">(Huang & Liao, 2007, p. 218)</div>

[*ta*], 'he'; [*lai*], 'come'; [*song*], 'deliver'; [*xin*], 'letters' and [*you*], 'again' have independently served certain functions in this sentence. [*le*], 'CP (completive particle)' plays an independent grammatical role in this sentence, and thus it is 词 [*ci*]. Saying that 词 [*ci*] is the smallest unit means that a component cannot be inserted between a 词 [*ci*] (i.e. two morphemes which consist of a certain 词 [*ci*] cannot be separated) such as '新娘' [*xin+niang*], 'bride'. In this case, the meaning will be different if the morpheme '新' [*xin*], 'new' and the morpheme '娘' [*niang*], 'mother' are separated.

Observe the differences among characters, morphemes and 词 [*ci*] in Chinese, in the following example. This example might serve to illustrate the Chinese term 词 [*ci*].

(2.4)

谁喜欢巧克力糖

Shei-xi-huan-qiao-ke-li-tang

Who-like-happy-[artful-control-strength (phonetic translation)]-sweets

'Who likes chocolate sweets?'

Character	谁 [shei]	喜 [xi]	欢 [huan]	巧 [qiao]	克 [ke]	力 [li]	糖 [tang]	7 characters
Morpheme	谁 [shei]	喜 [xi]	欢 [huan]	巧克力 [qiao-ke-li]			糖 [tang]	5 morphemes
词[*ci*]	谁 [shei]	喜欢 [xi-huan]		巧克力糖 [qiao-ke-li-tang]				3 words (词[ci])

<div align="right">(Huang & Liao, 2007, p.219)</div>

It is obvious from this example that the relationship among characters, morphemes and 词 [*ci*] in Chinese is not a one-to-one relationship. Chinese has two major types of 词 [*ci*]: A single morpheme [*ci*] such as 江 [*jiang*], 'river' and a composite [*ci*] such as 司机 [*si-ji*], 'driver'. The single morpheme [*ci*] consists of a monosyllabic [*ci*] such as 江 [*jiang*], 'river' and polysyllabic [*ci*] words such as 蝴蝶 [*hu+die*], 'butterfly', 巧克力 [*qiao+ke+li*], 'chocolate', and 猩猩 [*xing+xing*], 'orangutan'. Composite words consist of two-syllabic words such as 管家 [*guan+jia*], 'butler' and polysyllabic words 红通通 [*hong+tong+tong*], 'bright red'.

In this dissertation, the concept of the Chinese technical term for 'word' – 词 [*ci*] refers to that of syntactic words in English.

2.5 CHINESE COMPOUNDS

2.5.1 CLASSIFICATION AND HEADEDNESS

The traditional compound classification is based on heterogeneous criteria (Scalise and Guevara, 2006). Compounds are classified into *subordinate, coordinate* and *appositive compounds*, *exocentric compounds* and *synthetic compounds*. This method does not distinguish endocentric compounds. It identified compound classes on the basis of grammatical relations between the constituents for *subordinate, coordinate* and *appositive compounds*, the absence of a lexical head for *exocentric compounds*, and concomitant compounding and affixation for *synthetic compounds* (Scalise and Guevara, 2006, p. 186). In this research, the classification of compounds proposed by Bisetto and Scalise (2005) is adopted because it seems to be based on the most consistent criteria. Here, compounds are classified into *subordinate, attributive* and *coordinate* at the first level, based on the grammatical relation between the constituents. At the second level, each type of compound mentioned above is classified as either *endocentric* (endo) or *exocentric* (exo). Compare the examples in (2.5) below:

(2.5) Types of Chinese Compounds

Subordinate: 手表 ShouBiao [N+N] hand+clock =watch (endo.)
'The hand of the clock'

骨盆 GuPen [N+N] bone+basin = pelvis (exo.)
'The basin of the bone'

Coordinate: 毛发 MaoFa [N+N] hair+hair = hair on human body (endo.)
'The hair and the hair'

呼吸 HuXi [V+V] exhale+inhale = breathe (exo.)
'Inhale and exhale'

Attributive: 白菜 BaiCai [A+N]white+vegetable = Chinese cabbage (endo.)
'The vegetable with the white color'

电脑 DianNao [N+N] electricity+brain = computer (exo.)[5]
'The brain with the electricity'

Generally, compounding is an important phenomenon in word formation. Many researchers have examined compounding in European languages. In addition, over the past decades, more and more researchers have focused attention on compounding in Chinese, due to it having some unique aspects compared to so-called 'Western languages'. For instance, in the majority of cases[6], the head of English compounds is on the right-hand side (e.g. *darkroom* with the head *room*) (Sandra, 1990; Zwitserlood, 1994; Libben, 1998), but in Chinese, the head of a compound may be on the left (e.g. 吸入 [*xi+ru*], 'inhale' + 'enter', 'to breathe in'); on the right (e.g. 手表 [*shou+biao*], 'hand' + 'watch', 'watch'); in some compounds both constituents may be heads (e.g. 毛发 [*mao+fa*], 'hair' + 'hair', 'hair on the human body'); and some compounds are characterised as headless (so-called exocentric compounds) (e.g. 东西 [*dong+xi*], 'east' + 'west', 'thing') (Scalise and Guevara, 2006; Ceccagno and Scalise, 2006 and Ceccagno and Basciano, in print).

The presence or absence of a lexical head in a compound determines whether the compound is classified as endocentric or exocentric. A lexical head can be distinguished in two different ways: As a formal head and/or as a semantic head. According to Scalise and Guevara (2006, p. 190), a formal head determines the lexical category of a compound, while a semantic head determines the overall meaning of a compound. Scalise and Guevara (2006) propose that endocentric compounds have at least one formal head and at least one semantic head, and if a

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[5] These different categories of compounds are not always clear cut, as the "same sequence of constituents can correspond to more than one interpretation and, therefore can be candidate to more than one grammatical relation:

(3) *dog bed*   a. Subordinate   'bed of/for a dog'
                    b. Attributive   'bed with a dog-like shape'
                    c. Coordinate   'bed and dog' (not possible in English)"

(Scalise & Guevara, 2006, p. 188)

[6] In cases where the head is not on the right, the compound would have to be characterized as being headless. See two examples: (TO) jailbird and (OO) humbug.

compound has only a formal head and only one semantic head, then the two must coincide. However, exocentric compounds are characterised by the absence of a lexical head, in which a compound realises any of the remaining possibilities mentioned above (Scalise and Guevara, 2006). There are 16 possibilities of combining two constituents to form a compound, according to Scalise and Guevara's (2006) definition of endocentric and exocentric compounds.

Table (2.6) Possibilities of Combining Two Constituents to Form a Compound

Exocentric Combinations (formal and semantic heads do not coincide)	Endocentric Combinations (at least one formal and one semantic head coincide)
0+0	F/S+0
0+F	F/S+F
0+S	F/S+S
F+0	0+F/S
S+0	F+F/S
F+S	S+F/S
S+F	F/S+F/S
F+F	—
S+S	—

(Remark: F = formal head, S = semantic head, F/S = formal and semantic head, 0 = not a head)

(Scalise and Guevara, 2006, p.193)

2.5.2 TYPES OF CHINESE COMPOUNDS

Packard (2000, p.127) classifies Chinese compounds into two major groups: *nominal compounds* and *verbal compounds*. He proposes that nearly 90% of Chinese compound nouns have a nominal formant on the right, and that 85% of Chinese compound verbs have a verbal formant on the left, the default position of the head of a nominal is said to be on the right-hand side of a disyllabic compound, and the head of a verb on the left-hand side. However, Ceccagno and Scalise (2006) criticise the limitation of Packard's Headedness Principle for the existence of exocentric compounds in Chinese. They summarise types of Chinese compounding rules and their outputs as shown below.

(2.7) Types of Chinese compounding rules (Ceccagno and Scalise, 2006, p. 240)

a. Chinese coordinate compounds:
    [A+A]$_A$, [A+A]$_N$, [N+N]$_N$, [V+V]$_N$, [V+A]$_V$, [V+V]$_V$, [V+V]$_{N/V}$

b. Chinese subordinate compounds:
    [A+N]$_A$, [N+A]$_A$, [V+N]$_A$, [N+N]$_N$, [V+N]$_N$, [N+V]$_V$, [V+N]$_V$

c. Chinese attributive compounds:
    [N+A]$_A$, [A+N]$_N$, [N+N]$_N$, [V+N]$_N$, [A+V]$_V$, [N+V]$_V$

Regarding [V+V] in Chinese coordinate compounds, the output of some of these types of compounds can be used as nouns and also as verbs. Huang and Liao (2007) think this indicates that the usage of syntactic categories of Chinese words in the sentence is very complicated. See the examples (2.8a) and (2.8b) below, where (i.e. 呼吸 [*Hu+Xi*], 'exhale' + 'inhale', 'breathe') are used in the sentences:

(2.8a) Output − Noun

他 没有　　呼吸了
Ta meiyou huxi le
He NEG (negative) breath CRS (currently relevant state)
He is not breathing.

(2.8b) Output – Verb
他 没有　　呼吸
Ta meiyou huxi
He NEG breathe
He is not breathing.

2.5.3 'SEMANTICALLY FREE' COMPOUNDS

Scalise and Guevara (2006) consider one kind of exocentric compound in Chinese, which in their view is not semantically transparent, that is, the meanings of the compounds are not predictable from the meanings of their constituents, nor is there any detectable motivation for the meaning of the whole which might stem from the meanings of the constituents.

(2.9) Examples of 'semantically free' Chinese compounds (Scalise and Guevara, 2006)

a.　东西　　DongXi　[N+N] east + west = thing
b.　江湖　　JiangHu　[N+N] river + lake = itinerant entertainers, quacks, vagabond
c.　江山　　JiangShan [N+N] river + mountain = country, the state power
d.　东床　　DongChuang [N+N] east + bed = son in law
e.　手脚　　ShouJiao [N+N] hand + foot = the behavior (especially operating secretly and often illegally)
f.　手足　　ShouZu [N+N] hand + feet = brothers, very intimate friends
g.　心腹　　XinFu　[N+N] heart + belly = trusted subordinate, henchman
h.　风月　　FengYue [N+N] wind + moon = romance
i.　桃李　　TaoLi [N+N] peach + plum = one's disciples or pupils
j.　水火　　ShuiHuo [N+N] water + fire = hardship, catastrophe
k.　饭碗　　FanWan [N+N] rice + bowl = occupation
l.　推敲　　TuiQiao [V+V] push + knock = to deliberate (especially about the ways of expression)

Semantic exocentricity takes into consideration the relative lexico-semantic distance between the constituents and the whole compound. In Indo-European languages, it is often easy to find a link between a compound and its constituents in the process of interpretation. However, in some compounds in Chinese, there seems to be no link between the compound and its constituents according to Scalise and Guevara (2006, p.199). The question arises as to whether these 'semantically free' compound constituents, which do not seem to be semantically related to the meaning of the compound as a whole, are linked to the compound word in the mental lexicon. How is the lexical entry of the whole compound retrieved from the mental lexicon? And how is this kind of exocentric compound represented in the mental lexicon?

2.5.4 NEOLOGISMS

As society and technology develop, more and more new concepts emerge, hence more and more new words are created to meet communication needs. For a simpler explanation, the *New Chinese Neologisms Dictionary* (2003) is used to analyse this, because the neologisms used in the empirical study underlying the data analyses in this dissertation are taken from the *New Chinese Neologisms Dictionary* (2003) (the term 'the *Dictionary'* will be used hereafter). According *the Dictionary* (2003)*,* about one thousand new words are being coined in modern Chinese each year (this estimate is based on the lexicon growth rate between 1999 and 2003). This is due to the development of information technology (especially the popularisation of the internet). The statistics from the *Ministry of Education of China* show that, on average, 700 neologisms were coined between 1980 and 1989. In the *Dictionary* (2003) there are

about 2200 lexical entries and 4000 entries of relevant words and expressions. These new words are needed, for example, in the domains of information, finances and economics, environmental protection, medicine, sports, military, law, education, technology and language. In the *Dictionary* (2003), scientific and technological terminologies dominate with ca. 90% of neologisms in these domains (Pan, 2004).

Taking the *Dictionary* (2003) as an example, by far the most prominent group of neologisms are two-syllabic words (approximately 58.7%), followed by a much smaller number of three-syllabic words (approximately 17.6%) such as 电饭锅 [*dian+fan+guo*], 'electric cooker', 计算机 [*ji+suan+ji*], 'calculator'，小小说 [*xiao+xiao+shuo*], 'mini-novel' (Huang & Liao, 2007, p. 271). The class of four-syllabic words is slightly smaller than that of three-syllabic words (approximately 14.7%) such as 长篇小说 [chang+pian+xiao+shuo], 'full-length novel'. Five-syllabic words are the smallest group (approximately 8.7%) such as 经济适用房 [jing+ji+shi+yong+fang], 'economically affordable housing'.

In this dissertation, the polysyllabic words with more than three syllables (including those with three) are not considered as compounds because there is still an argument as to whether polysyllabic words with more than 4 syllables are 词 [*ci*]. In terms of syntactic categories of these neologisms in the *Dictionary* (2003), there are mainly three groups of syntactic categories: nouns, verbs and adjectives. With a number as high as 1716 (78%), the nouns clearly dominated the other word classes: 462 (21%) of the neologisms are verbs and 22 (1%) are adjectives out of the total number of 2200 new lexical entries (Guo & Zhou, 2003, p. 41).

The *Dictionary* (2003) also indicates that two-syllabic words are the most prominent sub-categories; while another phenomenon is that the two-syllabic words can be used as roots to combine with other morphemes/ words to create new words (Guo & Zhou, 2003). As new concepts increase, words will inevitably contain more and more information (Guo & Zhou, 2003). Therefore, the two-syllabic words which were not used as components for word formation previously have become productive, i.e. they are now used to combine with other morphemes/ words to create new words. For instance, the two-syllabic word 问题 [*wen+ti*], 'problem' can combine with another morpheme/word to create new three-syllabic words such as 问题菜 [*wen+ti+cai*], 'the vegetables have a quality problem', 问题车 [*wen+ti+che*], 'the cars have a quality problem', four-syllabic words, such as 问题儿童 [*wen+ti+er+tong*], 'the

children who always do what they are not permitted to do are difficult to educate' (Guo & Zhou, 2003, p. 41). Due to the fact that, in this dissertation, compounds are only considered as two-syllabic words which are a subcategory of COMPOSITE WORDS, the research does not extend to three-syllabic and four-syllabic words.

There are several reasons for the increase in neologisms. The first reason is the increase of affixes in Chinese (Guo & Zhou, 2003). For example, the affix 走 [*zou*], 'go' can combine with nouns and adjectives to create: 走热 [*zou+re*], 'getting popular', 走红 [*zou+hong*], 'be in vogue', and 走穴 [*zou+xue*], 'actor or doctor who performs for extra income'. The second reason is due to 'lexical shortenings' such as blends, acronyms, abbreviations, clippings and back-formation. In the *Dictionary* (2003), there are 528 词 [*ci*] which are put together through shortening (approximately 24%) (Guo & Zhou, 2003). There are 76.3% of two-syllabic words created through abbreviation. For example, the two-syllabic word 导购 [*dao+gou*], 'shopping guide' is formed as an analogy to 导游 [*dao+you*], 'tour guide'. The third and final reason for the growing number of neologisms in the Chinese lexicon is that neologisms are phonetic translations and are loan words from languages resulting from the integration of the world (Guo & Zhou, 2003, p. 42).

The meanings of new compounds in Chinese appear to demonstrate the characteristics below. With regard to new compounds corresponding to new concepts, the meanings of the compounds are mostly 'created' through a combination of the meanings of the constituents and, accordingly, these new compounds are semantically transparent (Yang, 2009, p. 50). For example:

(2.10a)

> Compound: 指证 [zhi+zheng]
> Constituent meaning: 'point out' + 'demonstrate'
> Compound's meaning: 'point out and demonstrate'

(2.10b) Compound: 制假 [zhi+jia]

> Constituent's meaning: 'to make' + 'fake, counterfeit'
> Compound's meaning: 'to fabricate counterfeit goods'

The meanings of compounds in the above examples (2.10a and 2.10b) are transparent. In contrast, when the older/existing compounds are used to denote new emerging concepts, the new meanings of these compounds are not simply constructed through the meanings of their

constituents (Yang, 2009). In these new compounds, the meaning of the whole compound is derived from the meaning of an older compound via similes and/or metonyms (Yang, 2009). Such older compounds may thus not be semantically transparent. For example:

(2.11)

Compound:	包装[bao+zhuang]
Literal meaning:	'wrap the goods with paper or put the goods into box/bottle; packaging'
New concept:	'refer to dressing up, beautifying and embellishing appearance of person/thing to make it attractive'

From the above example it can be seen that the meaning of the older compound is transparent, but the whole meaning of the new compound is not easy to assume from the meaning of its constituents.

CHAPTER 3
THEORETICAL FRAMEWORK

In this chapter the theory which will be used to test the assumption in the dissertation will be outlined. A discussion of semantic transparency as an important factor in word recognition will be presented, followed by an introduction to Cao's study on conceptual motivation for the meaning of Chinese compounds. Two types of effects, namely word superiority effect and frequency effect will be discussed in conclusion.

3.1 SEMANTIC TRANSPARENCY IN COMPOUNDS

Many researchers state that semantic transparency is an important factor in the representation and the processing of multi-morphemic words (Sandra, 1990; Zwitserlood, 1994; Libben, 1998; Jarema, Busson, Nikolova, Taspkini and Libben, 1999). In the early 1980s, there was no agreement as to whether a compound was represented as a whole word in the mental lexicon, or whether the multi-morphemic strings would have to be decomposed into their constituents in order for compounds to be understood (e.g. Taft, 1981 and Butterworth, 1983). However, Libben (1998) made a strong claim that multi-morphemic words should preferably not be stored as wholes in the mental lexicon, but rather in terms of their constituents. He argued that the fewer elements that needed to be retrieved from the lexical store the better, because storage efficiency appeared to be more desirable than processing cost. Libben conceded, however, that the manner in which multi-morphemic words were represented and processed could not be decided across the board. Rather, representation and processing of multi-morphemic words seemed to rely on a variety of lexical factors such as frequency, lexical category, morphological type, and semantic relationships between the multi-morphemic forms and their constituents (Libben, 1998, p.31).

Since the 1990s, models of morphological processing which considered the above-mentioned lexical properties have emerged (Marslen-Wilson, Tyler, Waksler, and Older, 1994; Schreuder and Baayen, 1995). These models generally converged on the idea that semantic transparency played a central role in the processing of multi-morphemic words. Specifically, semantic transparency seemed to determine whether a multi-morphemic word was processed by way of 'combining' the meanings of its constituents. Accordingly, a word that is built by regular morphological rules is also categorised as semantically transparent, for example, the adverb

friendly[7], and is held to be much more easily accessed from the mental lexicon through its morphemes [*friend+ly*] than a semantically opaque word such as *department.* This difference would be due to the fact that the meaning of *department* cannot be described as a composite of *depart+ment* (Libben, 1998). In terms of studies on compounds, Sandra (1990) found that if the meanings of a compound's constituents were semantically transparent, the compound would most probably be represented in the mental lexicon in a 'decomposed' form. However, semantically opaque compounds seemed "to thwart a routinised morphological decomposition procedure" (Libben, 1998, p.34) and might thus have to be stored as decomposable wholes. Moreover, Zwitserlood (1994) indicated that fully transparent compounds and partially opaque compounds are assessed through their constituents, whereas it seems that fully opaque compounds are not. Gagne and Spalding (2004) and Libben (1998) also emphasise this assumption in their studies.

3.1.1 CLASSIFICATION OF COMPOUND TRANSPARENCY

The present research investigates to what extent semantic transparency and frequency are involved in the representation and processing of Chinese compounds words (e.g., neologisms). In relation to frequency, according to Tsai's (1996) research, high frequency compounds in Chinese are stored in the mental lexicon as independent lexical entries, whereas low frequency compounds are not stored in the mental lexicon. In other words, high frequency compounds in Chinese may be represented in decomposed forms, e.g. only through their constituents. While this holds for semantically transparent compounds – we have to assume that opaque, 'semantically free' compounds are stored as wholes in the mental lexicon – thus the question still poses itself as to whether these exocentric compounds would be assessable through their constituents. In other words, would a Chinese speaker who was presented with the word 西 [*xi*], 'west' associate it with the compound 东西 [*dong+xi*], 'east' + 'west', 'thing' upon hearing only one constituent?

In his research, Tsai does not distinguish Chinese compounds into categories according to the studies of the ratio of semantic transparency established by Jarema, Busson, Nikolova, Taspkini & Libben (1999) and Libben, Gibson, Yoon and Sandra (2003). The researcher has,

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[7] It is controversial whether words that are composed by regular morphological rules are stored as wholes or whether they are composed 'on the fly' every time they are needed. Data from first language acquisition research provides evidence that word stems and inflectional morphology are stored separately though (see e.g. Clahsen, Prüfert, Eisenbeiss and Cholin (2002).

however, for the purposes of this study, categorised the selected compounds into groups according to the studies established by the above authors. The detail regarding the degree of semantic transparency is discussed below.

According to Jarema, Busson, Nikolova, Taspkini and Libben (1999) as well as Libben, Gibson, Yoon and Sandra (2003), compounds are generally divided into four groups according to the relationship of a constituent's meaning within a compound, and its meaning as an independent lexical form. Three degrees of processing effects are found according to the extent of compound transparency. The first ones dealt with are fully transparent items (TT), followed by partially transparent items (OT & TO), and the last one covers fully opaque items (OO).

