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THE ACQUISITION OF
METAPHORICAL EXPRESSIONS, IDIOMS, AND PROVERBS
BY CHINESE LEARNERS OF ENGLISH: A CONCEPTUAL METAPHOR
AND IMAGE SCHEMA BASED APPROACH

By
LI Fuyin

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ABSTRACT

In this dissertation, the author argues for an “innovative” approach to the systematic learning of metaphorical expressions, idioms and proverbs, which is conceptual metaphor and image schema based (CM-IS-based). This approach is based on conceptual metaphor theory (Lakoff & Johnson 1980; Lakoff 1993), image schema theory (Johnson 1987), and on the empirical research of Gibbs (1992) and Gibbs et al (1990; 1995; 1997). Drawing on the above research, a hierarchical framework is established, which originates from embodied experiences, and surfaces in linguistic expressions, which include metaphorical expressions, idioms, and proverbs. The hierarchical framework consists of four levels: *embodied experiences* → *image schemas* → *conceptual metaphors* → *linguistic expressions* (including metaphorical expressions, idioms and proverbs).

Because conceptual metaphors and image schemas have some specific cognitive features, the author claims that both conceptual metaphors and image schemas can facilitate the learning of those linguistic expressions organized by them. Supports for the claim have been identified from the following three sources of evidence: the Dual Coding Theory, the Psychological Reality of Image Schema, and the Psychological Reality of Hierarchical Structure.

The effectiveness of the CM-IS-based approach to the learning of metaphorical expressions, idioms and proverbs is experimentally explored and examined by means of five studies with the participation of four hundred plus Chinese undergraduate students. Each study consists of a pre-test, a post-test,
questionnaires, and a one-week delayed test. The design and the development of the learning materials were informed by cognitive linguistics theories and the subjects' characteristics, including their language proficiency.

In the light of the experimental results, the author discusses the implications of the CM-IS-based approach for ESL/EFL learners' vocabulary learning in general and the learning of metaphorical expressions, idioms and proverbs in particular. The author also explores the potential applications of the CM-IS-based to reading comprehension and literary analysis.

The present research represents a bold attempt to bridge a huge gap between the theoretical study of conceptual metaphors and image schemas in cognitive linguistics on the one hand and the practical applications of such theories in applied linguistics on the other.
摘要

实验结论证实：“继念隐喻与形像图式法”是一种系统有效地学习英语中的隐喻表达、成语和谚语的方法。这种方法的具体运用可以与阅读理解相结合，并且可以用于文学作品分析。作者充分探讨了该方法在教学中的具体应用，提出了课堂教学应用实例。

本研究属于“应用认知语言学范畴”，旨在运用认知语言学的理论解决中国英语学习者的实际问题。
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CHAPTER 1

INTRODUCTION

1.1 Introduction

This short chapter offers a general introduction to the theoretical framework, the methodology, the conclusions and significance of the whole research, sketching a brief outline of the thesis. It starts with a discussion suggesting that vocabulary causes the biggest problem for Chinese EFL learners (Section 1.2). Section 1.3 offers a brief introduction to the theoretical framework, and Section 1.4 introduces the methodology. Section 1.5 is the conclusion and significance of study. Finally Section 1.6 outlines the organizational structure of the thesis.

1.2 The Biggest Problem for Chinese EFL Learners

It is truism to say that vocabulary is central to language acquisition or learning. Wilkins (1972: 111) observes “without grammar very little can be conveyed; without vocabulary nothing can be conveyed.” Similarly, McCarthy (1990) highlights the great importance of vocabulary in second-language (L2) learning:
"No matter how well the student learns grammar, no matter how successfully the sounds of L2 are mastered, without words to express a wider range of meanings, communication in an L2 just cannot happen in any meaningful way." (p. viii)

According to Vermeer (1992: 147), knowing words is the key to understanding and being understood. Gass and Selinker (1994: 270), in fact, rank vocabulary as the most important component for L2 learners.

In China, the English language teaching profession also fully recognizes the great importance of vocabulary learning alongside the teaching and learning of grammar. Two recent surveys of tertiary students' English learning conducted by the present researcher (Li 2001b; 2001c), one surveying teachers' views and the other the students' views, have revealed that the biggest learning problem experienced by the tertiary Chinese EFL subjects was vocabulary, which was manifested in "limited vocabulary size", "general lack of idiomatic expressions", and "unfamiliarity with contemporary word usage". Another recent corpus-based study conducted by Gui (2000), which compared a Chinese English-learners' Corpus (CELC) with two native English speakers' corpora (the Brown Corpus and the Lancaster-Oslo/Bergen [LOB] Corpus) has reported that the "vocabulary types" found in CELC is 14598, as opposed to 50406 and 39868 found in the Brown and the LOB corpus respectively. Besides restricted vocabulary types, Gui's (2000) study has further revealed that vocabulary suffered from a higher rate of error than grammar among advanced Chinese EFL learners.
Despite the gravity of problems related to vocabulary learning, there have
been relatively few methodological proposals on how best to systematically
approach the teaching and learning of the general vocabulary as well as the more
advanced vocabulary usage such as metaphorical expressions, idioms and
proverbs. Fillmore (1979) argued that mature fluent discourse requires a blend of
formulaic and conventionalized language.

Motivated by the central importance of vocabulary in foreign language (FL),
the “most erroneous” nature of FL vocabulary, and by a strong desire to identify
some systematic, effective and efficient way(s) to help tertiary FL learners to learn
the more advanced vocabulary usage, the present researcher embarked on an
extensive review of the literature, and was eventually led to believe that one
promising line to pursue is the “conceptual metaphor and image schema based
approach” to advanced vocabulary development and learning. Further elaboration
on this approach is given in Section 1.3 below.

1.3 The Theoretical Framework

The proposed “conceptual metaphor and imaged schema based approach” is
based on the following three theories: (1) “A conceptual metaphor theory”; (2)
“the theory of image schemas” and (3) “the invariance hypothesis”. I will briefly
describe and discuss each of them below.
(1) A Theory of Conceptual Metaphor

The idea of "conceptual metaphor" was originated in Lakoff and Johnson (1980) and fully described in the "the contemporary theory of metaphor" (Lakoff 1993). The main idea is that conceptual metaphor is "a cross domain mapping in the conceptual system". In this theory, metaphors are not mere poetical or rhetorical embellishments, they are part of everyday speech that affects the ways we perceive, think, and act --- they are pervasive in everyday language. Metaphor is a figure of the mind, a way of thinking, and the mapping is a tool to comprehend new things. Most importantly they are conceptual and part of long-term memory in people's conceptual system.

The essential point, which could be utilized in vocabulary expansion, is that through "cross-domain mapping", a series of linguistic metaphors are produced. Take, for example, the conceptual metaphor "TIME IS MONEY". The mapping is illustrated in Figure 1.1.

![Diagram of Conceptual Metaphor: TIME IS MONEY](image.png)

*Figure 1.1 TIME IS MONEY*
We find the following linguistic metaphors:

How do you spend your time?

That flat tire cost me an hour.

I've invested a lot of time in her.

Is that worth your while? (Lakoff and Johnson 1980:7-8)

The group of words including waste, spend, cost, invest, spare, worth, borrow, profit etc. are now associated with the conceptual metaphor TIME IS MONEY. These words are used in their concrete meanings in the source domain of MONEY; after the systematic mapping, they are now used in the target domain of TIME in the form of linguistic metaphors. A conceptual metaphor can be seen as a bridge, which links the lexical senses in two conceptual domains.

(2) The Image Schema Theory

Briefly, image schemas are recurring basic abstract conceptual structures that occur in our conceptualizations of the world. Image schemas appear to play a fundamental role in various cognitive semantic processes (Johnson 1987; Lakoff 1987, 1990; 1993; Lakoff and Turner 1989; Cienki 1997; Clausner 1999; etc.). The important feature for image schemas is that they are embodied, or bodily based (Johnson 1987), that is, they are rooted in bodily experience and are acquired through our physical experience in the world, such as perceiving the environment, moving our bodies, exerting and experiencing force, etc. During these processes, we gradually form basic conceptual structures, which we then use
to organize our thoughts across a range of more abstract domains. Image schemas structure our experiences and give rise to the structure of our knowledge. Furthermore, because image schemas are acquired in the concrete spatial world, most of them can be represented in some simple, highly abstract diagrams as an analog structure of image schemas (Johnson 1987; Dewell 1994; Brugman 1981; etc.). These diagrams have a potential value in facilitating memory.