(3.1) Degrees of transparency in Chinese compounds

TT (transparent – transparent)
    (e.g., 房型 FangXing [N+N] house+model = layout of a house)
OT (opaque – transparent)
    (e.g., 黑车 HeiChe [A+N] black/illegal+vehicle = unlicensed car)
TO (transparent – opaque)
     (e.g., 舌头 SheTou [N+N] tongue+head = tongue)
OO (opaque – opaque)
    (e.g., 色狼 SeLang [N+N] lust+wolf = sex maniac)

Additionally, in this research, Chinese compounds are subcategorised into groups according to compound frequency which is derived as follows.

(3.2) Compound frequency and transparency[8]:

TT (transparent – transparent):
T/H+T/H; T/H+ T/L; T/L+ T/H; T/L + T/L
OT (opaque – transparent):
O/H+T/H; O/H +T/L; O/L+T/H; O/L+T/L
TO (transparent – opaque):
T/H+O/H; T/H+O/L; T/L+O/H; T/L+O/L
OO (opaque – opaque);
O/H+O/H; O/H+O/L; O/L+O/H; O/L+O/L

(The compound frequency is adopted from the *List of Contemporary Chinese Frequently Used Words* compiled by *the Commercial Press* in 2008)

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[8] 'T' = transparent; 'O' = opaque; 'H' = high frequency; 'L' = low frequency

According to the classification of compound transparency above, 'semantically free' compounds (e.g., 东西 [*dong+xi*], 'east' + 'west', 'thing') would be regarded as fully opaque compounds due to the observation that the meaning of the compounds is not predictable from the meanings of their constituents. According to this view, this means that the meanings of these 'semantically free' compounds cannot possibly be constructed through the meanings of their constituents. On the other hand, according to Tsai's study (1996), high frequency compounds in Chinese are stored in the mental lexicon entries as independent lexical entries. From this assumption, it is possible to deduce that, the meaning of high frequency compounds could be constructed through the meanings of their constituents. Therefore, the meaning of the compound 东西 [*dong+xi*], 'east' + 'west', 'thing' can be processed through the meanings of its constituents due to the fact this compound 东西 [*dong+xi*], 'east' + 'west', 'thing' is a high frequency compound in Chinese (it belongs to the 3000 most commonly used Chinese words).

3.2 CHINESE SEMANTICS

3.2.1 MOTIVATIONS FOR THE MEANINGS OF CHINESE MULTIMORPHEMIC WORDS

According to Cao (2009), conceptual motivation for the meanings of Chinese compounds includes two aspects: *conspicuous motivation* and *latent motivation*.

Conspicuous motivation means that the meanings of compounds have a close, direct and obvious relation to the meanings of its constituents (Cao, 2009). In latent motivation, the relation between the meaning of the compound as a whole and the meanings of its morphemes is indirect, obscure, and difficult to find (Cao, 2009).

3.2.1.1 CONSPICUOUS MOTIVATION COMPOUNDS

Compounds whose composition can be described as being based on conspicuous motivation can be further sub-categorised into the following four of sub-types:

First sub-type of 'conspicuous motivation compounds': *the meaning of the compound is a generalisation of the meanings of its constituents*. For instance,

Group A: 根源[gen+yuan], 'the roots of trees' + 'the source of rivers' = 'starting point of the existence of every single thing'

汇集[hui+ji], 'gather together' + 'gather' = 'converge'

治理[zhi+li], 'cure' + 'manage' = 'govern'

牵引[qian+yin], 'drag' + 'lead' = 'drag, draw, tow'

贫穷[pin+qiong], 'impoverished' + 'poor' = 'poor, impoverished'

Group B: 价值[jia+zhi], 'price' + 'value' = 'value'

疾病[ji+bing], 'illness' + 'disease' = 'illness, disease'

寻找[xun+zhao], 'seek' + 'look for' = 'seek, look for, search'

选择[xuan+ze], 'select' + 'choose' = 'select, choose'

美丽[mei+li], 'beautiful' + 'pretty' = 'beautiful, pretty'

(Cao, 2009, p.73)

The characteristics of this kind of compound indicate that the meanings of the two constituents are the same or closely related. Therefore, the meaning of the compound can be derived from the meanings of its constituents. Take 根源 [*gen+yuan*] for example: 根 [*gen*] means 'the roots of trees' which is a starting-point for growing trees; 源 [*yuan*] means 'the source of rivers' which is a starting point from which rivers run (Cao, 2009), hence, the combination of the meanings of these two constituents results in the overall meaning of the compound which refers to the 'starting point of the existence of every single thing' (Cao, 2009). In Group B, the meanings of the constituents are much closer than in Group A such as 美丽 [*mei+li*]. The meaning of the constituent of 美 [*mei*] is 'beautiful', while the meaning of the constituent of 丽 [*li*] is 'pretty'. The combination of the meanings of these two constituents results in the overall meaning of the compound which refers to 'beautiful, pretty'.

Second sub-type of 'conspicuous motivation compounds': *the meaning of the compound is a simple combination of the meanings of its constituents* (i.e. the compound (AB) denotes what 'the sum' of A + B denotes). For instance,

Group A: 知青[zhi+qing], 'know' + 'green' = 'the youth with knowledge'

军工[jun+gong], 'army' + 'skill' = 'military industry'

外事[wai+shi], 'outer, foreign' + 'affair, matter' = 'foreign affairs'

公廉[gong+lian], 'public' + 'cheap, honest' = 'incorrupt government'

科技[ke+ji], 'a branch of academic' + 'ability' = 'science and technology'

Group B: 平地[ping+di], 'smooth' + 'ground' = 'smooth ground'

昏君[hun+yong], 'confuse' + 'monarch' = a fatuous ruler

良机[liang+ji], 'good' + 'opportunity' = 'good opportunity'

公敌[gong+di], 'public' + 'enemy' = 'public enemy, common enemy'

心悸[xin+ji], 'heart' + 'palpitate' = 'palpitation'

Group C: 是非[shi+fei], 'right' + 'wrong' = 'right and wrong'

彼此[bi+ci], 'you' + 'I' = 'each other, one another'

遐迩[xia+er], 'far' + 'near' = 'far and near'

公私[gong+si], 'public' + 'private' = 'public and private'

胜负[sheng+fu], 'win' + 'lose' = 'win and lose'

<div align="right">(Cao, 2009, p.74)</div>

The characteristics of this kind of compound are that the meanings of two constituents of the compound are different. In some cases, (i.e. Group C) where the meanings of the constituents are semantically related, the meanings of the two constituents have to be 'opposites'.

Compounds in Group A are the results of shortening such as 知青 [*zhi+qing*], which comes from 知识青年 [*zhi+shi+qing+nian*], 'the youth with knowledge'. The meanings of compounds in Group B are the result of a combination of the meanings of their constituents; for example, the meaning of the compound 平地 [*ping+di*] which means 'smooth ground' is composed from the meaning of 平 [*ping*] 'smooth' and the meaning of 地 [*di*] 'ground'.

The meanings of the constituents of the compounds in Group C are related in that they are opposites of one another; such as the meaning of compound 是非 [*shi+fei*], 'right and wrong' which is composed from the meaning of the constituent 是 [*shi*], 'right' and the meaning of the constituent 非 [*fei*], 'wrong'.

<u>Third sub-type of 'conspicuous motivation compounds'</u>: *the meaning of the compound comes from the meaning of one of its constituents* while the meaning of the other constituent is lost. For instance,

Group A: 忘记[wang+ji], 'forget' + 'remember' = 'forget'
           窗户[chuang+hu], 'window' + 'one paneled door' = 'window'
           动静[dong+jing], 'stir' + 'still, tranquil' = 'stir'
           干净[gan+jing], 'dry' + 'clean' = 'clean'
Group B: 帽子[mao+zi], 'hat' + 'son' (as an affix) = 'hat'
           老师[lao+shi], 'old' (as an affix) + 'teacher' = 'teacher'
           广为[guang+wei], 'wide, extensive' + 'be' = 'wide, extensive'
           深为[shen+wei], 'profound' + 'be' = 'profound'

<div align="right">(Cao, 2009, p.75)</div>

The characteristics of this kind of compound are that the meanings of the compounds are derived from the meanings of one of their constituents and the other constituent does not contribute to the compound's overall meaning. Group A contains typical examples of this type of compound; for instance, the meaning of the constituent 记 [*ji*] 'remember' in the compound 忘记 [*wang+ji*] is lost; the meaning of the compound 忘记 [*wang+ji*] means 'forget' which comes from the constituent 忘 [*wang*]. In Group B, the meanings of the compounds are derived from the meanings of one of their constituents, but the difference to those in Group A is that the constituents which do not contribute to the compounds' overall meanings are affixed. For instance, the constituents of 子 [*zi*] and 老 [*lao*] are affixed in the respective

compounds 帽子 [*mao+zi*] and 老师 [*lao+shi*]. 帽子 [*mao+zi*] means 'hat' and 老师 [*lao+shi*] means 'teacher'.

Fourth sub-type of 'conspicuous motivation compounds': *the meaning of the compound is a complementation and derivation of the meanings of its constituents.* For instance:

谢幕[xie+mu], 'express appreciation' + 'screen curtain' = 'after a performance, when audience applauds, the actors are standing before the screen curtain, saluting and expressing their appreciation to the audience'
盘菜[pan+cai], 'plate' + 'vegetable, dish' = 'assorted cold dishes'
协作[xie+zuo], 'assist' + 'do, make' = 'cooperation, collaboration, coordination'
通史[tong+shi], 'connect' + 'history' = 'general history, comprehensive history'
快报[kuai+bao], 'quick' + 'newspaper, report' = 'newsflash'
剪票[jian+piao], 'cut' + 'ticket' = 'check ticket'

(Cao, 2009, p.75)

The characteristics of this kind of compounds are such that, although it can be seen that there is a cause-and-effect relation between the meanings of the compound and the meanings of its constituents, the relationship between the individual meanings of the constituents and the overall meanings of the whole compounds is not as obvious as for the above kinds of compounds, and the formation of the overall meaning of these types of compounds is a very long process. It is thus not very helpful to try to understand the overall meaning of the compounds if one has only mastered the meanings of their constituents. Some specific knowledge such as lexicology and methods will be required. Take 谢幕 [*xie+mu*] for example, 谢 [*xie*] means 'express appreciation' and 幕 [*mu*] means 'screen curtain', but the combination of the meanings of the two constituents is less 'complete' than the overall meaning of the compound 谢幕 [*xie+mu*]. The meaning of the compound 谢幕 [*xie+mu*] expresses that, after a performance, when the audience applauds, the actors stand before the screen curtain, saluting and expressing their appreciation to the audience. It is thus not difficult to see the differences between the more complex, overall meaning of the compound 谢幕 [*xie+mu*] and the meanings of its constituents.

3.2.1.2 LATENT MOTIVATION COMPOUNDS

In contrast, the meaning of compounds with a latent motivation for compound composition is 'rhetorically derived' from the meanings of its constituents. Groups in this sub-category are:

Group A: 股肱[gu+gong], 'thigh' + 'arm' = 'the person who is a very capable and a competent right-hand assistant'

笔墨[bi+mo], 'pen' + 'Chinese ink' = 'writing, articles'

唇舌[chun+she], 'lip' + 'tongue' = 'one's words'

滥觞[lan+shang], 'float' + 'wineglass' = 'the origin of things'

Group B: 园丁[yuan+ding], 'garden' + 'man' = 'gardener, teacher'

桥梁[qiao+liang], 'bridge' + 'beam' = 'bridge, approach'

心脏[xin+zang], 'heart' + 'viscera' = 'heart, key point'

小儿科[xiao+er+ke], 'small' + 'son' + 'a division' = 'department of paediatrics, worthless things or easy job'

Group C: 红色[hong+se], 'red' + 'color' = 'passion'

黄色[huang+se], 'yellow' + 'color' = 'obscene, erotic'

红豆[hong+dou], 'red' + 'bean' = 'yearning between lovers, lovesickness'

白色[bai+se], 'white' + 'color' = 'horrify'

Group D: 丧胆[sang+dan], 'lose' + 'gallbladder' = 'be smitten with fear'

倾倒[qing+dao], 'topple' + 'fall' = 'greatly admire'

销魂[xiao+hun], 'melt' + 'soul' = 'be extremely sad, distressed or happy'

一溜烟[yi+liu+yan], 'one' + 'sneak off' + 'smoke' = 'swiftly'

(Cao, 2009, p.76)

The meanings of the compounds in Group A are derived via the conceptual process of metonymy from the meanings of their constituents. Consider, for example, the compound 股肱[*gu+gong*]: 股[*gu*] means 'thigh', and 肱[*gong*] means 'arm'. Accordingly, the literal meaning of this compound refers to 'arm and thigh', however, due to the fact that arms and thighs are important body parts for conducting daily human activities, the meaning of the compound becomes 'the person who is a very capable and a competent right-hand assistant'.

The overall meanings of the compounds in Group B are derived by the conceptual process of simile from the meanings of their constituents. Consider, for example, the compound 园丁 [*yuan+ding*]: 园 [*yuan*] means 'garden', and 丁 [*ding*] means 'man'. Accordingly, the literal meaning of this compound refers to 'gardener'. However, due to the similarity between the work specification of a gardener and that of a teacher (the work of a garderner is in achievement of the beauty of a tree whereras that of a teacher is in achievement of the beauty of a man), the compound 园丁[yuan+ding] refers to 'teacher'.

The meanings of the compounds in Group C are derived from the conceptual process of symbolisation of the meanings of their constituents. Consider, for example, the compound 黄色 [*huang+se*]: 黄 [*huang*] means 'yellow', and 色 [*se*] means 'color'. Accordingly, the literal meaning of this compound refers to 'yellow', however, in Chinese, this color is used to refer 'obscene, erotic'.

The overall meanings of the compounds in Group D are derived from the conceptual process of hyperbole from the meanings of theirs morphemes. Consider, for example, the compound 丧胆 [*sang+dan*]: 丧 [*sang*] means 'lose', and 胆 [*dan*] means 'gallbladder'. Accordingly, the literal meaning of this compound refers to 'lose gallbladder'. In the Chinese culture, however, the gallbladder is the source of courage, and if the gallbladder is lost, then it means that one has no courage at all, and thus 丧胆 [*sang+dan*] means to 'be smitten with fear'.

Another kind of compound which is a typical example of compounds with a latent motivation requires discussion here. The meaning of this kind of compound is derived from Chinese literary quotations (Cao, 2009). For instance,

Group A: 问鼎[wen+ding], 'ask' + 'an ancient cooking vessel' = 'attempt to usurp the throne'
临池[lin+chi], 'near' + 'pool' = 'practice calligraphy'
染指[ran+zhi], 'dye' + 'finger' = 'have a finger in the pie, encroach on'
Group B: 桑梓[sang+zi], 'white mulberry' + 'catalpa' = 'one's native place, hometown'
涂鸦[tu+ya], 'spread' + 'crow' = 'poor handwriting'
先鞭[xian+bian], 'first' + 'whip' = 'the first and leading works'

(Cao, 2009, p.77)

The characteristics of this kind of compound are that it is hardly possible to find a connection between the meaning of the compound and the meanings of its constituents, in contrast with the compound of 股肱 [*gu+gong*], 'thigh' + 'arm', 'the person who is a very capable and a competent right-hand assistant'. However, there is a link between the latent meaning and the literal meaning such as in the compound of 股肱 [*gu+gong*] (Cao, 2009), namely that the latent meaning is based on their conspicuous meanings (i.e. the literal meanings). The meaning of this kind of compound like 染指 [*ran+zhi*], 'dye' + 'finger', 'have a finger in the pie, encroach on' is either a concise reference to some famous person's anecdotes from ancient times or an epitomising of a verse of poetry/prose from traditional Chinese. Sometimes there is a story behind the meaning of the compound. All compounds in Group A have stories behind the words, whereas the compounds in Group B express the epitomising of verses of poetry/ prose from traditional Chinese.

Consider, for example, the compound 染指 [*ran+zhi*] in Group A 'dye' + 'finger', 'have a finger in the pie, encroach on'. This anecdote is recorded in the Chronicle of Zuo, and is the source of this compound. In 605 BCE, the monarch of Zheng, a state in the Zhou Dynasty, invited his officials to have a dinner due to the monarch of Chu having presented some soft-shelled turtles to him as a gift. At the gate to the palace, a senior official ZiSong

suddenly stopped ZiJia, showed him his moving finger and told him that if his finger moved in a particular way, it meant that there would be delicious food. Upon being seated, Zijia found that ZiSong's prediction was true and put his thumb up to ZiSong, however, this was observed by the monarch of Zheng who asked ZiJia why he had done this. ZiJia told him and the monarch of Zheng didn't say any word. When the banquet started, only ZiSong was not served with soft-shelled turtle soup. ZiSong felt very embarrassed and found that the monarch of Zheng had done this intentionally, according to his expression and actions. Then he became angry, because he thought that the monarch of Zheng had made him lose face in front of his colleagues. He stood up and walked to the ancient cooking vessel, put a finger in the soup and tasted it, and then walked out of the hall. The monarch of Zheng became very angry and wanted to kill him because he thought that ZiSong did not respect him. However, ZiSong killed the monarch before the monarch could kill him.

Consider, for example, the compound 桑梓 [*sang+zi*], 'white mulberry' + 'catalpa', 'one's native place, hometown' which comes from the Book of Songs "维桑与梓，必恭敬止" and means that white mulberry trees and catalpa trees are planted by one's parents in one's hometown, therefore these trees should be admired. From that time on, 桑梓 [*sang+zi*] refers to hometown.

3.2.2 UNMOTIVATED COMPOUND MEANINGS FOR CHINESE '*CI*'词

To avoid terminological confusion, the term '*Ci* 词' is used when discussing the situation where the overall meaning of a Chinese compound appears to be utterly unmotivated. Unmotivated compounds' meanings refer to those compounds whose conceptual motivations have vanished for some reason or never existed (Cao, 2009). This may be as a result of a kind of custom and convention that we cannot currently trace back, but which formed the original meaning (Cao, 2009).

As Aronoff (1976) presumes, the meanings of compounds of this kind might have drifted apart over time from the meanings of their constituents. According to Cao (2009), there are four kinds of situations which may be responsible for the observation that there is sometimes no motivation for the meaning of a compound.

The first such situation is *phonetic translation* and the *borrowing of loan words* from a

language other than Chinese. It is easy to understand why, in compounds that result from such a situation, there is no relation between the meaning of the compound and the meanings of its constituents. For instance, consider the compound 布鲁塞尔 [*bu+lu+sai+er*], 'literal translation', actual meaning is 'Brussels', which is an example of phonetic translation.

The second is the so-called *LianMian Ci* 联绵词 in Chinese (which appears as a disyllabic word, however the two constituents look like bound words when they meet, and thus they cannot be separated). With regard to whether '*Ci* 词' is *LianMian Ci* 联绵词 or a compound, the criterion depends on whether the two constituents can be morphemes separately or as a whole. For instance, 葡 [*pu*] and 萄 [*tao*] are not morphemes, but 葡萄 [*pu+tao*], 'grape' as a whole is a morpheme. Hence, 葡萄 [*pu+tao*], 'grape' is *LianMian Ci* 联绵词.

The third refers to proper nouns. For example, 知母 [*zhi+mu*] is a plant called 'Common Anemarrhenae Rhizome', however, 知 [*zhi*] means 'knowledge', and 母 [*mu*] means 'mother'. Obviously there is absolutely no link between the meanings of the constituents and the overall meaning.

The last deals with dialectal words and colloquial words. For example, 埋汰 [*mai+tai*] means dirty. It is quite hard to understand the overall meaning of the compound from the meanings of its constituents, as 埋 [mai] means 'bury', and 汰 [tai] means 'eliminate'.

3.3 WORD-SUPERIORITY EFFECT AND FREQUENCY EFFECTS IN WORD RECOGNITION

In this section, two types of important effects relevant to the current study will be introduced. These are the word-superiority effect and the word frequency effect. The word-superiority effect basically indicates that word access from the mental lexicon is faster for words whose form can be perceived quickly and effortlessly as one 'Gestalt'. Frequency effects have a sensitive influence on words/compounds' recognition by the mental lexicon.

3.3.1 WORD SUPERIORITY EFFECT

The earliest study with regard to the word superiority effect (WSE) for Indo-European languages is the Reicher-Wheeler paradigm (Reicher, 1969; Wheeler, 1970). The studies

indicate that facilitation of letter recognition can be found in the context of a legitimate word of a given language while such a facilitation is absent for non-word contexts (Reicher, 1969; Wheeler, 1970). According to Cheng's (1981) study in terms of WSE in Chinese, he also found that the target character in the context of a two-character compound can be more easily perceived than in the context of a two-character non-word. For example, the target character 房 [*fang*], 'house' in the compound 房型 [*fang+xing*], 'house' + 'model', 'the layout of a house' can be more readily found than in the non-word of 房远 [*fang+yuan*], 'house' + 'far'. However, Cheng's (1981) experiment does not include the semantic transparency effect. In Mok's (2009) research, the word-superiority effect is investigated as a function of semantic transparency in Chinese bi-morphemic compound words. He found that fully opaque compounds and partially transparent compounds (both TO and OT) have a larger WSE than fully transparent compounds. This means that fully opaque compounds show up as more greatly 'perceptually unitised' than fully transparent compounds (Mok, 2009, p.1045). His research indicated that it is possible that the meaning of a compound is retrieved from the mental lexicon through the meanings of its constituents, if the combined meaning of the two constituents of the compound is transparent; but it is less possible that a compound is processed through its constituents when the combined meaning of the two constituents is opaque. In other words, in his experiment for WSE, it is shown that fully opaque compounds tend to be retrieved from the mental lexicon as whole. For example, for the fully opaque compound 色狼 [*se+lang*], 'lust' + 'wolf', 'sex maniac', it may be more efficient to represent the compound as a whole than to retrieve it through the two constituents 色 and 狼 which do not seem to serve much semantic function to the meaning of the compound. Therefore, this means that WSE shall be "the 'least unitised' if a compound is fully transparent to the 'most unitised' if a compound is fully opaque" (Mok, 2009, p.1044).