(3) The Invariance Hypothesis

This is a theory that links “conceptual metaphor theory” to “image schema theory”. According to Lakoff (1993), a conceptual metaphor is “a cross-domain mapping”; the mapping is systematic and observes the invariance principle: “metaphorical mapping preserves the cognitive topology (that is, the image-schema structure) of the source domain, in a way consistent with the inherent structure of the target domain (Lakoff 1993:215)”.

In my brief discussion of the conceptual metaphor theory earlier, I presented conceptual metaphors as a bridge linking two domains, source domain and target domain. In the discussion of image schemas and the invariance hypothesis, it is observed that it is image schemas that govern or control the cross-domain mapping. Therefore two domains are linked by conceptual metaphor and share the same image schema after mapping. For instance, conceptual metaphor “THEORIES ARE BUILDINGS” links THEORIES to BUILDINGS. A real building has a “foundation”, a theory also has a “foundation”, the foundation of a theory. If we consider conceptual metaphors as a bridge linking two domains, then
image schemas could be seen as the "steel structure" inside the "cement bridge" of the conceptual metaphor. This "steel structure" has many features which can facilitate memory, such as the one already mentioned that it can be represented in diagrams.

Based on the above three theories, and on the results of empirical research by Gibbs' et al (1990; 1992; 1997) that conceptual metaphor can (partly) motivate the understanding of idioms and proverbs. We can establish a hierarchical structure (see Section 3.6) with Embodied Experiences (which are abstracted into image schemas) lying at the deepest level of cognition and English linguistic expressions on the surface level, that is: *Embodied Experiences — Image Schemas — Conceptual Metaphors — Linguistic Expressions*. The linguistic expressions here include metaphorical expressions, idioms, and proverbs.

In this hierarchical structure, linguistic expressions are linked to conceptual metaphors and image schemas. As conceptual metaphors exist in people's conceptual system and image schemas are rooted in people's bodily experiences, it can be hypothesized that conceptual metaphors and image schemas may facilitate the learning of those linguistic expressions. I have also identified three sources of evidence from neighboring disciplines to support this hypothesis. They are: (a) "The Dual Coding Theory" (DCT); (b) "The Psychological Reality of Image Schemas"; and (c) "The Psychological Reality of Hierarchical Structure". They are briefly introduced below.
(a) The Dual Coding Theory

The major claim (e.g. Paivio 1969, 1983) is that concrete words or expressions (such as the word ‘monkey’) are easier to remember than abstract ones (such as the word ‘logical’). This effect, which is called the ‘concreteness effect’, leads to the proposal of DCT, which suggests that concrete words can invoke images. The latter can thus be dually coded in the mind with the words and promote or enhance memory.

We have already observed that conceptual metaphors can relate the abstract to the concrete domain. According to DCT, the senses in the concrete domain can easily evoke imagery, and are therefore easier to memorize. These concrete senses should facilitate the learning of the extended metaphorical sense if learners are brought to be aware of the linking framework — the “conceptual metaphor”. For example, the sense of “attack” in “The enemy attacked last night from a truck.” could facilitate the learning of the sense of “attack” in the sentence “He attacked every weak point in my argument” by referring the learner to the concrete sense of ‘attack’, that is, the through the conceptual metaphor “ARGUMENT IS WAR”. The theory and the pedagogical implications of DCT will be further elaborated in Section 4.2.

(b) The Psychological Reality of Image Schemas

A large body of research (e.g. Johnson 1987; Lakoff 1990; Lakoff and Turner 1989; Turner 1990; Gibbs & Colston 1995; Mandler 1988, 1992) can be
interpreted as supporting the claim that image schemas are indeed psychologically real and function in many aspects of how people process linguistic and non-linguistic information. A fuller discussion will be presented in Section 4.3.

(c) The Psychological Reality of Hierarchical Structures

Evidence from behavioral, ontogenetic and psychological domains support the idea that hierarchical structures also have psychological reality, and therefore enjoy many advantages over non-hierarchically structured representations in learning and memory. This will be fully elaborated in Section 4.4.

Even though the above three theories appear to support the hypothesis that conceptual metaphors and image schemas can facilitate the learning of linguistic expressions, there is a general lack of empirical support. To study the role of conceptual metaphors and image schemas in learning linguistic expressions, a series of 5 experiments will be designed and conducted. A brief discussion of them is found in Section 1.4 below.
1.4 Methodology

To explore whether conceptual metaphors and image schemas can or cannot facilitate the learning of metaphorical expressions, idioms and proverbs, a general null hypothesis was formulated as follows: *Image schemas and conceptual metaphors cannot facilitate the learning of metaphorical expressions, idioms, and proverbs.* Under the general null hypothesis, 5 null sub-hypotheses were further formulated as follows:

Hypothesis 1 (H1):

*Conceptual metaphors cannot facilitate the learning of the metaphorical senses of the words in the target domain.*

Hypothesis 2 (H2):

*Conceptual metaphors introduced via Chinese do not enhance the learning of the metaphorical senses of the English words in the target domain better than conceptual metaphors introduced via English.*

Hypothesis 3 (H3):

*Image schemas cannot facilitate the learning of the metaphorical senses of the words in the target domain.*

Hypothesis 4 (H4):

*Conceptual metaphors and image schemas cannot facilitate the learning of English idioms.*
Hypothesis 5 (H5):

*Conceptual metaphors and image schemas cannot facilitate the learning of English proverbs.*

These hypotheses will be tested and rejected in Chapter 5 and the results will be reported in Chapter 6. Table 1.1 below is a summary of the five Hypotheses, their testing goals and the subjects involved.

*Table 1.1: Summary of goals and subjects for each Hypothesis*

<table>
<thead>
<tr>
<th></th>
<th>Goals</th>
<th>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>To study the role of English CM in learning metaphorical senses</td>
<td>Group 1: non-metaphor group, 33 sophomores, non-English major</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group 2: CM group, 33 sophomores, non-English major</td>
</tr>
<tr>
<td>H2</td>
<td>To study the role of Chinese CM in learning English metaphorical senses</td>
<td>Group 1: English CM group, 21 sophomores, non-English major</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group 2: Chinese CM group, 21 sophomores, non-English major</td>
</tr>
<tr>
<td>H3</td>
<td>To study the role of IS in learning metaphorical senses</td>
<td>Group 1: Non-IS group, 21 freshmen, English major</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group 2: IS group, 21 freshmen, English major</td>
</tr>
<tr>
<td>H4</td>
<td>To study the role of CM and IS in learning English idioms</td>
<td>75 English major sophomores</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group 1 (25): Semantic group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group 2 (25): CM group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group 3 (25): IS group</td>
</tr>
<tr>
<td>H5</td>
<td>To study the role of CM and IS in learning English proverbs</td>
<td>114 sophomores</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group 1 (38): Semantic group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group 2 (38): CM group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group 3 (38): IS group</td>
</tr>
</tbody>
</table>

( CM = Conceptual metaphor, IS = Image schema )
1.5 Conclusions and Significance of the Study

The first three Hypotheses have been completely rejected, and H4 and H5 have been partly rejected. The following is a summary of the conclusions.

Conclusions:

(A): Conceptual metaphors and image schemas CAN facilitate the learning of the metaphorical senses in the target domain.

(B): Conceptual metaphors introduced via Chinese CAN enhance the learning of the metaphorical senses of the English words in the target domain better than conceptual metaphors introduced via English.

(C): Conceptual metaphors CAN facilitate the learning of English idioms and proverbs.

(D): (Mental) Images can facilitate the learning of English idioms and proverbs.

The current study is an attempt to bridge the huge gap between the theoretical study of conceptual metaphors and image schemas in cognitive linguistics on the one hand and their applications in language teaching and learning on the other.
1.6 The Organization of the Dissertation

This dissertation contains eight Chapters. Chapter 1 is an introduction, and provides a general picture of the thesis. Chapter 2 is a comprehensive literature review of vocabulary acquisition in general, and covers book publications as well as articles from over 30 international journals from 1971 through early 2002. Chapter 3 discusses three cognitive linguistics theories briefly referred to in Section 1.3, and sets up a basic theoretical framework for the study, that is, the hierarchical structure (see Section 3.6). Chapter 4 discusses three supporting theories (referred to in Section 1.3) from neighboring disciplines (e.g. experimental psychology, memory, cognition, etc.) to support the idea that the hierarchical structure involving conceptual metaphors and image schemas can facilitate the learning of metaphorical expressions, idioms, and proverbs. Chapter 5 discusses 5 experimental studies, including the reason why a certain hypothesis is formulated as it is, how the material is selected and organized, and the whole experimental process. Chapter 6 reports the results. The general discussion and conclusions are found in Chapter 7. Chapter 8 provides some sample activities in the light of the conclusions.