3.3.2 FREQUENCY EFFECTS

Frequency effects underpin not only the acquisition of orthographic, phonological and morphological form, but also the recognition of words/compounds in the mental lexicon (Ellis, 2002). In this case, it can be assumed that stored items are processed faster than un-stored items. Logically, high frequency items can be assumed to be processed faster than low frequency items due to the idea/ assumption that stored items are frequently used, and that frequently used items will be stored in the mental lexicon. Therefore, one may assume that high frequency items are stored in the mental lexicon; this hinges on the assumption that

frequency effects exist. In this study, frequency effects are separated into *compound frequency* and *constituent frequency*.

3.3.2.1 COMPOUND FREQUENCY

According to the above logic with regard to frequency effects, high frequency compounds may be stored as a whole in the mental lexicon. In Tsai's (1996) study, high frequency compounds are assumed to be stored in the mental lexicon as independent lexical entries, and low frequency compounds may not be stored in the mental lexicon. The compound frequency criterion is adopted from the *List of Contemporary Chinese Frequently Used Words* compiled by *the Commercial Press* in 2008.

3.3.2.2 CONSTITUENT FREQUENCY

Logically speaking, if the meaning of a compound is processed through the meanings of its constituents, the access speed to its constituents might well affect the recognition speed of the compound (Tsai, 1996). This is the original logic of manipulating character frequency, however, Chen (1993) found strong negative character frequency effects in his research that compounds with high frequency characters were recognised slower than those with low frequency characters in a lexical decision task. This negative result was confirmed further by Malmberg, Steyvers, Stephens and Shiffrin's study (2002). They found that low-frequency words were better recognized than high-frequency words because low-frequency words contained more uncommon features (Malmberg, Steyvers, Stephens and Shiffrin, 2002). Chen (1993) analysed that high frequency characters are more easily associated with their family words which might have an influence on access speed.

CHAPTER 4
RESEARCH METHODOLOGY

This chapter discusses the research methods and methodology used in the current dissertation. The rationale for the study design and methods is described; and it includes a description of the research site, the population, the sample and the sampling method. The discussion also contains the data collection methods, as well as the data preparation and data analysis plan.

4.1 RESEARCH DESIGN

This research may be characterised as an empirical investigation within the quantitative paradigm. The study contains three tasks. The design of Task 1 and Task 2 replicates the experiment concerning the classification of compound transparency which Libben, Gibson, Yoon and Sandra (2003) used to test English compounds. Task 3 is a kind of word association task that was designed following a suggestion by Gleason and Ratner (1998, p. 215).

4.1.1 QUANTITATIVE RESEARCH

In the social and human sciences, there are two major approaches to data collection and analysis: the *quantitative approach* (Bailey, 1978; Babbie, 1989; Hessler, 1992; and Black, 1999) and the *qualitative approach* (Bailey, 1978; Babbie, 1989; Hessler, 1992; and Walford, 2001).

The quantitative approach is a collection of research techniques used to gather quantitative data which are data that may be captured in numbers, e.g. percentages (Black, 1999). Quantitative research sees reality as objective and thus uses a deductive approach to collect data to assess preconceived models, hypotheses and theories (Babbie & Mouton, 2001). The aim is to objectively measure the social world, to test hypotheses, and to predict human behaviour (Schurink, 2001). In other words, quantitative approaches seek to confirm hypotheses about phenomena, and instruments use a more rigid style of eliciting and categorising responses to questions than that of the qualitative approach (Schurink, 2001, p.242-243). Analytical objectives are to quantify variation, to predict causal relationships, and to describe characteristics of a population (Schurink, 2001, p.242-243). Highly structured methods are used such as questionnaires, surveys and structure observation (Black, 1999).

Statistics, tables and graphs are often employed to present the results of quantitative research. In the current study, questionnaires and tests were selected for use in capturing the quantitative data. (Compare the detailed discussion in section 4.6). See example (4.1) below:

(4.1) Example: Frequency and Percentage for a Course Evaluation

(Source: Cohen, Manion & Morrison, 2007, p. 507)

		Frequency	Percentage
The course was too hard			
Valid	Not at all	24	12.6
	Very little	49	25.7
	A little	98	51.3
	Quite a lot	16	8.4
	A very great deal	4	2.1
Total		191	100

The example (4.1) indicates that quantitative research is concerned with quantifying relationships between variables, and with depicting data and characteristics about phenomena being studied. The purpose is to study frequencies, and thus discern possible new findings and compare these to already existing data, making possible recommendations for future studies (Cohen, Manion & Morrison, 2007).

4.1.2 QUALITATIVE RESEARCH

Qualitative approaches are research techniques generally associated with the evaluation of the social dimensions of development programmes, particularly programmes which have explicit social development aims (De Vos, 2002). Qualitative research can provide complex descriptions of how people experience a given research issue (Walford, 2001). This is especially effective in obtaining culturally specific information about the values, opinions, behaviours, and social contexts of particular populations (Shank, 2002). In contrast to quantitative research which seeks to confirm hypotheses about phenomena, qualitative research seeks to explore phenomena (Schurink, 2001). Semi-structured methods are used, such as in-depth interviews, focus groups, and participant observation (Babbie & Mouton, 2001). See example (4.2) below:

(4.2) Example: An Overview of Themes and Categories of Experience of Mothers Caring for their Teenage Daughters' Young Children
(Source: Modungwa, 1994, p. 33 cited in Poggenpoel, 2001, p. 347)

Themes	Categories and Subcategories

1. Meaning of the parenting role	3.1 Parenting as a stressor
	  ➤ Financial distress
	  ➤ Physical distress
	  ➤ Emotional-spiritual distress
	
	3.2 Parenting as doing one's duty
	  ➤ A sense of fulfilment
	  ➤ Mother-child attachment
	  ➤ Motivation for taking over parenting role

2. Lifestyle changes	2.1 A sense of being trapped 2.2 Accepting a less than ideal standard of life 2.3 Job reorganisation
3. Support system	3.1 Financial and material support 3.2 Health care and family planning support 3.3 Physical assistance 3.4 Strength and sustenance 3.5 Conflict resolution

The above example, indicates that the data of qualitative research are a verbal kind of data. These data can help us to interpret and better understand the complex reality of a given situation (Shank, 2002). This method is not emphasised in the current research, thus the researcher will not discuss qualitative research in much detail.

4.2 RESEARCH SITE

The *College of ShaanXi Costume & Art* was selected for the study. The college, which uses Chinese as a medium of instruction, is located in *XianYang*, *ShaanXi* Province. The college is an institute for tertiary and further education which was established in 1994, offers 49 disciplines, has a total student population of approximately 22000, and a total staff complement of approximately 400.

4.3 POPULATION

The population refers to the 'population' in a broad sense, including all the elements in the universe with which the research problem is concerned (e.g. persons, events, organisations units, case records or other sampling units) (Seaberg, 1988, p.240). 'Universe' refers to all

potential subjects who possess the attributes in which the researcher is interested (Arkava & Lane, 1983, p.27). In this study, the target population is Chinese native speakers who are first year college students, for whom Chinese is used as a medium of instruction in the college, for the period of January to July 2011.

4.4 SAMPLE AND SAMPLING PROCEDURES

Adopting a suitable sampling strategy plays an important role in influencing the quality of a piece of research. The term 'sample' refers to a smaller section of a population or universe (Strydom & De Vos, 1998, p.190). It is "the element of the population considered for actual inclusion in the study" (Arkava & Lane, 1983, p.27). It can be considered "as a subset of measurements drawn from a population in which we are interested" (Strydom & De Vos, 1998, p.191). Reasons for the use of samples are: Firstly, it is impossible to identify all the members of a population (Strydom & De Vos, 1998, p.191); secondly, it may be tedious and time-consuming, and it may be too large a task to observe or study the entirety of a population (Arkava & Lane, 1983, p. 157).

In terms of the sample size, there is no clear-cut answer for the correct sample size. Generally, the larger the sample the better (Cohen, Manion & Morrison, 2007; Strydom & De Vos, 1998), as this not only gives greater reliability, but also enables more sophisticated statistics to be used (Cohen, Manion & Morrison, 2007, p.101). Normally, the minimum number of the sample for statistical analysis is thirty cases according to Cohen, Manion and Morrison (2007, p.101). However they also advise that it is better to consider more because the optimal number may depend on the purpose and style of the research and the nature of the population of interest (Cohen, Manion & Morrison, 2007, p.101). More specifically, the sample size is determined by the kind of analysis to be performed as some statistical tests will require larger samples, and some variables may need to be ensured by a reasonably large sample size (Cohen, Manion & Morrison, 2007).

In addition, non-probability purposive sampling was selected for the current study. This type of sample is composed of elements which contain the most characteristic representative or typical attributes of the population (Singleton et al., 1988, p.153). In other words, the sample size depends on the judgment of the researchers. In this case, the researcher deemed the college students' views representative of the population in the study, due to the fact that as

youths they were representative of the youth. Additionally, they may have a similar education background and also a similar degree of language skill in Chinese relating to listening, speaking, reading and writing because they are in the same age group with similar social influences.

In this study, the sample sizes of Task 1 and Task 2 replicate the sample sizes in the experiment of Libben, Gibson, Yoon and Sandra (2003). As in Libben, Gibson, Yoon and Sandra's (2003) experiment, the sample size for Task 1 & 2, as presented in the current study is ninety-five. For Task 3, fifty participants who did not participate in Task 1 & 2 and who were first year students from the same college were selected. A sample size of 50 will hopefully ensure that the results are statistically significant; due to the nature of Task 3 more than 50 students would have been impossible to manage.

4.5 SELECTION CRITERIA FOR PARTICIPANTS

All Chinese native speakers qualified for this study. The expression 'Chinese native speakers' refers to Mandarin speakers in the context of the current research. There are many Chinese dialects. Chinese dialects can be roughly divided into Northern Chinese (Mandarin) and Southern dialects. Chinese dialects were formed as a result of waves of migration by the Han-Chinese who moved out of the Yellow River area (also called the former central states) at various times over the last two millennia, in order to protect themselves from natural disasters such as floods or from civil wars (Sun,2006).

4.6 DATA COLLECTION METHODS

In this study, two techniques were used for data collection, namely a questionnaire and a test. The questionnaire covers Task 1 and 2. The test is the measuring instrument for Task 3. The two techniques are discussed below in detail.

4.6.1 QUESTIONNAIRES

The bulk of the empirical data was collected by means of a questionnaire which addressed the critical questions of the research project. A questionnaire is a useful technique for collecting information, as it provides structured, often numerical data. Questionnaires can be

administered without the presence of the researcher, and are comparatively straightforward to analyse (Wilson & McLean, 1994 cited in Cohen, Manion & Morrison, 2007, p.317). According to Fouché (2001), there are five types of questionnaires, namely mailed questionnaires, telephonic questionnaires, personal questionnaires, questionnaires delivered by hand, and group-administered questionnaires. The term "personal questionnaires" indicates that the questionnaires are handed to participants who complete these on their own (Fouché, 2001, p.154). It is not necessary to explain the other four categories of questionnaires in detail because their titles are self-explanatory. The researcher chose personal questionnaires for her research because of the consideration that response rates to this type of questionnaire are high, and there is non-verbal communication between researchers and respondents because the researcher presents his/herself at the research site.

In the current study, two lists of compounds are presented in the questionnaire (Task 1 is based on a list of compounds; Task 2 presents the same list of compounds with one of the constituents underlined). The participants are asked to respond to each of the compounds one after the other in a manner specified for each task.

The questionnaire for Task 1 consisted of a list of compounds selected according to categories for 'semantically free' compounds, neologisms and contemporary compounds. 'Semantically free' compounds are the opaque compounds where the meanings of compounds and the meanings of their constituents are unrelated (Saclise and Guevara, 2006). Neologisms are compounds that have emerged since the 1990s. Contemporary compounds are compounds that have existed since 1919.

The participants were asked to indicate whether the meanings of the compounds were predictable from the meanings of the compounds' constituents. The participants used a four-point scale to indicate the extent to which the meanings of the compounds were predictable from the meanings of their constituents. The values on the scale ranged from 'very predictable' to 'very unpredictable'.

The questionnaire for Task 2 consisted of the same list of compounds as used in Task 1. However, in the context of Task 2 one of the constituents in each compound was underlined. The participants were asked to which extent they thought that the underlined constituent retained its individual meaning in the whole word. They responded on a four-point scale

where they indicated the extent to which they thought that the underlined constituent retained its individual meaning in the whole word. The values assigned to the scale ranged from 'retains all of its meaning in the whole word' to 'loses all of its meaning in the whole word'.

4.6.2 TESTS

Tests are a powerful method of data collection which may be used to examine aspects as diverse as:

"aptitude, attainment, personality, social adjustment, attitudes and values, stress and burnout, performance, projective tests, potential, ability, achievement, difficulties, intelligence, verbal and non-verbal reasoning, higher order thinking, performance in school subjects, introversion and extraversion, self-esteem, locus of control, depression and anxiety, reading readiness, university entrance tests, interest inventories, language proficiency, motivation and interest, sensory and perceptual abilities, special abilities and disabilities", and so on (Cohen, Manion & Morrison, 2007, p. 414).

As a technique for evaluative purposes, tests frequently exist for all aspects of a person's life and for all ages. The data collected by using this method is numerical rather than of a verbal nature (Cohen, Manion & Morrison, 2007).

There are several types of tests: *parametric and non-parametric tests*, *norm-referenced, criterion-referenced and domain-referenced tests*, and *commercially produced tests and researcher-produced tests* (Cohen, Manion & Morrison, 2007, p.414-417). *Parametric tests* are designed to represent the wide population and examine the characteristics of that wider population (p. 414). *Non-parametric tests* make few or no assumptions about the distribution of the population and the characteristics of that population (p.415). *Norm-referenced tests* compare a person's achievements relative to another persons' achievements, such as a test of intelligence which has been standardised to a large and representative sample of students between the ages of 6 and 16 (p. 415). *Criterion-referenced tests* do not compare 'person with person' but require a person to fulfill a given set of criteria, a predefined and absolute standard and outcome (p. 415). *Domain-referenced tests* are used within the confines of a particular field or area of the subject in a given domain (i.e., light in science; two-part counterpoint in music; parts of speech in the English language) (p. 416). *Commercially-produced tests and researcher-produced tests* as their names suggest, refer to investigation

and evaluation for research purposes in the use of published tests (p. 416-417).

For the current research, Task 3 is a domain-referenced test. In Task 3, 50 compounds were selected from the list of 165 compounds which were used for Task 1 and Task 2, and 50 participants participated in Task 3. Participants observed each selected compound on cardboard, one at a time, and were asked to respond orally as fast as they could with five words/compounds that spontaneously came to mind. All conversation between the researcher and the participants was recorded.

4.6.3 VALIDITY AND RELIABILITY FOR DATA COLLECTION TECHNIQUES

Reliability and validity are crucial factors in effective research. In quantitative research, reliability means dependability, consistency and replicability over time, over instruments and over groups of respondents (Cohen, Manion & Morrison, 2007, p.146) and a valid research must be generalisable, replicable and controllable (Cohen, Manion & Morrison, 2007). The relation between reliability and validity is that reliability is a necessary precondition of validity, and validity may be a sufficient, but not necessary, condition for reliability (Cohen, Manion & Morrison, 2007, p.133). Reliability can be measured in three different ways: reliability as stability, reliability as equivalence, and reliability as internal consistency (Cohen, Manion & Morrison, 2007).

In this study, the design of Task 1 and Task 2 replicated an experiment which Libben, Gibson, Yoon and Sandra (2003) used to test an English compound with the aim of achieving a classification of compound transparency. Task 3 was designed according to Gleason and Bernstein Ratner (1998, p. 215). Both pieces of research were conducted for the English language. That is to say that both their reliability and validity have been tested, however, in the context of Chinese, no study using these methods was found in the literature review. According to the principle of reliability as stability, reliability can also be stability over a similar sample (Cohen, Manion & Morrison, 2007). The current research used the same sample collection technique, the only difference was that the medium of language for the research was Chinese instead of English.

4.7 DATA COLLECTION PROCESS

For the first step, the researcher subcategorised a selected corpus of 'semantically free' compounds into high frequency compounds and low frequency compounds because Tsai (1996) argues that high frequency compounds in Chinese are stored in the mental lexicon as independent lexical entries. Frequency (compound frequency) is determined by the corpus of the *List of Contemporary Chinese Frequently Used Words* compiled by *the Commercial Press* in 2008. The effect of 'semantic transparency' is tested by the experiment itself (i.e. the experiment assesses transparency ratings from the participants).

In this study, if the frequency effect is stronger than the effect of 'semantic transparency' in 'semantically free' compounds, it could mean that lexico-semantic distance (semantic freedom) is much smaller in Chinese exocentric compounds than as anticipated by Scalise and Guevara (2006). However, should the effect of semantic transparency be stronger than the frequency effect, then the meanings of compounds of this kind might have drifted away over time from the meanings of their constituents (Aronoff, 1976). Regarding neologisms, a selected sample of contemporary novel compounds will also be subcategorized according to compound frequency as shown in (8) to see which effect – semantic transparency or frequency – is stronger in Chinese compounding.

TASK 1

Participants

Ninety-five students from the *College of ShaanXi Costume & Art* at *XianYang*, *ShaanXi* Province participated in the experiment. All participants were native speakers of Chinese and were between 18 and 35 years of age. Thirty-eight participants were female.

Materials and Design

One hundred and sixty-five compounds (i.e. contemporary neologisms and traditional "semantically free" compounds) were selected according to the four transparency groups (TT, OT, TO, OO) as established by Jarema, Busson, Nikolova, Taspkini and Libben (1999), as well as Libben, Gibson, Yoon and Sandra (2003).

Table 2: Material Used in the Current Research

'Semantically Free compounds'	Contemporary Neologisms	
Exocentric	Exocentric	Endocentric
Opaque (according to Scalise & Guevara 2006: 199)	Opaque	Transparent
Stem from Middle Chinese Period	Stem from after 1990s	Stem from after 1990s
Example: 东西 (DongXi, 'east+west' = thing).	Example：放电 (FangDian, 'send+electricity' = eye up	Example: 电影 (DianYing, 'electricity+shadow' = movie
Sample size used in research: 27	Sample size used in research: 30	Sample size used in research: 55

These groups will be tested for the Chinese language, i.e. the empirical results from the transparency ratings of the Chinese speakers may challenge whether these groups reflect the perceptions of the Chinese speakers with respect to the semantic transparency of the selected compounds (see more information about the division of these four transparency groups in Chapter 4). The 'semantically free' compounds were selected from *The Contemporary Chinese Dictionary* (2005). Compounds for neologisms were selected from the *New Chinese Neologisms Dictionary* (2003). Additionally, 53 compounds (the balance of the compounds which is excepted from the 'semantically free' compounds and neologisms) selected from the *Contemporary Chinese Dictionary* (2005) were used in contrast with 'semantically free' compounds and neologisms in order to get more comprehensive results. All of the above-mentioned compounds were distinguished across categories for compound frequency (the compound frequency was adopted from the *List of Contemporary Chinese Frequently Used Words* compiled by *the Commercial Press* in 2008). Participants were asked to rate each compound in terms of the extent to which its meaning was predictable from the meaning of its constituents. A four-point rating scale was employed in which the alternatives ranged from 'very predictable' to 'very unpredictable'.

TASK 2

Participants

The same ninety-five students from the *College of ShaanXi Costume & Art*, at *XianYang*, *ShaanXi* Province who participated in Task 1 were requested to complete Task 2.

Materials and Design

The same list of one hundred and sixty-five compounds (i.e. contemporary neologisms and traditional "semantically free" compounds) was used, but in Task 2, the compounds were presented to the participants with one of the constituents underlined. This time, participants were asked to rate the transparency of the constituents of each compound in terms of the extent to which the constituent retained its individual meaning in the whole compound. A four-point scale was employed in which the alternatives ranged from 'retains all of its meaning in the whole word' to 'loses all its meaning in the whole word'.

TASK 3

Participants

Fifty students from the *College of ShaanXi Costume & Art* at *XianYang*, *ShaanXi* Province participated as volunteers for this task. All participants were native speakers of Chinese, were between 18 and 35 years of age, and none of them had participated in either Task 1 or Task 2. Two main reasons underlying the smaller number of participants in Task 3 were firstly, Cohen, Manion and Morrison (2007) assumed that the minimum number of cases for each variable was thirty. According to this rule, if one variable had to have thirty cases, there should be sixty cases for Task 3, due to the presence of two variables (i.e. the effect of the meanings of the constituents and the effect of the meanings of the compounds). A slightly slightly smaller sample size was chosen however, because in Task 3, participants needed to be tested individually and it took nearly one hour per person to finish this task, according to the trial/pilot study that was conducted.

Materials and Design

A list of 50 compounds was selected from the list of 165 compounds used in Task 1 and Task 2. The compounds were balanced across categories for compound frequency. Each of the selected 50 compounds was written individually on a piece of cardboard. In individual sessions, the 50 compounds were shown one by one to each participant by the researcher. Participants were asked to respond orally, as fast as they could, with five words/compounds that spontaneously came to mind as they saw each compound. If they thought about a response for longer than 5 seconds, the participant was regarded as having failed to give a response. Participants were tested individually and separately. The whole experiment was recorded on a digital audio recorder, transcribed and translated into English. The aim of this

task was to examine which part of semantic transparency had a stronger effect on retrieving compounds in the mental lexicon, the meanings of constituents or the meaning of the whole compound. In other words, if the five words/compounds associated by the participants were linked mainly according to the meanings of constituents, it meant that compounds may be processed through their constituents in the mental lexicon; whereas if the five words/compounds associated by the participants were linked mainly according to the meaning of the whole compound, then compounds may be stored in the mental lexicon as whole units.

4.8 DATA ANALYSIS

Statistical procedures were used with the assistance of a statistician. Firstly, the frequency value was obtained by calculating the original data for Task 1, Task 2 and Task 3. The overall statistical analysis with regards to frequency values was analysed to reveal general characteristics about this research, for example:

- In Task 1, to observe whether any tendency arose among participants to think that the meanings of compounds were predictable according to the data classified in frequencies and percentages.

- In Task 3, to observe any tendency which indicated which situation was awarded the highest rating regarding the words reflected according to the data classified in frequencies and percentages.

The data was then classified in detail according to the different variables in these experiments, such as compound frequency, the degree of semantic transparency of compounds, and transparency/opacity of the compounds' constituents.

The Statistical Package for the Social Sciences (SPSS Version: 16.0), the Chi-square test and the one-way ANOVA were used to test the validity of classification.

4.9 DATA MANAGEMENT

All raw data will be retained by the supervisor, in line with the ethical guidelines of the university. Audio recordings will be deleted as soon as the dissertation has been completed.

4.10 ETHICAL CONSIDERATIONS

In this study, all the necessary efforts were made to meet the ethical requirements for research as discussed below:

4.10.1 PERMISSION FOR THE STUDY

Ethics approval was obtained from the University of KwaZulu-Natal Research Ethics Committee, and from the relevant target college.

4.10.2 INFORMED CONSENT

Each participant signed a consent form before completing the questionnaire or participating in the experiments. In this study, a Chinese version of the consent form (attached as Appendix A) was available as an option for participants to ensure that the participants understood the information provided well enough to give informed consent.

4.10.3 POTENTIAL RISKS AND BENEFITS

There were no potential physical or psychological risks to participants.

4.10.4 CONFIDENTIALITY AND ANONYMITY

Data collection sheets and audio tapes excluded the participants' names. All respondents were given a respondent number and all references to any of them were made by the respondent number. All of the analyses focused on patterns in the data over many individuals, rather than on the individuals themselves. Participants' names will not appear in any published documents, and no individual information about participants will be passed on to any other party under any circumstances.

4.10.5 WITHDRAWAL

Participation in this study was voluntary. Participants had the right to decide voluntarily whether to participate in the study, without risking any penalty. They could refuse to

participate, or could withdraw from the research at any stage if they did not feel comfortable.

CHAPTER 5
DATA ANALYSIS

This chapter will present the results of the experiments, and analyse the data, discussing the results with regard to the three tasks. In this study, the researcher revisits whether the relation between the meanings of the two constituents and the meaning of the whole compound in Chinese 'semantically free' compounds is indeed 'semantically free', i.e. whether there may be an unlimited lexico-semantic distance between the meanings of the constituents and the meaning of the whole compound in selected historical Chinese exocentric compounds. At the same time, neologisms in Chinese compounds were investigated, in order to observe the role played by semantic transparency in the formation/understanding of Chinese compounds, together with a search for grounds for conceptual motivation and linguistic principles underlying Chinese compounding from an empirical study. This study included three experiments, but the data analysis for these three respective experiments will be discussed in two sections. One section will combine Task 1 and Task 2, and the other will deal with Task 3.

5.1 SECTION ONE: TASK 1 & TASK 2

Task 1 and Task 2 were designed for testing in Chinese, according to an experiment of a classification of compound transparency used by Libben, Gibson, Yoon and Sandra (2003) to test English compounds. The aims of these two tasks derived from two aspects. One aim of the tasks was to provide a reference by which to select the 50 compounds for Task 3, and then group them into four stimuli categories (i.e., transparent-transparent (TT), opaque-transparent (OT), transparent-opaque (TO) & opaque-opaque (OO)). Additionally, a brief description with regard to the situation of semantic transparency in Chinese compounds from a native speaker's point of view will be presented.

TASK 1

Research Design

Ninety-five students from the *College of Shaanxi Costume & Art* participated in Task 1. One hundred and sixty-five compounds (i.e. contemporary neologisms and traditional

'semantically free' compounds) were selected. Specifically, 27 'semantically free' compounds, 112 neologisms and 53 normal compounds were used in Task 1. Participants were asked to rate each compound in terms of the extent to which its meaning was predictable or understandable from the meaning of its constituents. A four-point rating scale was employed in which the alternatives ranged from 'very predictable' to 'very unpredictable'.

RESULTS

Of the 165 compounds which were used for the experiments, there are 27 'semantically free' compounds, 85 neologisms and 53 contemporary compounds. According to the results of Task 1; of the 165 compounds, 57.17% of the compounds were judged by the participants to be very predictable, 22.61% of the compounds were predictable, 14.53% of the compounds were unpredictable and 5.71% of the compounds were very unpredictable. In contrast to the study of Libben, Gibson, Yoon and Sandra (2003), the opaque-transparent (OT) compounds like 定弦 [*ding+xuan*], 'decide' + 'string', 'make a decision' showed the highest overall transparency scores in Task 1, namely 62.58%, followed by the transparent-opaque (TO) compounds (59.82%) like 结症 [*jie+zheng*], 'knot' + 'illness', 'disease', the opaque-opaque (OO) compounds (53.59%) like 东西 [*dong+xi*], 'east' + 'west', 'thing' and the transparent-transparent (TT) compounds (52.60%) like 手表 [*shou+biao*], 'hand' + 'watch', 'watch'. The lowest overall transparency ratings were in the OO compounds at 6.67%, followed by the TT compounds (6.32%), the OT compounds (4.95%) and the TO compounds, with (4.91%). For more detail see Table 5.1 below.

Table 5.1: Overall Transparency Ratings in Task 1

	Total Selection Frequency				
	A	B	C	D	Score
RIGHT	2378	753	481	188	1.599737
LEFT	1023	381	222	84	1.629825
BOTH	1599	736	513	192	1.769079
EXO	3818	1719	1113	475	1.753684
	Percentage				
	A	B	C	D	
RIGHT	62.58%	19.82%	12.66%	4.95%	
LEFT	59.82%	22.28%	12.98%	4.91%	
BOTH	52.60%	24.21%	16.88%	6.32%	
EXO	53.59%	24.13%	15.62%	6.67%	

Remark: (Right = OT; Left = TO; Both = TT; Exo. = OO); (A = very predictable, B = predictable, C = unpredictable, D = very predictable)

The Figure 5.2 below represents an overview of the Task 1 score. The x-axis represents the 165 compounds, and the y-axis refers to the degree of transparency ratings. The higher the transparency rating[9] the more opaque is the compound.

Figure 5.2: Overview of Task 1 Scores
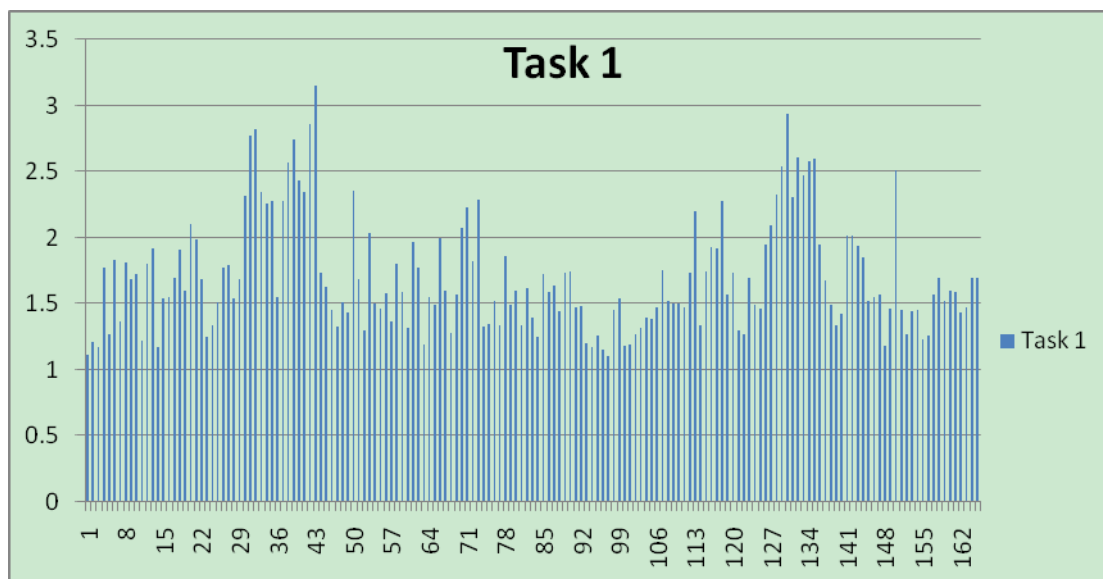
According to Figure 5.3 below, the transparency score (1.62) showed the highest selection

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[9] The term 'transparency rating' is used here to describe the frequency with which a compound was selected as 'very predictable' and thus is recognised by participants as easily and visibly comprehensible, rendering its meaning 'transparent, while 'rating' refers to the frequency of its determination as 'transparent'.

frequency. The horizontal x-axis represents the transparency score and the y-axis indicates selection frequency. High frequency ratings are between 1.28 and 1.96 (of transparency score) which the higher the score, the more opaque a compound is.

Figure 5.3: The Frequency with which Options Were Selected by Participants
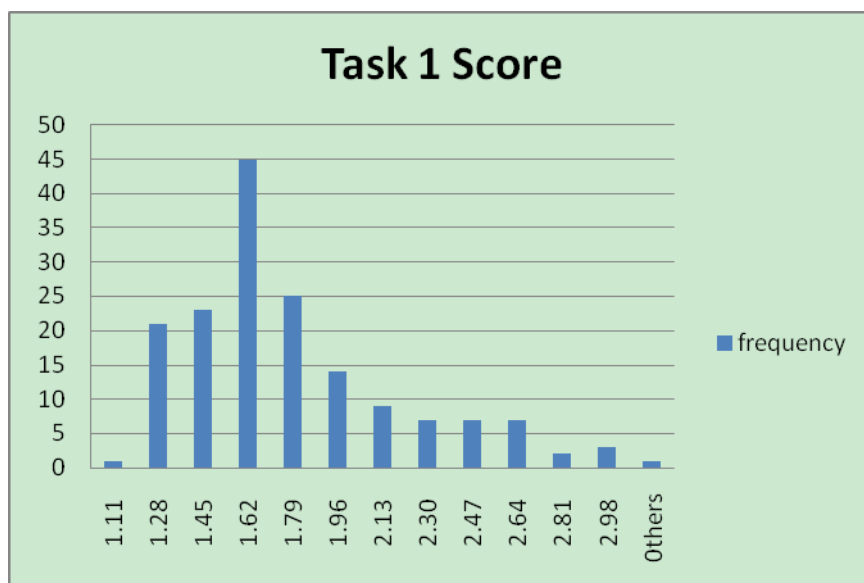
The Figures 5.2 and 5.3, together with Table 5.1, present a brief description with regard to the results of Task 1. The data relating to the compounds with the highest transparency rating and the lowest transparency rating in Task 1 will be presented next. Additionally, it is necessary to analyse the results obtained in task 1 for 'semantically free' compounds and neologisms respectively, as the aim of this research is the investigation of these two particular kinds of compounds in Chinese in contrast to Indo-European languages.

Compounds with a High Transparency Rating

Compounds with a selection frequency above 70 (T=95) are considered to be 'high transparency rating compounds', this means compounds that were considered by the participants to have a high semantic transparency. There were 38 compounds with a selection frequency above 70 (T=95), including a selection frequency over 80 (T=95). Among them were 23 neologisms which accounted for 60.53%, 11 contemporary compounds which accounted for 28.95%, and 4 'semantically free' compounds which comprised 10.53% of the compounds rated.

There were 13 compounds above with a selection frequency above 80 (T=95). Among them were 10 neologisms comprising 76.92%, namely 电脑 [*dian+nao*], 'electricity' + 'brain',

'computer', 减肥 [*jian+fei*], 'reduce' + 'fat', 'lose weight', 手机 [*shou+ji*], 'hand' + 'machine', 'cellphone', 电话 [*dian+hua*], 'electricity' + 'speeches', 'telephone', 电影 [*dian+ying*], 'electricity' + 'shadow', 'movie', 飞机 [*fei+ji*], 'fly' + 'machine', 'aeroplane', 汽车 [*qi+che*], 'vapour' + 'vehicle', 'car', 火车 [*huo+che*], 'fire' + 'vehicle', 'train', 超市 [*chao+shi*], 'exceed' + 'market', 'supermarket', 上网 [*shang+wang*], 'up' + 'net', 'to surf internet' and 3 contemporary compounds which accounted for 23.08% (they are 手表 [*shou+biao*], 'hand' + "watch", 'watch', 月亮 [*yue+liang*], 'moon' + 'bright', 'moon', 饥饿 [*ji+e*], 'hungry' + 'hungry', 'hungry').

There were 25 compounds whose selection frequency was over 70 (T=95), excluding those with a frequency of over 80 (T=95). Among them, were 13 neologisms accounting for 52%, 8 contemporary compounds which made up 32%, and 4 'semantically free' compounds constituting 16%.

(5.4): Twenty-Five compounds were selected by between 70 and 80 participants
1) Eight contemporary compounds: 抄写 [*chao+xie*], 'transcribe' + ' write', 'to transcribe'], 开心 [*kai+xin*], 'to open' + 'heart', 'to be joyful', 地区 [*di+qu*], 'land' + 'area', 'area', 画笔 [*hua+bi*], 'to draw' + 'pen', 'a pen for drawing picture', 打针 [*da+zhen*], 'to hit' + 'needle', 'to get an injection', 火箭 [*huo+jian*], 'fire' + 'arrow', 'a rocket', 崇拜 [*chong+bai*], 'to worship' + 'to worship', 'to worship', 创建 [*chuang+jian*], 'to start to do' + 'to establish', 'to found'.
2）Four 'semantically free' compounds: 手足 [*shou+zu*], 'hand' + 'foot', 'brothers/ very intimate friends', 江山 [*jiang+shan*], 'river' + 'mountain', 'country/ the state power', 手脚 [*shou+jiao*], 'hand' + 'feet', 'behavior (especially operating secretly and often illegally)', 百姓 [*bai+xing*], 'hundred' + 'surname', 'people'
3) Thirteen neologisms: 瘦身 [*shou+shen*], 'thin' + 'body', 'to lose weight', 风雨 [*feng+yu*], 'wind' + 'rain', 'difficulties and hardship', 拍卖 [*pai+mai*], 'to pat' + 'to sell', 'to auction', 抢购 [*qiang+gou*], 'to grab' + 'to buy', 'to rush to purchase s.th.', 动画 [*dong+hua*], 'to move' + 'picture', 'animation', 地铁 [*di+tie*], 'earth' + 'iron', 'subway', 钻石 [*zuan+shi*], 'to drill' + 'stone', 'diamond', 时尚 [*shi+shang*], 'time' + 'trend', 'fashion', 卫星 [*wei+xing*], 'to defend' + 'star', 'satellite', 网吧 [*wang+ba*], 'net' + 'bar', 'internet bar', 充电 [*chong+dian*], 'to charge' + 'electricity', 'to train/ to

study further', 休闲 [*xiu+xian*], 'to rest' + 'to be free', 'to relax', 网络 [*wang+luo*], 'net' + 'a net-like structure', 'network'

Of the 165 compounds which were used for Task 1, neologisms were considered as high transparency rating compounds.

Compounds with a Low Transparency Rating

Due to the low selection frequency, or low number of times that option 'D' ('very unpredictable') was selected by the participants, 10 participants (T=95), compounds that received this rating could be regarded as low transparency compounds. There were 26 compounds which were over 10 (T=95). Among them, there were 7 compounds which were over 20 (T=95) and 19 compounds which were over 10 (T=95) but under 20 (T=95). Of these compounds, the selection frequency of 马弁 [*ma+bian*], 'horse' + 'cap', 'batman' was 38 (T=95), making this the highest of the low transparency rating compounds. The compounds with a selection frequency of over 20 (T=95) excluding 马弁 [*ma+bian*], 'horse' + 'cap', 'batman' all the others were infrequently used compounds such as 贵胄 [*gui+zhou*], 'of an honoured ranked or position' + 'helmet', 'the noble', 拘挛 [*ju+luan*], 'to restrain' + 'to contract', 'to describe the articles which sounds awkward', 润格 [*run+ge*], 'to embellish' + 'poetry', 'reward', 丁忧 [*ding+you*], 'man' + 'to worry about', 'persons experiencing death of parent', 东佃 [*dong+dian*], 'east' + 'to farm', 'landlord and peasant', 飞蓬 [*fei+peng*], 'to fly' + 'cover', 'bitter fleabane'. Of these 7 compounds over 20 (T=95), 润格 [*run+ge*], 'to embellish' + 'poetry', 'reward' and 马弁[*ma+bian*], 'horse' + 'cap', 'batman' are 'semantically free' compounds. Of those 19 compounds were over 10 but under 20 (T=95), 5 were neologisms, 11 were contemporary compounds (of which 9 compounds were infrequently used), and 3 were 'semantically free' compounds (of which 1 was infrequently used).

(5.5): 19 Compounds with over 10 but under 20 points (T=T=95):

　　1) Eleven contemporary compounds: 焦土 [*jiao+tu*], 'scorched' + 'soil', 'ravages of war', 颠沛 [*dian+pei*], 'to bump' + 'copious', 'to suffer a setback', 贫化 [*pin+hua*], 'deficient' + 'change', 'depletion', 结症 [*jie+zheng*], 'knot' + 'illness', 'disease', 抵掌 [*zhi+zhang*], 'to clap' + 'palm', 'to clap (indicating happy)', 璞玉 [*pu+yu*], 'uncut jade' + 'jade", 'simplicity', 劝化 [*quan+hua*], 'to persuade' + 'to convert', 'to urge somebody to do good', 定弦 [*ding+xian*], 'to decide' + 'string', 'to make a decision', 返青 [*fan+qing*], 'to return' + 'blueness', 'striking root', 放恣 [*fang+zi*], 'to set free' + 'to throw off restraint',

'to do as one pleases', 赅博 [*gai+bo*], 'comprehensive' + 'broadly knowledgeable', 'erudite'

2) Three 'semantically free' compounds: 东床 [*dong+chuang*], 'east' + 'bed', 'son-in-law', 桃李 [*tao+li*], 'peach' + 'plum', 'one's disciples or pupils', 丢手 [*diu+shou*], 'to throw' + 'hand', 'to give up'

3) Five neologisms: 上佳 [*shang+jia*], 'top' + 'good', 'nice', 高发 [*gao+fa*], 'high/ above the average' + 'deliver', 'frequent', 氧吧 [*yang+ba*], 'oxygen' + 'bar', 'oxygen bar/ commercial bar with oxygen therapy', 失范 [*shi+fan*], 'lose/ deviate from the norm' + 'model', 'irregular', 走穴 [*zou+xue*], 'to walk' + 'cave', 'actor or doctor perform for extra income'

From the above results, it is evident that, of the 165 compounds used for Task 1, infrequently used compounds were regarded as low transparency rating compounds. Because participants might be unfamiliar with these compounds due to their infrequent usage, they tended to be regarded as fairly opaque and unpredictable.

'Semantically Free' Compounds

According to the results of Task 1, 'semantically free' compounds seemed not to be regarded as being high transparency rating compounds nor were they seen as low transparency rating compounds. The details of the data of (selection) frequency for these 'semantically free' compounds can be seen in Table 5.6 below.

Of the 27 'semantically free' compounds, the rating 'very predictable' was 1308 times in total (T=2565), the rating 'predictable' was assigned 657 in total (T=2565), the rating 'unpredictable' was given 419 (T=2565), and the rating 'very unpredictable' totalled 181 times (T=2565). In general, the results of Task 1 showed that 'semantically free' compounds were considered to be 'transparent', i.e. of average transparency.

Table 5.6: Transparency Rating for 'Semantically Free' Compounds in Task 1

COMPOUNDS	PINYIN[10]	DESCRIPTION	A	B	C	D
江湖	JiangHu	river+lake = itinerant entertainers, quacks, vagabond	56	22	13	4
心腹	XinFu	heart+belly =trusted subordinate, henchman	63	22	9	1
手足	ShouZu	hand+foot = brothers, very intimate friends	73	14	7	1
东西	DongXi	east+west = thing	66	16	6	7
江山	JiangShan	river+mountain = country, the state power	70	13	8	4
东床	DongChuang	east+bed = son in law	18	39	24	14
风水	FengShui	wind+water = a superstitious practice that tells fortune by looking at the direction	52	26	12	5
手脚	ShouJiao	hand+feet = behavior(espeically operating secretly and often illegally)	74	16	3	2
桃李	TaoLi	peach+plum = one's disciples or pupils	34	35	15	11
水火	ShuiHuo	water+fire = two things diametrically opposed to each other; catastrophe	62	22	7	4
风霜	FengShuang	wind+frost = hardships of a journey	61	26	6	2
推敲	TuiQiao	to push+to knock = to deliberate(especially about the ways of expression)	55	28	9	3
饭碗	FanWan	food+bowl = occupation	67	22	5	1
风月	FengYue	wind+moon = romance; amatory matter	46	24	23	2
千金	QianJin	thousand+gold = daughter	59	21	10	5
百姓	BaiXing	hundred+surname = people	74	13	7	1
泰斗	TaiDou	Mountain Tai +the Dipper = the leading authority	38	29	21	7
风土	FengTu	wind+soil = custom	47	27	16	5
马弁	MaBian	horse+cap = batman	5	14	38	38
捕快	BuKuai	to catch+quick = constable for catching criminals	49	26	16	4
揣摩	ChuaiMo	to rub+to touch = to try to fathom	44	27	20	4
丢手	DiuShou	to throw+hand = to give up	18	26	33	18
润格	RunGe	to embellish + poetry = reward	10	25	39	21
耳目	E'Mu	ears+eyes = agent, spy	51	24	18	2
风头	FengTou	wind+head = of liking to show oneself off	38	32	20	5
火海	HuoHai	fire+sea = impasse	42	34	15	4
打点	DaDian	to hit + dot = to get ready; give sb. a present	36	34	19	6

TASK 2

Research design: The same ninety-five students from the *College of ShaanXi Costume & Art*, at *XianYang*, *ShaanXi* province who participated in Task 1 were requested to complete Task 2. The same list of 165 compounds (i.e. contemporary neologisms and traditional 'semantically

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[10] PINYIN means Hanyu Pinyin, 汉语拼音 (i.e., Chinese Phonetic Alphabet) which is now used as the primary tool for recording the sound of Mandarin Chinese.

free' compounds) was used, but, in Task 2, the compounds were presented to the participants with one of the constituents underlined. This time, participants were asked to rate the transparency of the constituents of each compound in terms of the extent to which the constituent retained its individual meaning in the whole compound. A four-point scale was employed in which the alternatives ranged from 'retains all of its meaning in the whole word' to 'loses all its meaning in the whole word'.

RESULTS

Task 2 showed more balanced scores than Task 1 (the scores were more even for all of the options available for selection than in the previous Task). The constituents of compounds which retained all of their meaning comprised 27.92%, those which retained most of their meaning constituted 28.85%, those which retained a bit of their meaning accounted for 27.07%, and those which lost all of their meaning comprised 16.15%.

The TO compounds (of which were 32.11%) showed the highest constituent transparency rating in Task 2 with regard to whether constituents retained all of their meaning in the compounds, and followed the TT compounds (which were 31.71%), the OT compounds (26.08%) and the OO compounds (21.77%). In addition, the OO compounds (which were 24.53%) showed the lowest constituent transparency ratings with regard to whether constituents lost all their meaning in the compounds, and followed the OT compounds (18%), the TT compounds (11.12%) and the TO compounds (10.94%). See Table 5.7 below for details.

Table 5.7: Constituent Transparency Rating in Task 2

	A	B	C	D	Score
		Total Frequency			
RIGHT	991	1090	1035	684	2.371579
LEFT	549	536	438	187	2.153801
BOTH	964	960	778	338	2.161184
EXO	1551	1701	2125	1748	2.571228
		Percentage			
	A	B	C	D	
RIGHT	26.08%	28.68%	27.24%	18.00%	
LEFT	32.11%	31.35%	25.61%	10.94%	
BOTH	31.71%	31.58%	25.59%	11.12%	
EXO	21.77%	23.87%	29.82%	24.53%	

Remark: (Right = OT; Left = TO; Both = TT; Exo. = OO);

(A = retains all of its meaning; B = retains most of its meaning; C = retains a bit of its meaning; D = loses all its meaning).

Compounds with a High Constituent Transparency Rating

Those with a (selection) frequency of over 50 (T=95) were considered to be 'high constituent transparency rating compounds'. The results showed that there were 7 compounds whose (selection) frequency was over 50, i.e. over 50 out of the total of 95 participants rated the compound to have a high constituent transparency (T=95). Among them, 6 compounds were contemporary compounds and one was a neologism.

The 6 contemporary compounds were as follows: 手表 [*shou+biao*], 'hand' + 'watch', 'watch' was rated by 50 participants as having a high constituent transparency (T=95), 抄写 [*chao+xie*], 'to transcribe' + 'to write', 'to transcribe' was rated as 'high constituent transparent' by 60 participants (T=95), 月亮 [*yue+liang*], 'moon' + 'bright', 'moon' was selected by 58 participants as a high constituent transparent compound (T=95), 画笔 [*hua+bi*], 'to draw' + 'pen', 'a pen for drawing picture' received 55 'votes' (T=95), 饥饿 [*ji+e*], 'hungry' + 'hungry', 'hungry' was chosen by 71 participants (T=95), 剿灭 [*jiao+mie*], 'to suppress' + 'to destroy', 'to exterminate' was chosen by 50 participants (T=95); and the 1 neologism was 靓丽 [*liang+li*], 'pretty' + 'beautiful', 'beautiful and lovely' was considered to have a high constituent transparency by 52 participants (T=95).

In 饥饿 [*ji+e*], 'hungry' + 'hungry', 'hungry', and in 抄写 [*chao+xie*], 'to transcribe' + 'to write', 'to transcribe' both constituents are heads. The head of 月亮 [*yue+liang*], 'moon' + 'bright', 'moon' is on the left. The head of 画笔 [*hua+bi*], 'to draw' + 'pen', 'a pen for drawing picture' is on the right. The head of 手表 [*shou+biao*], 'hand' + 'watch', 'watch' is on the right. Both constituents of 靓丽 [*liang+li*], 'pretty' + 'beautiful', 'beautiful and lovely' and 剿灭 [*jiao+mie*], 'to suppress' + 'to destroy', 'to exterminate' are head.

The results indicate that compounds with a high constituent transparency rating are all transparent compounds with head.

Compounds with Low Constituent Transparency Ratings

Those with a (selection) frequency of over 40 (T=95) were considered low constituent transparency rating compounds. There were 8 compounds whose (selection) frequency was over 40 (T=95). There were 3 neologisms, 3 'semantically free' compounds and 2 contemporary compounds.

The 3 neologisms were: 二奶 [*er*+*nai*], 'the second' + 'milk', 'mistress' with a low transparency rating of 52[11] (T=95), 粉丝 [*fen*+*si*], 'powder' + 'thin thread', 'fans' with 47 participants rating it as having a low constituent transparency (T=95), and 菜鸟 [*cai*+*niao*], 'vegetable' + 'bird', 'rookie' which was judged by 45 (T=95) participants with low constituent transparency.

The 3 'semantically free' compounds with a low constituent transparency rating were: 桃李 [*tao*+*li*], 'peach' + 'plum', 'one's disciples or pupils' chosen by 40 participants (T=95), 东西 [*dong*+*xi*], 'east' + 'west', 'things' chosen by 40 participants (T=95) and 马企 [*ma*+*bian*], 'horse' + 'cap', 'batman' chosen by 42 participants (T=95).

The 2 contemporary compounds with a low constituent transparency rating were: 恶棍 [*e*+*gun*], 'evil' + 'stick', 'ruffian' chosen by 47 participants (T=95) and 祸水 [*huo*+*shui*], 'disaster' + 'water', 'a person who is considered as a trouble magnet' chosen by 46 participants (T=95).

The common characteristics of these compounds with low constituent transparency are that they are all exocentric compounds.

5.2 SECTION TWO: TASK 3

Task 3 was designed according to Gleason and Ratner (1998, p. 215) and constituted a type of word association task. Fifty students from the *College of ShaanXi Costume & Art* at *XianYang*, *ShaanXi* Province participated as volunteers in this task. All participants were native speakers of Chinese and were between 18 and 35 years of age. None of them had participated in either Task 1 or Task 2. A list of 50 compounds was selected from the list of 165 compounds used in Task 1 and Task 2. The compounds were balanced across categories for compound frequency. Each of the 50 compounds selected was written individually on cardboard and was shown, one by one, to each participant by the researcher. Participants were asked to respond orally as fast as they could, by supplying five words that came to mind as they saw each compound.

The idea behind this task was to assess, whether participants would respond to the meaning of the compound as a whole, or, whether their responses would be 'primed' by the meaning of one of the constituents of the compound rather. In the latter case it was of interest to see whether the response was to the first or to the second constituent. The reasoning behind this

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[11] "A low transparency rating of 52" means that 52 out of the 95 participants perceived these compounds to have a low constituent transparency.

task is that if participants spontaneously react to the meanings of the constituents then the compound might be semantically transparent.

RESULTS

The results are categorized into three situations: the words that are responses of the participants that seem to be in reaction to the meaning of the first constituent ("left" for short), responses of the participants that seem to be in reaction to the meaning of the second constituent ("right" for short) and responses of the participants that seem to be in reaction to the meaning of the whole compound ("combination" for short)[12].

In Task 3, every participant responded with 250 words in total (due to participants are asked to respond with five words to each of the compounds). The list of compounds comprised of 20 neologisms, 18 'semantically free' compounds and 12 contemporary compounds. Figure 5.8 portrays an overview of Task 3 in terms of the category of responses and the degree of semantic transparency.

According to Figure 5.8, in the category of words that are responses of the participants to the meaning of the first constituent of the compounds (left), the transparent-opaque (TO) compounds received the highest responses.

In the category of words that are responses of the participants to the meaning of the second constituent of the compounds (right), the opaque-transparent (OT) compounds reflected the highest number of responses.

In the category of the words that are responses of the participants to the whole meaning of the compounds (combination), the transparent-transparent (TT) compounds received the highest number of responses.

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[12] In this chapter the word "response" means that the participant named a word that came to her/his mind as a response to the stimulus, i.e. the compound presented to the participant by the experimenter.

Figure 5.8: Number of Responses to the Presented Compounds According to the Categories of Semantic Transparency
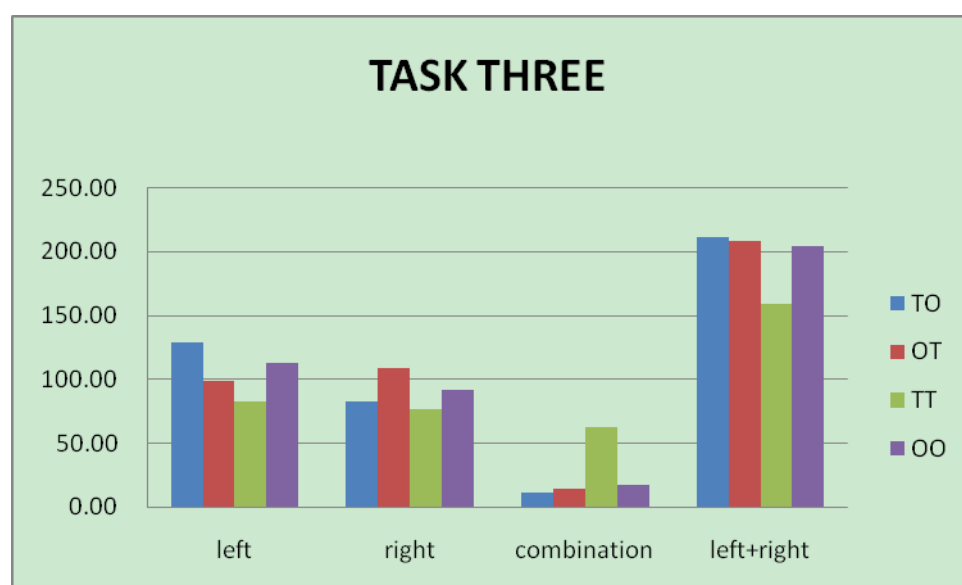
In general, the results of Task 3 show that the words which are responses of the participants to the meaning of the first constituent of the compounds (49.21%) have the highest response frequency among the three possible options. The words that are responses of the participants to the meaning of the whole compound (8.96%) have the lowest frequency.

In Table 5.9 below, the data is analysed in detail according to compound frequency (the compound frequency was adopted from the *List of Contemporary Chinese Frequently Used Words* compiled by *the Commercial Press* in 2008).

For multi-morphemic words with a compound frequency between 1 and 10,000 [13], participants preferably reacted to the meaning of the first constituent of the compounds (49.96%) whereas for this type of low-frequency compound, responses to the meaning of compounds as a whole were very rare (8.39%).

For compounds with a compound frequency between 10,001 and 20,000, participants predominantly responded to the meaning of the second constituent of the compounds (43.65%), while the words that are responses to the meaning of compounds as a whole were again rather rare (9.53%).

Where the compound frequency was between 20,001 and 30,000, responses to the meaning of the first constituents of the compounds (51.56%) were the most common, and responses to the meaning of compounds as a whole (12.66%) once again had the lowest occurrence.

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[13] The compound frequency was adopted from the *List of Contemporary Chinese Frequently Used Words* compiled by *the Commercial Press* in 2008. The bigger figure more infrequently used is the compound. For example, the compounds with a compound frequency of between 1and 10,000 is more frequently used than the compounds with a compound frequency of between 30,001 and 40,000.

For compounds with a compound frequency of between 30,001 and 40,000: the responses of to the meaning of the first constituent of the compounds (48.09%) were most common, and that are responses to the meaning of the compounds as a whole (10.49%) portrayed the lowest occurrence.

Where the compound frequency was over 40,001, responses of the participants to the meaning of the first constituent of the compounds (68.43%) constituted the highest number of occurrences, while responses to the meaning of the compounds as a whole (9.25%) were, once again, rather seldom.

Compounds that were used in the data collection but which were not on the list of compound frequency were regarded as infrequently used compounds. With regard to these infrequently used compounds in Task 3, responses of the participants to the meaning of the second constituents of the compounds (48.80%) received the highest response rating, when compared to the responses to the meaning of compounds as a whole (which reflected the lowest percentage).

In summary, where one of the constituents of the compound was much easier to be recognized from the mental lexicon during the processing, the word superiority effect (WSE) might be predominantly found to be greater during the processing of compounds.

Table 5.9: Analysis of the Participants' Responses According to Compound Frequency

Content	Left	Right	Combination	Left+right
total（all）	5440	4624	991	10064
Percentage	49.21%	41.83%	8.96%	0.910357304
total(first 10000)	1388	1157	233	2545
Percentage	49.96%	41.65%	8.39%	0.91612671
total(10001-20000)	774	830	169	1604
Percentage	43.65%	46.81%	9.53%	90.47%
total(20001-30000)	1022	709	251	1731
Percentage	51.56%	35.77%	12.66%	87.34%
total(30001-40000)	642	553	140	119500.00%
Percentage	48.09%	41.42%	10.49%	89.51%
total(40001-)	466	152	63	618
Percentage	68.43%	22.32%	9.25%	90.75%
total(in the list)	4292	3401	856	7693
Percentage	50.20%	39.78%	10.01%	89.99%
total(not list)	1148	1223	135	-
Percentage	45.81%	48.80%	5.39%	-

Figure 5.10 below presents the data in terms of responses to the meaning of the compounds as a whole. The horizontal x-axis represents the compound frequency (the compound frequency was adopted from the *List of Contemporary Chinese Frequently Used Words* compiled by *the Commercial Press* in 2008) and the y-axis indicates response percentage.

In the group with a compound frequency between 20,001 and 30,000, responses to the meaning of the compound as a whole constituted the biggest percentage of all responses, namely 12.66%. Next are compounds with a compound frequency between 30,001 and 40,000, where responses to the meaning of the compounds as a whole accounted for 10.49%. For compounds with a compound frequency between 10,001 and 20,000, responses to the meaning of compounds as a whole constituted a mere 9.53%. Responses the meaning of compounds whose frequency was over 40,000 comprise 9.25%. Compounds with a compound frequency of between 1 and 10,000 were responded to as a whole in only 8.39% of the cases.

Figure 5.10: Overview of Responses According to the Meaning of the Compound as a Whole
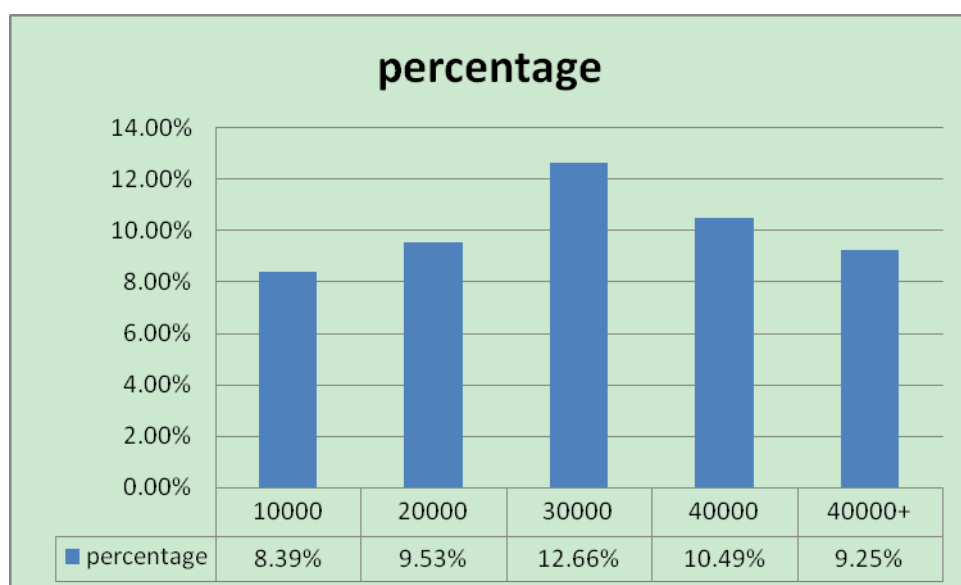
In Figure 5.11, the x-axis represents the degree of semantic transparency of compounds and the y-axis indicates response rating for the participants' responses to the meaning of the compound.

The score in Figure 5.11 is a transparency score which means that the higher the score is, the more opaque the compound is supposed to be. Highest response scores between 1 and 1.5 are reflecting the lowest compound opaqueness. Response scores between 1.5 and 2 reflect an

intermediate compound opaqueness followed by compounds that have a response score between 2.5 and 3. For the least transparent compounds the response score is between 2 and 2.5. The last one is a score of over 3 which it is not shown in Figure 5.11 due to the data being zero.

In summary, with regard to participants' responses to the meaning of compound as a whole, the results show that the participants tend to respond according to the meaning of compound as a whole when the compound as a whole is easy to understand.

Figure 5.11: Analysis of Responses to the Meaning of the Compounds with Regard to the Degree of Semantic Transparency
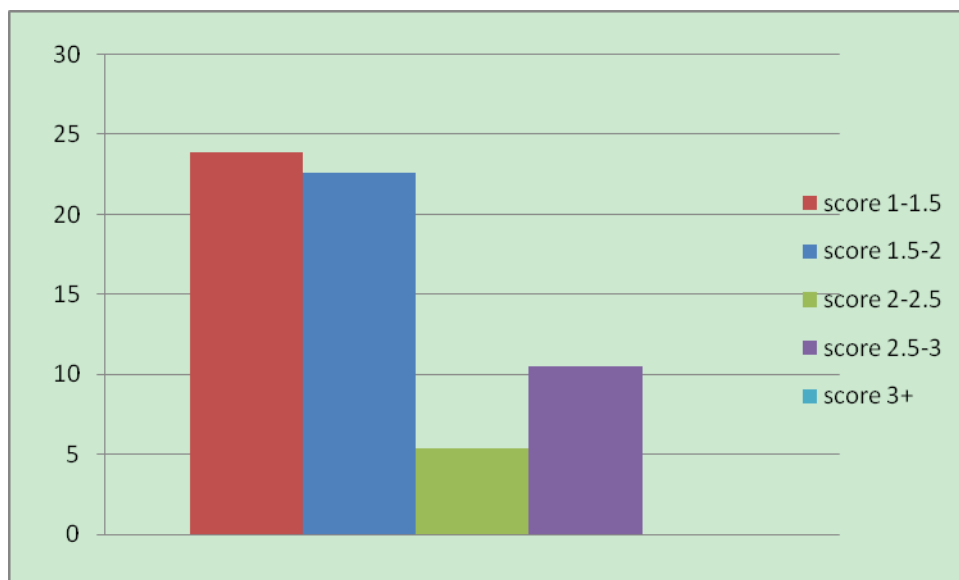
In Figure 5.12, the horizontal x-axis represents the response scores and the y-axis indicates the degree of semantic transparency of compounds. On the y-axis, the bigger the figure, the more difficult it is to understand the meaning of the compound as a whole. Scores in Figure 5.12 indicate responses by the participants according to the meaning of the compound as a whole in Task 3. Figure 5.12 shows that the responses to the meaning of compound as a whole are scattered mainly between 1 and 2. Therefore, the results in Figure 5.12 also show that it is much easier for the participants to respond according to the meaning of compounds as a whole, if the meaning of the compound is transparent.

Figure 5.12: Distribution of Scores for Responses According to the Meaning of the Compounds

In Figure 5.13, the horizontal x-axis represents participants' responses in Task 3 and the y-axis indicates the response percentage. Also, the bigger the transparency score figure, the more difficult it was for the participants to understand the compounds.

The results can be distinguished based on whether the transparency score is above/under 2 (point) according to the results in Figure 5.12: responses to the meaning of compounds are scattered mainly between 1 and 2. In this case, the compounds which scored above 2 have overall meanings which are more difficult to understand as compared to the meanings of compounds which scored under 2. In Figure 5.13, the responses to the meaning of the first constituent of the compounds is represented; the compounds which scored above 2 elicited overall more words in the word association task than the compounds which scored under 2.

Contrarily, the number of responses to the meaning of the second constituent of the compounds was higher for the compounds which scored under 2 than for the compounds which scored above 2. Similarily, responses to the overall meaning of the compounds were more frequent for the compounds which scored under 2 than for the compounds which scored above 2.

In summary, when comparing the data of category left and category right, the participants seem to have found it much easier to access words that are associated with the right constituent of a compound in cases where the compound is relatively opaque.

With regard to responses to the overall meaning of compounds, the results also show that

more words are associated with the compound meaning if the overall meaning of the compound is transparent.

Figure 5.13: Overview of Responses According to the Degree of Semantic Transparency
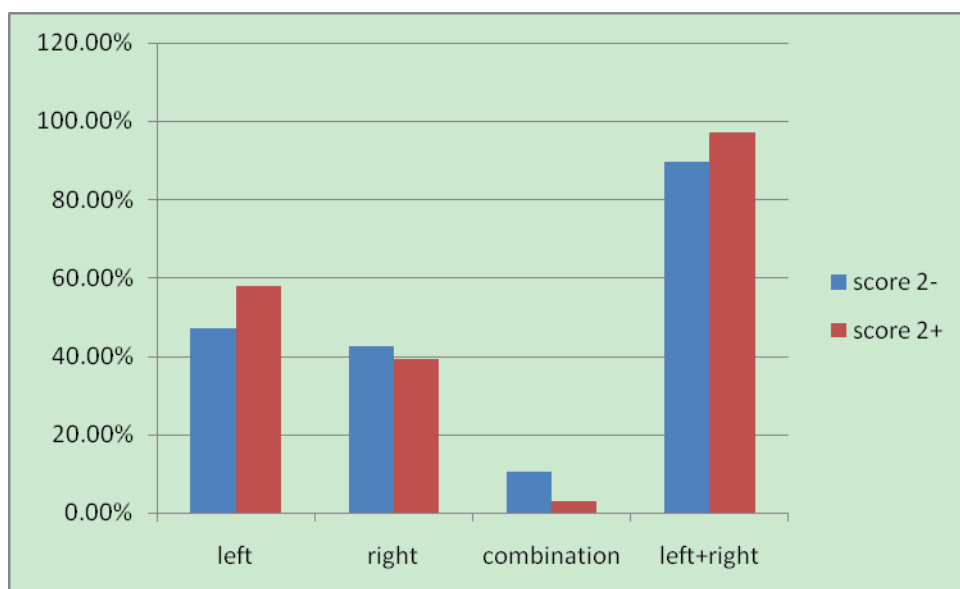
'Semantically Free' Compounds

Eighteen 'semantically free' compounds were used in Task 3. The results showed that participants associated the greatest number of words (2075 out of 4500 responses) with the meaning of the first-constituent of the compounds (T=4500). The second highest response rate was for words associated with the meaning of the second constituent of the compounds (1611/T=4500). The smallest number of words were asscociated with the overall meaning of the compounds (318/T=4500).

In the category of responses to the meaning of the first constituent of the compounds, 13 out of the 18 compounds' response rate was over 100 out of a possible 250 responses to each compound (T=250). Among them, were 马弁 [*ma+bian*], 'horse' + 'cap', 'batman' with 247/250 responses to 'horse' (T=250), 桃李 [*tao+li*], 'peach' + 'plum', 'one's disciples or pupils' with 156/250 responses to 'peach' (T=250), 丢手 [*diu+shou*], 'to throw' + 'hand', 'to give up' with 147/250 responses to 'to throw' (T=250) and 心腹 [*xin+fu*], 'heart' + 'belly', 'trusted subordinate, henchman' with 145/250 responses to 'heart' (T=250). These were respectively the first four in this category.

In the category of responses to the meaning of the second constituent of the compounds, 8 out of 18 compounds had response rates over 100 of a possible 250 responses (T=250). Among these: 千金 [*qian+jin*], 'thousand' + 'gold', 'daughter' with a response rate of 133/T=250 to 'gold' and 揣摩 [*chuai+mo*], 'to rub' + 'to touch', 'to try to fathom' with a response rate of 132/T=250 to 'touch' . These were the first two in this group.

In the category of responses to the overall meaning of the compounds, the response rate did not exceed either the two other categories. For example, even though 揣摩 [*chuai+mo*], 'to rub' + 'to touch', 'to try to fathom' with a response rate of 66/T=250 was the highest in this category, the response rate of 132/T=250 for responses to the second constituent of the compound is higher than the highest response rate of 66/T=250 in this category. See Table 5.14 below for details.

Table 5.14: Response Rates for 'Semantcially Free' Compounds in Task 3

Compounds	DESCRIPTION	Left	Right	Combination
手足(shouZu)	hand+foot = brothers, very intimate friends	87	93	27
东西(dongXi)	east+west = thing	107	90	20
泰斗(taiDou)	Mountain Tai +the Dipper = the leading authority	97	118	2
江湖(jiangHu)	river+lake = itinerant entertainers, quacks, vagabond	100	99	16
心腹(xinfu)	heart+belly = trusted subordinate, henchman	145	62	16
手脚(shouJiao)	hand+feet = behavior(espeically operating secretly and often illegally	110	105	8
百姓(baiXing)	hundred+surname = people	108	66	27
水火(shuiHuo)	water+fire = two things diametrically opposed to each other; catastrophe	103	112	12
千金(qianJin)	thousand+gold = daughter	70	133	19
饭碗(fanWan)	food+bowl = occupation	124	75	19
桃李(taoLi)	peach+plum = one's disciples or pupils	156	43	16
推敲(tuiQiao)	to push+to knock = to deliberate (especially about the ways of expression)	129	97	14
风月(fengYue)	wind+moon = romance; amatory matter	114	108	8
揣摩(chuaiMo)	to rub+to touch = to try to fathom	23	132	66
耳目(er'Mu)	ears+eyes = agent, spy	117	102	12
捕快(buKuai)	to catch+quick = constable for catching criminals	91	112	28
丢手(diuShou)	to throw+hand = to give up	147	64	8
马弁(maBian)	horse+cap = batman	247	0	0

Neologisms

Twenty neologisms were used in Task 3. The results showed that responses to the meaning of the first constituent of compounds received the highest response rate, i.e.2238/T=5000. These were followed by responses to the meaning of the second constituent of the compounds, whose response rate was 1738/T=5000. Last were responses to the overall meaning of the compounds whose response rate was 289/T=5000.

In the category of responses to the meaning of the first constituent of the compounds, there were 17 out of 20 compounds whose response rate was over 100 (T=250). Among them, 氧吧 [*yang+ba*], 'oxygen' + 'bar', 'oxygen bar' had 155/T=250 responses to 'oxygen' and 跳槽 [*tiao+cao*], 'to jump' + 'trough', 'to move from one firm (or job) to another' scored 154/T=250 responses to 'jump', both of which were over 150/T=250.

In the category of responses to the meaning of the second constituent of the compounds, 5 out of 20 compounds had a response rate of over 100 (T=250) out of a possible 250. They were 当红 [*dang+hong*], 'current' + 'red', 'popular' which had 104/T=250 responses to 'red', 上网 [*shang+wang*], 'to up' + 'net', 'to surf the internet' with 103/T=250 responses to 'net', 房奴 [*fang+nu*], 'house' + 'slave', 'a person who needs to pay a loan for a house' with 102/T=250 responses to 'lave', 黑车 [*hei+che*], 'black/ illegal' + 'vehicle', 'unlicensed car' which scored 101/T=250 for 'vehicle', and 手机 [*shou+ji*], 'hand' + 'machine', 'cellphone' with a score of 101/T=250 for 'machine'.

In the category of words responses to the overall meaning of the compounds, 靓丽 [*liang+li*], 'pretty' + 'beautiful', 'beautiful and lovely' was the compound with the highest response rate, that of 89/T=250. Refer to Table 5.15 below for further details.

Table 5.15: Response rates for Neologisms in Task 3

Compounds	DESCRIPTION	Left	Right	Combination
放电(fangDian)	to send + electricity = to eye up/to make oneself attractive to sb	108	96	5
氧吧(yangBa)	oxygen +ba = oxygen bar; commercial bar with oxygen therapy	155	63	2
菜鸟(caiNiao)	vegetable+bird = rookie	109	99	11
拆迁(chaiQian)	to take apart+to move = to resettle	100	91	19
房奴(fangNu)	house+slave = person who need to pay a loan for a house	117	102	3
款爷(kuanYe)	money+boss = the rich	110	59	50
时尚(shiShang)	time+trend = fashion	122	64	18
跳槽(tiaoCao)	to jump+trough = to move from one firm(or job) to another	154	52	5
黑车(heiche)	black/illegal + vehicle = unlicensed car	120	101	2
软件(ruanJian)	soft+document = software	110	78	8
电话(dianHua)	electricity+speeches = telephone	123	87	8
手机(shouJi)	hand + manchine = cellphone	104	101	7
作秀(zuoXiu)	to do+ show = to show	109	93	13
瘦身(shouShen)	thin+body = to lose weight	88	90	29
当红(dangHong)	current + red = popular	102	104	9
走穴(zouXue)	to walk+cave = actor or doctor perform for extra income	122	96	1
上网(shangWang)	to up+net = to surf internet	93	103	4
炒作(chaoZuo)	to stir-fry+to make = to sensationalize	100	99	3
靓丽(liangli)	pretty+beautiful = beautiful and lovely	63	61	89
失范(shiFan)	lose/deviate from the norm + model = irregular	129	99	3

Infrequently Used Compounds

In Task 3, except for 'semantically free' compounds and neologisms, some infrequently used compounds were selected in order to obtain comprehensive results. There were 7 infrequently used compounds included, which were not listed in the *List of Contemporary Chinese Frequently Used Words* compiled by *the Commercial Press* in 2008.

The results indicated that for this category of compounds participants responded to the meaning of the second constituent of the compounds most frequently by a slight margin with a response rate of 781/T=1750. This number was closely followed by the number of responses to the meaning of the first constituent of the compounds, with a score of 751/T=1750.The response rate for responses to the overall meanings of the compounds was only 75/T=1750.

In the category of responses according to the meaning of the first constituent of the compounds, 贵胄 [*gui+zhou*], 'of an honored rank or position' + 'helmet', 'the noble' scored 200/T=250 responses for 'of an honored rank or position' and had the highest response rate, 自虐 [*zi+nue*], 'oneself' + 'to be cruel', 'auto-sadism' scored 151/T=250 responses for

'oneself', 定弦 [*ding+xian*], 'to decide' + 'string', 'to make a decision' had 147/T=250 responses to 'to decide' and 丢手 [*diu+shou*], 'to throw' + 'hand', 'to give up' had a score of 147/T=250 responses to 'to throw'.

The last category consisted of responses according to the meaning of the second constituent of the compounds, and two out of the seven compounds used had response rate of over 200. They were 璞玉 [*pu+yu*], 'uncut jade' + 'jade', 'simplicity' with a score of 225/T=250 responses to 'jade' and 赅博 [*gai+bo*], 'comprehensive' + 'broadly knowledgeable', 'erudite' which scored 203/T=250 responses to 'broadly knowledgeable'. Refer to Table 5.16 for further details.

Table 5.16: Responses for Infrequently Used Compounds

Compounds	DESCRIPTION	Left	Right	Combination
定弦(dingXian)	to decide+string = to make a decision	147	78	3
贵胄(guiZhou)	of an honored rank or position + helmet = the noble	200	20	14
赅博(gaiBo)	comprehensive+broadly knowledgeable = erudite	5	203	19
璞玉(puYu)	uncut jade+jade = simplicity	10	225	3
自虐(ziNue)	oneself+to be cruel = autosadism	151	79	0
捕快(buKuai)	to catch+quick = constable for catching criminals	91	112	28
丢手(diuShou)	to throw+hand = to give up	147	64	8

Remark: The last two words in yellow are 'semantically free' compounds.

5.3 DISCUSSION

According to the results of Task 1 and Task 2, it is evident from these 165 compounds selected that neologisms are considered as high transparency rating compounds, while infrequently used compounds are considered as low transparency rating compounds. With regard to the degree of constituent transparency, the high constituent transparency rating compounds are transparent compounds with heads. The low constituent transparency rating compounds are exocentric compounds which include neologisms, 'semantically free' compounds and contemporary compounds.

The results for Task 3 show that responses to the meaning of the first constituent of the compounds are most common among the three possibilities: responses to the first constituent, responses to the second constituent, responses to the overall meaning of the compound.

The aim of Task 3 was to examine which part of semantic transparency had a stronger effect

on retrieving compounds from the mental lexicon, the meanings of the constituents or the meanings of the whole compound. In other words, if the five words/compounds' participants responded with were mainly associated with the meaning of the constituents, it meant that words/compounds may be processed through their constituents in the mental lexicon; whereas if the five words/compounds' participants responded with were mainly associated with the meaning of the whole compound, this then might indicate that the respective compounds may be stored in the mental lexicon as whole units. Therefore, from the results of Task 3, it can be concluded that words/compounds may be processed through their constituents rather than as composite wholes.

5.3.1 'SEMANTICALLY FREE' COMPOUNDS

According to Scalise and Guevara (2006), 'semantically free' compounds are one kind of exocentric compound in Chinese for which the meanings of the compounds are not predictable from the meanings of their constituents, nor is there any detectable motivation of the meaning of the whole which might stem from the meanings of the constituents.

There were 27 'semantically free' compounds in Task 1 and Task 2. Generally speaking, these 27 'semantically free' compounds were considered to be transparent in Task 1 as they were rated as 'very predictable' in 1308 (T=2565) out of an absolute 2565 cases). There were four 'semantically free' compounds which were perceived as 'highly transparent' compounds by the participants with scores of over 70 but under 80 (T=95): 手足 [*shou+zu*], 'hand' + 'foot', 'brothers/very intimate friends'，江山 [*jiang+shan*], 'river' + 'mountain', 'country/ the state power'，手脚 [*shou+jiao*], 'hand' + 'feet', 'behavior (especially operating secretly and often illegally)', and 百姓 [*bai+xing*], 'hundred' + 'surname', 'people'.

With regard to the results of Task 2, there were no 'semantically free' compounds perceived as having a high constituent transparency by the participants. In the group of compounds with a low constituent transparency rating, there were 3 'semantically free' compounds. These were 'judged' as having a low constituent transparency in over 40 (T=95) out of 95 total ratings: 桃李 [*tao+li*], 'peach' + 'plum', 'one's disciples or pupils' received a 'low constituent transparency' rating in 40/T=95 cases, 东西 [*dong+xi*], 'east' + 'west', 'things' received the rating of 40/T=95, and 马弁 [*ma+bian*], 'horse' + 'cap', 'batman' scored 'low constituent transparency' in 42 /T=95 cases.

Although the results of Task 1 show that the 'semantically free' compounds were generally perceived as being transparent by the participants, the word association task in Task 3 illustrates that the responses to the meanings of the first constituent of the compounds had the highest response rate. In Task 3, there were 18 'semantically free' compounds. The results demonstrate that the response rate for 马弁 [*ma+bian*], 'horse' + 'cap', 'batman' was 247/T=250, 桃李 [*tao+li*], 'peach' + 'plum', 'one's disciples or pupils' was 156/T=250, 丢手 [*diu+shou*], 'to throw' + 'hand', 'to give up' was 147/T=250 and 心腹 [*xin+fu*], 'heart' + 'belly', 'trusted subordinate/ henchman' scored 145/T=250 for responses to the first constituent of the respective compounds. These were the four compounds with the highest response rates for the first constituent..

It is not difficult to understand that participants predominantly responded to the meaning of the constituents of compounds if the meanings of the compounds in question are opaque, for example:

- 桃李 [*tao+li*], 'peach' + 'plum', 'one's disciples or pupils' in Task 3: The response rate for responses to the meaning of the first constituent of the compound was 156 (T=250), the response rate for responses to the meaning of the second constituent of the compound was 43 (T=250), and the response rate for responses to the overall meaning of compound was 16 (T=250).
- 东西 [*dong+xi*], 'east' + 'west', 'things' in Task 3: The response rate for responses to the meaning of the first constituent of the compound was 107 (T=250), the response rate for the responses to the meaning of the second constituent of the compound was 90 (T=250), and the response rate for responses according to the meaning of compound as a unit was 20 (T=250).
- 马弁 [*ma+bian*], 'horse' + 'cap', 'batman' in Task 3: The response rate for the responses according to the meaning of the first constituent of the compound was 247 (T=250), the response rate for the responses according to the meaning of the second constituent of the compound was 0 (T=250), and the response rate for the responses according to the meaning of the compound was 0 (T=250).

The above three compounds are all 'semantically free' compounds. It is to say that the meanings of the compounds are not predictable from the meanings of their constituents. It is evident according to the results of Task 2 that the constituents '桃' [*tao*], 'peach' in 桃李

[*tao+li*], 'peach' + 'plum', 'one's disciples or pupils', '东' [*dong*], 'east' in 东西 [*dong+xi*], 'east' + 'west', 'things', '弁' [*bian*], 'cap' in 马弁 [*ma+bian*], 'horse' + 'cap', 'batman' were regarded as having lost all of their individual meanings in the overall meanings of the compounds.

In Task 3, with regard to the compounds 桃李 [*tao+li*], 'peach' + 'plum', 'one's disciples or pupils' and 东西 [*dong+xi*], 'east' + 'west', 'things', the responses of the participants were predominantly to the meanings of the constituents '桃' [*tao*], 'peach' and '东' [*dong*], 'east' respectively. In this case, Mok's (2009) research on the word-superiority effect (WSE) which presumes that fully opaque compounds appear to exhibit a larger WSE than fully transparent compounds may serve to explain this phenomenon. That is to say that the meanings of the constituents '桃' [*tao*], 'peach' and '东' [*dong*], 'east' are easy to retrieve from the mental lexicon in the context of their compounds due to the WSE. It may also mean that these two 'semantically free' compounds are represented in the mental lexicon as whole units according to Mok's study (2009) that fully opaque compounds show up as more greatly 'perceptually unitised' than fully transparent compounds (Mok, 2009, p.1045).

However, in terms of the compound 马弁 [*ma+bian*], 'horse' + 'cap', 'batman', the there are relatively few participants' responses to the meaning of the constituent '弁' [*bian*], 'cap' are. This may be due to the fact that '弁' [*bian*], 'cap' is an infrequently used word. According to the frequency effect, words or compounds with a high frequency are processed faster than infrequently used ones. In this case, the constituent '马' [*ma*], 'horse' is more frequently used than the constituent '弁' [*bian*], 'cap'. Therefore, with regard to the compound 马弁 [*ma+bian*], 'horse' + 'cap', 'batman' in Task 3, by participants respond more frequently to the meaning of the first constituent '马' [*ma*], 'horse'.

Interestingly, there are some 'semantically free' compounds which are considered to be transparent as whole units but, during the word association in Task 3 participants rather responded according to the meanings of their constituents. The following are the 'semantically free' compounds whose transparency ratings were the highest.

- For instance, 手足 [*shou+zu*], 'hand' + 'foot', 'brothers/ very intimate friends' in Task 3: The response rate for responses to the meaning of the first constituent of the compound was 87 (T=250), the response rate for responses to the meaning of the second constituent of the compound was 93 (T=250), and the response rate for

responses to the overall meaning of the compound was 27 (T=250).

- 手脚 [*shou+jiao*], 'hand' + 'feet', 'behavior (especially operating secretly and often illegally)' in Task 3: The response rate for responses to the meaning of the first constituent of the compound was 110 (T=250), the response rate for responses to the meaning of the second constituent of the compound was 105 (T=250), and the response rate for responses to the overall meaning of the compound 8 (T=250).

- 百姓 [*bai+xing*], 'hundred' + 'surname', 'people' in Task 3: The response rate for responses to the meaning of the first constituent of the compound was 108 (T=250), the response rate for responses to the meaning of the second constituent of the compound was 66 (T=250), and the response rate for responses according to the meaning of the compound as a whole was 27 (T=250).

5.3.2 NEOLOGISMS

Of the 165 compounds, 85 neologisms were used in Tasks 1 and 2. Neologisms have been considered to be high transparency rating compounds according to the result of Task 1. For example, there were 38 compounds which were rated as 'highly transparent with a frequency of over 70 (T=95). Among them, 23 were neologisms. With regard to low transparency rating compounds, there were 26 compounds whose (selection) frequency rating was over 10 (T=95). Among them, 5 were neologisms. In Task 2, the (selection) frequency rating for neologisms was not the highest. Of 7 compounds whose (selection) frequency rating was over 50 (T=95), there was only 1 neologism in terms of high constituent transparency rating compounds. Regarding low constituent transparency rating compounds, there were 3 neologisms among the 8 compounds whose (selection) frequency rating was over 40 (T=95).

In Task 3, there were 20 neologisms selected for testing. According to the results, responses to the meaning of the first constituent of the compound had the highest response rate. In other words, compounding for a neologism may be processed through its constituents. In order to illustrate this point, specific examples will be discussed below according to the groups: high transparency rating compounds, low transparency rating compounds, high constituent transparency rating compounds and low constituent transparency rating compounds.

Examples of high transparency rating compounds in Task 3:

- 电话 [*dian+hua*], 'electricity' + 'speeches', 'telephone': The response rate for responses to the meaning of the first constituent of the compound was 123 (T=250); the response rate for responses to the meaning of the second constituent of the compound was 87 (T=250); and the response rate for responses to the meaning of the overall meaning of the compound was 8 (T=250).

- 手机 [*shou+ji*], 'hand' + 'machine', 'cellphone': The response rate for responses to the meaning of the first constituent of the compound was 104 (T=250); the response rate for responses to the meaning of the second constituent of the compound was 101 (T=250); and the response rate for responses to the meaning of the overall meaning of the compound was 7 (T=250).

- 上网 [*shang+wang*], 'to up' + 'net', 'to surf the internet': The response rate for responses to the meaning of the first constituent of the compound was 88 (T=250); the response rate for responses to the meaning of the second constituent of the compound was 90 (T=250); and the response rate for responses to the overall meaning of the compound was 29 (T=250).

- 瘦身 [*shou+shen*], 'thin' + 'body', 'to lose weight': The response rate for responses according to the meaning of the first constituent of the compound was 93 (T=250); the response rate for responses according to the meaning of the second constituent of the compound was 103 (T=250); and the response rate for responses to the meaning of the compound was 4 (T=250).

Examples of low transparency rating compounds in Task 3:

- 氧吧 [*yang+ba*], 'oxygen' + 'bar', 'oxygen bar/ commercial bar with oxygen therapy': The response rate for responses to the meaning of the first constituent of the compound was 155 (T=250); the response rate for responses to the meaning of the second constituent of the compound was 63 (T=250); and the response rate for responses to the meaning of the overall meaning of the compound was 2 (T=250).

- 失范 [*shi+fan*], 'lose /deviate from the norm' + 'model', 'irregular': the response rate for responses to the meaning of the first constituent of the compound was 129 (T=250); the response rate for responses to the meaning of the second constituent of the compound was 99 (T=250); and the response rate for responses to the overall meaning of the compound was 3 (T=250).

- 走穴 [*zou+xue*], 'to walk' + 'cave', 'actor or doctor perform for extra income': The response rate for responses to the meaning of the first constituent of the compound was 122 (T=250); the response rate for responses to the meaning of the second constituent of the compound was 96 (T=250); and the response rate for responses to the overall meaning of the compound was 1 (T=250).

Examples of high constituent transparency rating compounds in Task 3:
- 靓丽 [*liang+li*], 'pretty' + 'beautiful', 'beautiful and lovely': The response rate for responses to the meaning of the first constituent of the compound was 63 (T=250); the response rate for responses to the meaning of the second constituent of the compound was 61 (T=250); and the response rate for responses g to the overall meaning of the compound was 89 (T=250).

Examples of low constituent transparency rating compounds in Task 3:
- 菜鸟 [*cai+niao*], 'vegetable' + 'bird', 'rookie': The response rate for responses to the meaning of the first constituent of the compound was 109 (T=250); the response rate for responses to the meaning of the second constituent of the compound was 99 (T=250); and the response rate for responses to the overall meaning of the compound was 11 (T=250).

The common characteristics of these categories of compounds are that the constituents which constitute these compounds are frequently used words (constituent frequency is adopted from the *List of the Current Frequently Used Characters and Words* compiled by the *Committee of the Ministry of Education of China* in 1988). In the group of high transparency rating compounds, responses to the meanings of the *first* constituent of the compounds such as 电话 [*dian+hua*], 'electricity' + 'speeches', 'telephone' and 手机 [*shou+ji*], 'hand' + 'machine', 'cellphone' had high response rates. In contrast, the group of high transparency rating compounds represented by examples such as 上网 [*shang+wang*], 'to up' + 'net', 'to surf the internet' and 瘦身[*shou+shen*], 'to thin' + 'body', 'to lose weight' had a high response rate for responses to the meanings of the *second* constituent of the compounds

According to Packard (2000), morphemes in Chinese are categorised into four groups (see 2.4.1 in Chapter 2). Take 电话 [*dian+hua*], 'electricity' + 'speeches', 'telephone' for example,

'电' [*dian*], 'electricity' is a free-standing word, whereas '话' [*hua*], 'speeches' is a bound root. The constituent '电' [*dian*], 'electricity' is therefore much more easily retrieved from the mental lexicon than the constituent '话' [*hua*], 'speeches'. Similarly, the results of the word association for 上网 [*shang+wang*], 'up' + 'net', 'to surf the internet' are as a result of the fact that the constituent '上' [*shang*], 'up' is a bound root.

With regard to the exocentric compounds, although 氧吧 [*yang+ba*], 'oxygen' + 'bar', 'oxygen bar/ commercial bar with oxygen therapy', 失范 [*shi+fan*], 'lose /deviate from the norm' + 'model', 'irregular' and 走穴 [*zou+xue*], 'to walk' + 'cave', 'actor or doctor perform for extra income' show the same results as the overall result of Task 3 in which responses to the meaning of the first constituent of the compounds are the greatest in number, it can be seen that there is a particular phenomenon exhibited. The words tend to be responded to by participants according to the meaning of the first constituent of the compound when the constituents are both bound roots such as 失范 [*shi+fan*], 'lose /deviate from the norm' + 'model', 'irregular' and 走穴 [*zou+xue*], 'to walk' + 'cave', 'actor or doctor perform for extra income'.

In addition, the highest response rate for the responses to the meaning of the overall compound are found for the following compounds: 靓丽 [*liang+li*], 'pretty' + 'beautiful', 'beautiful and lovely' and 娇艳 [*jiao+yan*], 'pretty' + 'gorgeous', 'beautiful' which scored 91 (T=250). The common characteristics are that the meanings of these two compounds are transparent. Also, their constituents have similar meanings, and the meanings of their constituents are transparent. Moreover, the response rates for all three options (first constituent, second constituent, overall compound meaning) are almost even. The information stated previously in this chapter provides the analysis for 靓丽 [*liang+li*], 'pretty' + 'beautiful', 'beautiful and lovely'. In other words, the responses to the overall meaning of the compound may occur with a high possibility when the compound and its constituents are transparent.

Furthermore, according to the results of Task 3, it is not evident to show that participants react mainly to the head. For example, the head of the compound 手机 [*shou+ji*], 'hand' + 'machine', 'cellphone' is the second constituent '机' [*ji*], 'machine'. However, the response rate for responses to the meaning of the second constituent of the compound (101/T=250) is not more than the response rate for response to the meaning of the first constituent of the compound (104/T=250) as the same as the compound 时尚 [*shi+shang*], 'time' + 'trend',

'fashion'. It may be a different result if there are more stimulus compounds with heads. But in this dissertation the researcher is mostly dealing with headless compounds.

In conclusion, the overall results of Task 3 show that the participants' responses were predominantly associated to the meaning of the first constituent of the compound no matter whether the compounds are neologisms, 'semantically free' compounds or contemporary compounds. Thus compounds in Chinese may be processed through their constituents even though this processing will be influenced by many factors such as the degree of semantic transparency for the compound/its constituents, compound frequency/constituent frequency, headedness and morpheme types.

CHAPTER 6
CONCLUSION AND FINDINGS

The dissertation set out to explore the opacity of Chinese compounds in search of conceptual motivations for traditional exocentric compounds and contemporary neologisms in Chinese. The experiment which was designed involved three tasks. Ninety-five participants from the *College of ShaanXi Costume & Art* at *XianYang*, *ShaanXi* Province participated in Task 1 and Task 2. One hundred and sixty-five compounds were selected according to the four transparency groups (transparent-transparent, opaque-transparent, transparent-opaque, opaque-opaque). The information in terms of the four transparency groups was explained in detail in Chapter 4. These compounds were also distinguished across categories for compound frequency (the frequencies were adopted from the *List of Current Frequently Used Words* compiled by *the Commercial Press* in 2008).

In Task 1, participants were asked to rate each compound in terms of the extent to which its meaning was predictable from the meaning of its constituents. In the Task 2, the same 95 students from the *College of ShaanXi Costume & Art*, at *XianYang*, *ShaanXi* Province who participated in Task 1 were requested to complete Task 2. The same list of 165 compounds was used, but the compounds were presented to the participants with one of the constituents underlined. Participants were asked to rate the transparency of the constituent of each compound in terms of the extent to which the constituent retained its' individual meaning in the whole compound. In Task 3, 50 participants were invited to participate in a word association task. Participants were required to respond orally as fast as they could with five words that came to mind as they were presented with each of 50 compounds selected from the list of 165 compounds used in Task 1 and Task 2. Two kinds of Chinese compounds were investigated in this research: 'semantically free' compounds and neologisms. The findings of the study will be discussed according to these two kinds of compounds.

6.1 'SEMANTICALLY FREE' COMPOUNDS

Task 1 in terms of compound transparency: According to the results of Task 1, 'semantically free' compounds might neither be considered as being high transparency rating compounds nor as low transparency rating compounds. Compounds that are rated as 'highly transparent' in at least 70 cases (T=95) are considered as high transparency rating compounds. 手足

[*shou+zu*], 'hand' + 'foot', 'brothers/very intimate friends', 江山 [*jiang+shan*], 'river' + 'mountain', 'country/the state power', 手脚 [*shou+jiao*], 'hand' + 'feet', 'behavior (especially operating secretly and often illegally)', and 百姓[*bai+xing*], 'hundred' + 'surname', 'people' were among the 27 'semantically free' compounds which scored over 70 (T=95) in this category.

The (selection) frequency rating over 10 (T=95) for the option 'very unpredictable' is regarded as a low transparency compound. There were 2 'semantically free' compounds (whose (selection) frequency rating was over 20 (T=95)) and 3 semantically free' compounds (whose (selection) frequency rating was over 10 but under 20 (T=95)). The (selection) frequency rating of 马弁 [*ma+bian*], 'horse' + 'cap', 'batman' which was 38 (T=95) was the highest one for the low transparency rating compounds.

Task 2 in terms of constituent transparency: Constituents of 'semantically free' compounds are basically considered as having lost all their meaning. With regard to high constituent transparency rating compounds, (selection) frequency ratings over 50 (T=95) for the option 'retains all of its meaning in the whole compound' are considered to be high constituent transparency rating compounds. The results of Task 2 show that high constituent transparency rating compounds are almost transparent compounds with heads. 'Semantically free' compounds are exocentric compounds with no heads. There are no 'semantically free' compounds that were rated by the participants to have a high constituent transparency.

The (selection) frequency ratings over 40 (T=95) for the option 'loses all its meaning in the whole compound' are considered to be low constituent transparency rating compounds. 'Semantically free' compounds are regarded as low constituent transparency rating compounds due to the fact that they are all exocentric compounds. According to the results of Task 2, low constituent transparency compounds are almost all exocentric compounds. There are 3 'semantically free' compounds whose the (selection) frequency rating is over 40 (T=95) in terms of the low constituent transparency rating.

Task 3 word association task: There were 18 'semantically free' compounds in Task 3. The results show that responses to the meaning of the first constituent of the compounds have the highest response rate with a score of 2075 in total (T=4500). Second are responses to the meaning of the second constituent of the compounds with a response rate of 1611 (T=4500).

Last are responses to the overall meaning of the compounds with response rate of 318 (T=4500). The results show that the rate for responses to the meaning of their first constituents is closer to the rate for responses to the meaning of their second constituents in Task 3. From the above result, a conclusion could be made that 'semantically free' compounds might be retrieved through their constituents from the mental lexicon.

However, as is well known, 'semantically free' compounds are a kind of exocentric compound. The meanings of compounds cannot be obtained through the meanings of their compounds. It could be thought that the selection of which of the constituents to respond to in a word association task could be at chance level for constituents of responses compounds that are semantically opaque; however an exception is posed by 马弁 [*ma+bian*], 'horse' + 'cap', 'batman'. According to the result in Task 3, responses regarding the compound 马弁 [*ma+bian*], 'horse' + 'cap', 'batman' are almost all based on the meaning of the first constituent of the compound. The researcher deduces that the reason is that the first constituent of the compound is a frequently used character, but that the second constituent is an infrequently used character.

Additionally, the response rate in total for 'semantically free' compounds regarding the responses to the overall meaning of compounds is inflated in comparison to neologisms. Another conclusion can be made that opaque compounds might make it easier than neologisms to retrieve the overall meanings of the compounds as a whole unit.

6.2 NEOLOGISMS

Task 1 in terms of compound transparency: Neologisms have been considered as high transparency rating compounds. (Selection) frequency ratings above 70 (T=95) are for the option 'very predictable' considered as high transparency rating compounds. There are 10 neologisms whose the (selection) frequency rating is 80 (T=95), and 13 neologisms whose the (selection) frequency rating is over 70 but under 80 (T=95).

The (selection) frequency ratings over 10 (T=95) for the option 'very unpredictable' are regarded as low transparency compounds. There was no neologism with a frequency rating over 20 (T=95), but there were 5 neologisms whose the (selection) frequency rating was over 10 but under 20 (T=95).

Task 2 in terms of constituent transparency: Constituents of neologisms are almost considered as retaining all of their meaning or retaining most of their meaning. With regard to

high constituent transparency rating compounds, the (selection) frequency ratings over 50 (T=95) for the option 'retains all of their meaning in the whole compound' are considered as high constituent transparency rating compounds. There was one neologism: 靓丽 [*liang+li*], 'pretty' + 'beautiful', 'beautiful and lovely' whose the (selection) frequency rating was 52 (T=95).

The (selection) frequency ratings over 40 (T=95) for the option 'loses all its meaning in the whole compound' are considered as low constituent transparency rating compounds. There were 3 neologisms whose the (selection) frequency rating was over 40 (T=95). They were: 二奶 [*er+nai*], 'the second' + 'milk', 'mistress' with a rating of 52 (T=95), 粉丝 [*fen+si*], 'powder' + 'thin thread', 'fans' with a rating of 47 (T=95), and 菜鸟 [*cai+niao*], 'vegetable' + 'bird', 'rookie' with a rating of 45 (T=95). These three compounds are exocentric compounds. The results of Task 2 indicate that low constituent transparency compounds are almost all exocentric compounds. Even though Yang (2009) presumes that most neologisms in Chinese are semantically transparent, there may be exocentric compounds like the above three neologisms due to the meaning of old compounds whose concepts were derived from extensions in meaning, simile, and metonymy of the original meanings of the old compounds.

Task 3 word association task: There were 20 neologisms in Task 3. The results showed that responses to the meaning of the first constituent of the compounds were the highest with a response rate of 2238 (T=5000). These were followed by responses to the meaning of the second constituent of the compounds whose response rate was 1738 (T=5000). Last were responses to the overall meaning of the compounds whose response rate was 289 (T=5000). According to Yang (2009), most neologisms are semantically transparent. A conclusion can be drawn that the first constituents might have a positional advantage in visual recognition when compounds are semantically transparent. In contrast to 'semantically free' compounds, for neologisms, the response rate for responses to the meaning of the first constituents is significantly higher than the response rate for responses to the meaning of the second constituents.

The two compounds with the highest response rate of words associated with the overall meaning of compounds were: 靓丽 [*liang+li*], 'pretty' + 'beautiful', 'beautiful and lovely' and 娇艳[*jiao+yan*], 'pretty' + 'gorgeous', 'beautiful'. The common characteristics here are that the meanings of the two constituents are similar in both compounds. Also, both of these compounds are semantically transparent. It may be that compounds are more easily

recognised by the mental lexicon when compounds are semantically transparent and their constituents' meanings are similar.

6.3 LIMITATIONS AND RECOMMENDATION

This is an experimental study; the sample size was comparatively small as there were only 50 participants for Task 3. As a result, the current results might not be fully comprehensive. In a further study, it would be interesting to see whether the results would stay the same with more participants.

Moreover, the researcher is aware of the fact that her methodology does not allow for substantiated empirical evidence on this issue, which can only be acquired through lexical priming experiments. Even though the researcher considered conducting priming experiments, it turned out after careful consideration that the technical and logistical problems involved in carrying out lexical priming experiments in the context of the current study were not manageable. In a further study, it would be interesting to see whether the results would be verified by lexical priming experiments.

Thirdly, the readings which were used to support the ideas of this study were limited, although the relevant information was found within each of the articles. A larger number of readings and research is suggested for further studies.

Lastly, the compounds selected for the study may not have been as well thought-out and as comprehensive as they could have been due to time limitations and the results were thus unpredictable (e.g. the kind of compound like 靓丽 [*liang+li*], 'pretty' + 'beautiful', 'beautiful and lovely' was found to have the highest response rate in words associated with the meaning of compounds). In a further study, a more comprehensive list of compounds should be selected and investigated based on the results found in this study.

6.4 SUMMARY AND FINDINGS

In summary, the following conclusion emanates from the results of the three tasks for 'semantically free' compounds. 'Semantically free' compounds may be processed by means of their constituents in the mental lexicon. Meanwhile, for some reason 'semantically free'

compounds may be accessed from the mental lexicon as a whole. The research also found that the frequency effect is stronger than the effect of 'semantic transparency' in 'semantically free' compounds, which could mean that lexico-semantic distance (semantic freedom) is much smaller in Chinese exocentric compounds than anticipated by Scalise and Guevara (2006).

In summary, the following conclusion may be derived from the results of the three tasks for neologisms. Neologisms may be processed through their constituents in the mental lexicon. The effect of semantic transparency may be stronger than the frequency effect in neologisms when compounds are semantically transparent and their constituents' meanings are similar.

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Appendix A

题目：汉语复合词：新词义的概念语义研究

调查对象：项目 1 和项目 2 将邀请 80 到 100 个在校大学生，项目 3 将邀请 50 个在校大学生，要求母语为汉语，年龄在 18 到 35 岁之间

材料：项目 1 和项目 2 使用 165 对复合词，项目 3 从 165 对复合词中选择 50 对复合词

实验流程和操作：项目 1：判别下列复合词是否能够从其字面意思理解该复合词的词义。如果你认为非常容易理解，请在方格中填入'A'；如果你认为容易理解，请填入'B'；如果你认为不容易理解，请填入'C'；如果你认为非常不容易理解，请填入'D'（A = 非常容易理解；B = 容易理解； C = 不容易理解；D = 非常不容易理解）。

项目 2：判别下列复合词中该词义是否还存有下划线字的字义。如果你认为在复合词词义中仍含有该字的全部字义，请在方格中填入'A'；如果你认为存留大部分字义，请填入'B'；如果你认为存留少部分字义，请填入'C'；如果你认为失去全部字义，请填入'D'（A = 保留全部字义；B = 保留大部分字义；C = 保留少部分字义； D = 失掉全部字义）。

项目 3：50 对复合词将分别写在硬纸板上。调查对象需快速地反应出 5 对复合词当看到纸板上的复合词时。

调查参与和数据处理：参与调查都是自愿和调查数据是保密的。数据分析是针对数据本身而不是针对个人。你的名字不会出现在任何出版的文件上，你的个人信息不会泄露给第三方。你的参与是自愿的，所以任何阶段都可退出。调查无任何歧视。

同意

我_____ (全名)在此已仔细阅读并明确以上内容。我同意参加此调查。 我了解只要我愿意，我将可以在任何时候退出调查。

调查参与者签名_____时间_____

Appendix B

Department of Linguistics University of KZN (Howard College Campus).

Researcher	Project Supervisor
Ms Man Xu	Prof. Heike Tappe
	University of KZN
Contact no 0027-766119595	Contact No 0027-31- 2601131

We need your help to investigate the morphological competence and morphological patterns in today's mother tongue speakers of Chinese through the analysis of neologisms. Your help will enable us to understand the organization of Chinese words in the mental lexicon and the processing of Chinese compounds in natural speech.

The study consists of a number of questions which we ask you to answer one after the other. The data are confidential and we will not be able to tell that they are yours personally.

- This is a **voluntary and confidential** questionnaire. Be assured that confidentiality will be preserved – all of our analyses will focus on patterns in the data over many individuals, rather than on individuals themselves. Your name will not appear in any published documents, and no individual information about you will be passed on to any other party under any circumstances.

- Your participation in this study is **voluntary**; you may decline to participate without penalty, just hand in a blank questionnaire at the end.

- If you decide to participate, you may withdraw from the study at any stage and for any reason without penalty.

- If you do take part your response will not be linked to you or your school.

- Non-participation in this questionnaire will not result in any discrimination of any kind.

- All data collected from these questionnaires will be dealt with under the ethical rules of the University of KwaZulu-Natal.

- Please read each question carefully and take a moment to think about your answer.

- The questionnaire will take about 20-30 minutes to complete.

CONSENT

I _____ (full name of participant) herby confirm that I have read the above information. I agree to participate in this study. I understand that I can withdraw from the study at any time, should I so desire.

Participant's signature _____   Date _____

Appendix C

问卷调查/**QUESTIONNAIRE**: TASK ONE & TASK TWO

A:个人信息/**PERSONAL INFORMATION**

年龄/ Age: _____
性别/ Gender:_____

B:请判别下列复合词是否能够从其字面意思理解该复合词的词义。如果你认为非常容易理解，请在方格中填入'A'；如果你认为容易理解，请填入'B'；如果你认为不容易理解，请填入'C'；如果你认为非常不容易理解，请填入'D'（A = 非常容易理解；B = 容易理解；C = 不容易理解；D = 非常不容易理解）。

Please rate each compound in terms of the extent to which its meaning is predictable from the meaning of its constituents. A four-point rating scale is employed in which the alternatives range from 'very predictable' to 'very unpredictable' (A = very predictable; B = predictable; C = unpredictable; D = very unpredictable).

C:请判别下列复合词中是否该词义还存有下划线字的字义。如果你认为在复合词词义中仍含有该字的全部字义，请在方格中填入'A'；如果你认为存留大部分字义，请填入'B'；如果你认为存留少部分字义，请填入'C'；如果你认为失去全部字义，请填入'D'（A = 保留全部字义；B = 保留大部分字义；C = 保留少部分字义； D = 失掉全部字义）。

Please rate the transparency of the constituent underlined and in bold of each compound in terms of the extent to which the constituent retains its individual meaning in the whole compound. A four-point scale is employed in which the alternatives range from 'retains all of its meaning in the whole word' to 'loses all its meaning in the whole word' (A = retains all of its meaning; B = retains most of its meaning; C = retains a bit of its meaning; D = loses all its meaning).

Appendix D TASK ONE

COLUMN 1		COLUMN 2		COLUMN 3		COLUMN 4		COLUMN 5		COLUMN 6		COLUMN 7		COLUMN 8	
手表		恶棍		马弁		炒作		作秀		互动		顶角		超市	
抄写		打针		捕快		增值		回扣		大腕		定弦		外企	
月亮		火箭		江湖		全陪		速配		花心		丢手		走穴	
穿插		祸害		心腹		建构		饭局		平台		东佃		提速	
开心		交接		手足		瘦身		客串		打假		逗引		休闲	
揣摩		剿灭		东西		主打		网虫		拆迁		返青		人气	
地区		筋骨		江山		生猛		搞定		款爷		放恣		裸奔	
掉包		赖皮		东床		上佳		摆平		氧吧		飞蓬		上网	
发行		颠沛		风水		当红		手机		网吧		赅博		网络	
轨迹		贵胄		手脚		高发		电话		菜鸟		房型		黑客	
画笔		拘挛		桃李		靓丽		动画		风行		忽悠		跳槽	
火海		贫化		水火		风雨		电影		蜗居		宅女		粉丝	
风头		结症		风霜		放电		飞机		失范		充电		房奴	
饥饿		筋节		推敲		拍卖		软件		风流		来电		车奴	
娇艳		自虐		饭碗		离休		硬件		二奶		搭售		投资	
结盟		涵括		风月		组建		汽车		崇拜		评聘		卖场	
局面		抵掌		千金		洽谈		火车		创建		并购		拒载	
祸水		润格		百姓		抢购		地铁		耳目		知青		黑车	
计较		璞玉		泰斗		宅男		钻石		发威		打动			
焦土		劝化		风土		人权		时尚		糊涂		打发			
焦心		丁忧		电脑		减肥		卫星		打点		打手			

Appendix E TASK TWO

COLUMN 1		COLUMN 2		COLUMN 3		COLUMN 4		COLUMN 5		COLUMN 6		COLUMN 7		COLUMN 8	
手**表**		恶**棍**		马**弁**		**炒**作		作**秀**		互**动**		顶**角**		超**市**	
抄写		**打**针		**捕**快		**增**值		回**扣**		大**腕**		**定**弦		外**企**	
月亮		火**箭**		江**湖**		全**陪**		速**配**		花**心**		**丢**手		走**穴**	
穿**插**		祸**害**		心**腹**		**建**构		**饭**局		平**台**		东**佃**		**提**速	
开心		交**接**		手**足**		**瘦**身		**客**串		打**假**		**逗**引		休**闲**	
揣**摩**		剿**灭**		**东**西		主**打**		**网**虫		拆**迁**		**返**青		人**气**	
地**区**		筋**骨**		**江**山		生**猛**		**搞**定		款**爷**		放**恣**		裸**奔**	
掉包		**赖**皮		东**床**		上**佳**		摆**平**		**氧**吧		飞**蓬**		**上**网	
发**行**		颠**沛**		风**水**		当**红**		手**机**		**网**吧		赅**博**		**网**络	
轨迹		贵**胄**		手**脚**		高**发**		电**话**		菜**鸟**		房**型**		黑**客**	
画**笔**		**拘**挛		**桃**李		**靓**丽		动**画**		风**行**		忽**悠**		跳**槽**	
火**海**		**贫**化		**水**火		**风**雨		电**影**		**蜗**居		**宅**女		粉**丝**	
风头		结**痂**		风**霜**		放**电**		**飞**机		失**范**		充**电**		房**奴**	
饥**饿**		**筋**节		推**敲**		拍**卖**		**软**件		风**流**		**来**电		**车**奴	
娇**艳**		自**虐**		饭**碗**		离**休**		硬**件**		二**奶**		**搭**售		**投**资	
结**盟**		**涵**括		风**月**		**组**建		汽**车**		**崇**拜		评**聘**		卖**场**	
局面		抵**掌**		千**金**		洽**谈**		火**车**		**创**建		并**购**		**拒**载	
祸**水**		润**格**		百**姓**		抢**购**		地**铁**		**耳**目		**知**青		黑**车**	
计**较**		璞**玉**		泰**斗**		宅**男**		钻**石**		发**威**		**打**动		
焦**土**		**劝**化		风**土**		人**权**		**时**尚		**糊**涂		**打**发		
焦**心**		丁**忧**		电**脑**		**减**肥		卫**星**		**打**点		打**手**		

Appendix F

NO.	COMPOUND	PINYIN	CLASS	STRUCT	CAT	HEAD	DESCRIPTION
1	手表	ShouBiao	ATT	N+N	N	right	hand+watch = watch
2	抄写	ChaoXie	CRD	V+V	V	both	to transcribe+to write= to transcribe
3	月亮	YueLiang	SUB	N+A	N	left	moon+bright = moon
4	穿插	ChuanCha	CRD	V+V	V	exo	to pierce through+to insert =to alternate
5	开心	KaiXin	SUB	V+N	V	exo	to open+heart=to be joyful
6	地区	DiQu	CRD	N+N	N	both	land+area=area
7	掉包	DiaoBao	SUB	V+N	V	exo	to drop+bag=exchange
8	发行	FaXing	CRD	V+V	V	both	to send out + to go= to publish
9	轨迹	GuiJi	CRD	N+N	N	both	rail+mark = a track
10	画笔	HuaBi	ATT	N+N	N	right	to draw+pen= a pen for drawing picture
11	火箭	HuoJian	ATT	N+N	N	right	fire+arrow = a rocket
12	饥饿	Ji'e	CRD	V+V	V/N	both	to be hungry + to be hungry = to be hungry; hunger
13	娇艳	JiaoYan	CRD	A+A	A	both	pretty+gorgeous=beautiful
14	结盟	JieMeng	SUB	V+N	V	right	to tie+oath = to contract an alliance with sb
15	局面	JuMian	ATT	N+N	N	left	situation+aspect = situation
16	祸水	HuoShui	ATT	N+N	N	exo	disaster+water = a person who is considered as a trouble magnet
17	计较	JiJiao	CRD	V+V	V	exo	to count+to compare = to argue sth with sb
18	焦土	JiaoTu	ATT	A+N	N	exo	scorched + soil = ravages of war
19	焦心	JiaoXin	ATT	A+N	V/N	exo	scorched +heart = to be anxious; anxiety
20	崇拜	ChongBai	CRD	V+V	V	both	to worship + to worship = to worship
21	创建	ChuangJian	CRD	V+V	V	both	to star to do + to establish = to found
22	发威	FaWei	SUB	V+N	V	exo	to send+strength = to show one's courage and power
23	糊涂	HuTu	CRD	N+V	A	exo	paste + to coat = confused

NO.	COMPOUND	PINYIN	CLASS	STRUCT	CAT	HEAD	DESCRIPTION
24	打动	DaDong	CRD	V+V	V	both	to hit + to move = to touch sb emotionally
25	打发	DaFa	CRD	V+V	V	both	to hit + to launch = to send out
26	打手	DaShou	SUB	V+N	N	exo	to hit+hand = hired thugs
27	恶棍	E'Gun	ATT	A+N	N	exo	evil +stick = ruffian
28	打针	DaZhen	SUB	V+N	V	left	to hit+needle = to take an injection
29	祸害	HuoHai	CRD	N+V	V/N	both	disaster+to impair = to bring disaster to; scourge
30	交接	JiaoJie	CRD	V+V	V	exo	to hand over + to take over = to adjoin each other
31	剿灭	JiaoMie	CRD	V+V	V	both	to suppress + to destroy = to exterminate
32	筋骨	JinGu	CRD	N+N	N	exo	muscles +bones = physique
33	赖皮	LaiPi	SUB	V+N	N/V	exo	to bilk+skin = shamelessness, to be unreasonable
34	颠沛	DianPei	CRD	V+V	V	both	to bump +copious= to suffer setback
35	贵胄	GuiZhou	CRD	N+N	N	right	of an honored rank or position + helmet = the noble
36	拘挛	JuLuan	CRD	V+V	V	both	to restrain + to contract = to describe the articles which sounds awkward
37	贫化	PinHua	SUB	A+V	N	left	deficient+change =depletion
38	结症	JieZheng	SUB	N+N	N	right	knot+illness =disease
39	筋节	JinJie	CRD	N+N	N	exo	muscles+joints=vital links in a speech or essay
40	自虐	ZiNue	SUB	N+V	V	left	oneself+to be cruel= autosadism
41	涵括	HanKuo	CRD	V+V	V	both	to contain +to include =to draw together
42	抵掌	ZhiZhang	SUB	V+N	V	left	to clap +palm =to clap (indicating happy)
43	璞玉	PuYu	ATT	N+N	N	right	uncut jade+jade= simplicity
44	劝化	QuanHua	CRD	V+V	V	both	to persuade +to convert = to urge sb to do good
45	丁忧	DingYou	SUB	N+V	N	exo	man+to worry about = of experiencing death of parent
46	顶角	DingJiao	ATT	N+N	N	right	top +corner=vertex angle
47	定弦	DingXuan	SUB	V+N	V	left	to decide+string= to make a decision

NO.	COMPOUND	PINYIN	CLASS	STRUCT	CAT	HEAD	DESCRIPTION
48	东佃	DongDian	CRD	N+V	N	both	east+to farm=landlord and peasant
49	逗引	DouYin	CRD	V+V	V	both	to play with +to lure = to tease
50	返青	FanQing	SUB	V+N	N	exo	to return +blueness=striking root
51	放恣	FangZi	CRD	V+V	V	both	to set free +to throw off restraint = to do as one pleases
52	飞蓬	FeiPeng	SUB	V+N	N	exo	to fly+cover =bitter fleabane
53	赅博	GaiBo	ATT	A+A	A	right	comprehensive+broadly knowledgeable= erudite
54	江湖	JiangHu	CRD	N+N	N	exo	river+lake =itinerant entertainers,quacks,vagabond
55	马弁	MaBian	CRD	N+N	N	exo	horse+cap=batmen
56	捕快	BuKuai	SUB	V+A	N	exo	to catch+quick=constable for catching criminals
57	揣摩	ChuaiMo	CRD	V+V	V	exo	to rub+to touch = to try to fathom
58	丢手	DiuShou	SUB	V+N	V	exo	to throw+hand =to give up
59	心腹	XinFu	CRD	N+N	N	exo	heart+belly=trusted subordinate,henchman
60	手足	ShouZu	CRD	N+N	N	exo	hand+foot=brothers,very intimate friends
61	东西	DongXi	CRD	N+N	N	exo	east+west = thing
62	润格	RunGe	SUB	V+N	N	exo	to embellish + poetry =reward
63	江山	JiangShan	CRD	N+N	N	exo	river+mountain = country,the state power
64	东床	DongChuang	SUB	N+N	N	exo	east+bed=son in law
65	耳目	Er'Mu	CRD	N+N	N	exo	ears+eyes= agent, spy
66	风水	FengShui	CRD	N+N	N	exo	wind+water=a superstitious practice that tells fortune by looking at the direction
67	手脚	ShouJiao	CRD	N+N	N	exo	hand+feet=behavior(espeically operating secretly and often illegally
68	桃李	TaoLi	CRD	N+N	N	exo	peach+plum=one's disciples or pupils
69	水火	ShuiHuo	CRD	N+N	N	exo	water+fire=two things diametrically opposed to each other; catastrophe
70	风霜	FengShuang	CRD	N+N	N	exo	wind+frost=hardships of a journey
71	风头	FengTou	CRD	N+N	N	exo	wind+head=of liking to show oneself off

NO.	COMPOUND	PINYIN	CLASS	STRUCT	CAT	HEAD	DESCRIPTION
72	推敲	TuiQiao	CRD	V+V	V	exo	to push+to knock=to deliberate(especially about the ways of expression)
73	打点	DaDian	SUB	V+N	V	exo	to hit + dot = to get ready; give sb. a present
74	饭碗	FanWan	CRD	N+N	N	exo	food+bowl=occupation
75	风月	FengYue	CRD	N+N	N	exo	wind+moon=romance; amatory matter
76	火海	HuoHai	ATT	N+N	N	exo	fire+sea= impasse
77	千金	QianJin	ATT	N+N	N	exo	thousand+gold=daughter
78	百姓	BaiXing	ATT	N+N	N	exo	hundred+surname=people
79	泰斗	TaiDou	SUB	N+N	N	exo	Mountain Tai +the Dipper=the leading authority
80	风土	FengTu	CRD	N+N	N	exo	wind+soil=custom
81	电脑	DianNao	SUB	N+N	N	exo	eletricity+brain=computer
82	房型	FangXing	SUB	N+N	N	right	house+model = layout of a house
83	忽悠	HuYou	CRD	V+V	V	exo	to ignore+to swing = to coax
84	宅女	ZhaiNv	SUB	N+N	N	right	house+girl=the girl who like staying at home whole day
85	充电	ChongDian	SUB	V+N	V	exo	to charge+eletricity = to train; to study further
86	来电	LaiDian	SUB	V+N	V	exo	to come+eletricity= to commove
87	搭售	DaShou	SUB	V+V	V	left	to tie-in to sale = sale method
88	评聘	PinPing	CRD	V+V	V	both	to comment+to employ=to sift and employ
89	并购	BinGou	CRD	V+V	V	both	to merge+to buy= to merge by buying it
90	知青	ZhiQing	ATT	N+N	N	right	knowledge+youth=young student
91	炒作	ChaoZuo	CRD	V+V	V	exo	to stir-fry+to make= to sensationalize
92	增值	ZengZhi	SUB	V+N	V	left	to increase+value=to make sth more valuable
93	全陪	QuanPei	ATT	N+V	A	right	entire+to accompany=national guide
94	建构	GouJian	CRD	V+N	V	both	to build+to form=to construct
95	瘦身	ShouShen	SUB	V+N	V	left	thin+body=to lose weight

NO.	COMPOUND	PINYIN	CLASS	STRUCT	CAT	HEAD	DESCRIPTION
96	主打	ZhuDa	ATT	N+V	A	right	main+to hit=majoy detrusion
97	生猛	ShengMeng	CRD	A+A	A	both	living + vigorous =lively
98	上佳	ShangJia	CRD	A+A	A	both	top+good=nice
99	当红	DangHong	ATT	N+N	N	right	current + red = popular
100	高发	GaoFa	ATT	A+V	A	exo	high/above the average + deliver = frequent
101	靓丽	LiangLi	CRD	A+A	A	both	pretty+beautiful=beautiful and lovely
102	风雨	FengYu	CRD	N+N	N	exo	wind + rain = difficulities and hardship
103	放电	FangDian	SUB	V+N	V	exo	to send + electricity = to eye up/to make oneself attractive to sb
104	拍卖	PaiMai	CRD	V+V	V	both	to pat + to sell = to auction
105	离休	LiXiu	CRD	V+V	V	both	to leave + to rest = to retire
106	组建	ZuJian	CRD	V+V	V	both	to organize + to build = to establish
107	洽谈	QiaTian	CRD	V+V	V	both	to consult with +to discuss=to talk over with
108	抢购	QiangGou	SUB	V+V	V	left	to grab+to buy=to rush to purchase sth
109	宅男	ZhaiNan	ATT	N+N	N	right	house+boy=the boy who prefer to staying at home
110	人权	RenQuan	ATT	N+N	N	right	man + right = human right
111	减肥	JianFei	SUB	V+N	V	left	to reduce + fat = to lose weight
112	超市	ChaoShi	ATT	V+N	N	right	to exceed +market = supermarket
113	外企	WaiQi	ATT	A+N	N	right	outside+company=foreign company
114	走穴	ZouXue	SUB	V+N	V	exo	to walk+cave=actor or doctor perform for extra income
115	提速	TiSu	SUB	V+N	V	left	to lift + speed = to accelerate
116	休闲	XiuXian	CRD	V+V	V	both	to rest + to be free = to relax
117	人气	RenQi	ATT	N+N	N	right	man + air = popularity
118	裸奔	LuoBen	ATT	V+V	V	right	to bare+to run=to streak
119	上网	ShangWang	SUB	V+N	V	exo	to up+net= to surf internet

NO.	COMPOUND	PINYIN	CLASS	STRUCT	CAT	HEAD	DESCRIPTION
120	网络	WangLuo	CRD	N+N	N	both	net+a net-like structure=network
121	作秀	ZuoXiu	SUB	V+N	V	exo	to do+ show=to show
122	回扣	HuiKou	CRD	V+V	N	exo	to return+to deduct = a sales commission
123	速配	SuPei	ATT	N+V	V	right	speed+to match= to do matchmaking immediately
124	饭局	FanJu	ATT	N+N	N	right	meal+function=dinner arranged for establish contact with each other
125	客串	KeChuan	SUB	N+V	V	exo	guest+to connect = to be a guest performer in a movie
126	网虫	WangChong	SUB	N+N	N	exo	net+insect = web enthusiast
127	搞定	Gaoding	SUB	V+V	V	left	to carry on+to set=to sort out
128	摆平	Baiping	SUB	V+V	V	left	to put+ to be at the same level= to sort sth/sb out
129	手机	ShouJi	ATT	N+N	N	right	hand + manchine = cellphone
130	电话	DianHua	ATT	N+N	N	exo	electricity+speeches=telephone
131	动画	DongHua	ATT	V+N	N	right	to move+picture=animation
132	电影	DianYing	ATT	N+N	N	right	electricity+shadow=movie
133	飞机	FeiJi	ATT	V+N	N	right	to fly+machine=airplane
134	软件	RuanJian	ATT	A+N	N	exo	soft+document=software
135	硬件	YingJian	ATT	A+N	N	exo	hard+document=hardware
136	汽车	QiChe	ATT	N+N	N	right	vapour+vehicle=automobile
137	火车	HuoChe	ATT	N+N	N	right	fire+vehicle=train
138	地铁	DiTie	ATT	N+N	N	exo	earth+iron=subway
139	钻石	ZuanShi	ATT	V+N	N	right	to drill+stone=diamond
140	时尚	ShiShang	ATT	N+N	N	right	time+trend=fashion
141	卫星	WeiXing	ATT	V+N	N	right	to defend + star =statellite
142	黑客	HeiKe	ATT	A+N	N	right	black+guest=hacker
143	跳槽	TiaoCao	SUB	V+N	V	exo	to jump+trough = to move from one firm(or job) to another

NO.	COMPOUND	PINYIN	CLASS	STRUCT	CAT	HEAD	DESCRIPTION
144	粉丝	FenSi	ATT	N+N	N	exo	powder +thin thread=fans
145	房奴	FangNu	SUB	N+N	N	right	house+slave =person who need to pay a loan for a house
146	车奴	CheNu	SUB	N+N	N	right	vehicle+slave=person who need to pay a loan for a car
147	投资	TouZi	SUB	V+N	V	left	to put + money = to invest
148	卖场	MaiChang	ATT	V+N	N	right	to sell + place = big marketplace for selling commodities
149	拒载	JuZai	SUB	V+V	V	left	to refuse +to carry = (of a taxi driver) refuse to take a passenger
150	黑车	HeiChe	ATT	A + N	N	right	black/illegal + vehicle = unlicensed car
151	互动	HuDong	ATT	Adv+V	V	exo	mutually + move = to interact
152	大腕	DaWan	ATT	A+N	N	exo	big+wrist=big shot
153	花心	HuaXin	ATT	N+N	N	exo	flower+heart =unfaithfulness
154	平台	PingTai	ATT	A+N	N	right	flat+stage=terrace
155	打假	DaJia	SUB	V+N	V	left	to hit+fake=to be against fake products
156	拆迁	ChaiQian	CRD	V+V	V	both	to take apart+to move=to resettle
157	款爷	KuanYe	ATT	N+N	N	right	money+boss=the rich
158	氧吧	YangBa	ATT	N+Inter.	N	exo	oxygen +ba=oxygen bar;commercial bar with oxygen therapy
159	网吧	WangBa	ATT	N+Inter.	N	exo	net+ba=internet bar
160	菜鸟	CaiNiao	ATT	N+N	N	exo	vegetable+bird=rookie
161	风行	FengXing	SUB	N+V	V	exo	wind+to behaviour=fashionable
162	蜗居	WoJu	ATT	N+V	N	right	snail+residence=a house small as a nutshell's place
163	失范	ShiFan	SUB	V+N	A	exo	lose/deviate from the norm + model = irregular
164	风流	FengLiu	CRD	N+V	N	exo	wind + to flow = of be outstanding; of be unfaithful
165	二奶	ErNai	ATT	N+N	N	exo	the second+milk=mistress

Appendix G

WORD LIST FOR TEST - TASK THREE

Compound	Compound	Compound
放电 exo	手足 exo	定弦 left
氧吧 exo	东西 exo	贵胄 right
菜鸟 exo	泰斗 exo	赅博 right
拆迁 both	江湖 exo	璞玉 right
房奴 right	心腹 exo	恶棍 exo
款爷 right	手脚 exo	自虐 left
时尚 right	百姓 exo	赖皮 exo
跳槽 exo	水火 exo	崇拜 both
黑车 right	千金 exo	祸水 exo
软件 exo	饭碗 exo	开心 exo
电话 exo	桃李 exo	娇艳 both
手机 right	推敲 exo	结盟 right
作秀 exo	风月 exo	
瘦身 left	揣摩 exo	
当红 right	耳目 exo	
走穴 exo	捕快 exo	
上网 exo	丢手 exo	
炒作 exo	马弁 exo	
靓丽 both		
失范 exo		

Appendix H

.

Department of English Studies
Language, literature and Linguistics
College of ShaanXi Costume and Art
Southern Universities District
XianYang, ShaanXi Province
China

Date: 28th October 2010

To Whom It May Concern:

Dear Sir or Madam

This letter is to confirm that we, *College of ShaanXi Costume and Art*, accept that Man Xu from University of KwaZulu Natal conduct her research in our institute. We notice that her research is not involved any of the following:

- ❖ Access to confidential information without prior consent of participants
- ❖ Participants being required to commit an act which might diminish self-respect or cause them to experience shame, embarrassment, or regret
- ❖ Participants being exposed to questions which may be experienced as stressful or upsetting, or to procedures which may have unpleasant or harmful side effects
- ❖ The use of stimuli, tasks or procedures which may be experienced as stressful, noxious, or unpleasant
- ❖ Any form of deception

Please do not hesitate to contact us if you have any question.

Yours truly,

Header of Department of English Studies

韩萍

Appendix I

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

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Westville Campus
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ximbap@ukzn.ac.za

10 October 2011

Ms M Xu (206514266)
School of Language, Literature and Linguisitcs

Dear Ms Xu

PROTOCOL REFERENCE NUMBER: HSS/0991/011M
PROJECT TITLE: *The opaqueness of Chinese compounds: In search of conceptual motivations underlying traditional exocentric compounds and contemporary neologisms in Chinese.*

In response to your application dated 4 October 2011, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL.**

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.
PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Professor Steven Collings (Chair)
Humanities & Social Science Research Ethics Committee

cc Supervisor – Professor Heike Tappe
cc Mrs. S van der Westhuizen

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