Each chapter follows a similar pattern, starting with an introduction to the main contents of the whole Chapter, and ending with either a summary or a conclusion.
CHAPTER 2

LITERATURE REVIEW

OF THE ACQUISITION OF VOCABULARY,IDIOMS, AND PROVERBS

2.1 Introduction

This chapter contains an extensive review of the language teaching - learning and the memory and cognition literature from some 30 international journals over the past thirty years that are related to the learning and teaching of words, idioms and proverbs. Section 2.2 introduces and clarifies some basic concepts and terms used for further discussion. These terms include ‘vocabulary learning’, ‘context’, ‘learning and acquisition’. Section 2.3 delineates the basic trends of vocabulary teaching and learning in the past 30 years. To facilitate the review and classification of the huge literature, a framework was adapted from a more general framework (Ellis, 1994: 17-18) in exploring second language (L2) acquisition. This adapted framework involves four areas: (i) characteristics of learners’ vocabulary; (ii) the learning materials; (iii) learners’ internal mechanism; (iv) the vocabulary learning strategies. An explication of the adapted framework can be found in Sections 2.4. Literature will be reviewed in the above four areas (Sections 2.5 – 2.8). Section 2.9 pays special attention to the acquisition of idioms and proverbs using conceptual metaphors. Section 2.10 is a preview of what the “conceptual metaphor and image schema-based approach” can offer to the learning and development of vocabulary. Section 2.11 is conclusions of Chapter 2.
2.2 Some Basic Concepts Concerning Vocabulary Learning

2.2.1 What does ‘vocabulary learning’ imply?

To discuss vocabulary learning in a foreign language, one issue is unavoidable; that is, what does ‘vocabulary learning’ mean? What does it mean to say that a learner’s vocabulary size is, say, 5,000 or 10,000? To truly understand the process of lexical development in the acquisition of a foreign language, we need to introduce the term ‘lexical unit’, a term Cruse (1986) used to replace the notion of “word”. In fact, vocabulary acquisition may also include the learning of new senses for well-known words, or of combinations of well-known words, that is, meanings that are not predictable on the basis of the already known meanings. This is why the term ‘lexical unit’ is needed to describe lexical development. Cruse defines ‘lexical unit’ as follows:

*Lexical units are the smallest parts that satisfy the following two criteria:*

a. A lexical unit must be at least one semantic constituent.

b. A lexical unit must be at least one word. (Cruse 1986: 24)

The term ‘semantic constituent’, which appears in the above definition, is part of a whole (word, phrase, or sentence) that contributes in an independent way to the general meaning of that whole. This means the words, *he, disobeys, orders,* and the prefix *dis-* are all semantic constituents in the sentence ‘He *disobeys*
orders'. However, dis- is not a lexical unit according to criterion (b), and neither is the whole form 'disobeys' according to criterion (a). Therefore, lexical units may be words, but this is only the case with monosemic words. A lexical unit is "the union of a lexical form and a single sense" (Cruse 1986:77).

With the concept of a lexical unit, it can be said that foreign language vocabulary acquisition may include one or more of the following proposed by Bogaards (2001):

1. Learning an unknown form and a new meaning /sense.
2. Learning a new meaning for an already known form; that is, learning a subsequent lexical unit covered by a form.
3. Learning a new meaning for a combination of already known forms, such as compounds and idiomatic expressions like 'kick the bucket'.
4. Learning semantic relations between lexical units in term of synonyms, antonyms, etc.
5. Learning morphological relations between lexical units, e.g. learning that gracefulness is related to the lexical unit grace in the sense of charm.
6. Learning the correct uses of lexical units at the level of grammar.
7. Learning the usual collocations.
8. Learning the appropriate use at the levels of pragmatics and discourse.
Now returning to the questions raised at the beginning of this section, we may say that a learner having a vocabulary of 5,000 means that he or she knows 5,000 lexical units. In this dissertation, vocabulary learning will make reference to one or more of the above eight areas. It should be noted here that even though what we are really talking about is the learning of lexical units, we will still use traditional phrases such as 'learning or acquisition of words or vocabulary', in agreement with the majority of the existing literature.

2.2.2 Context

There are various studies in the literature that have shown that words are best learned in context (e.g. Nation and Coady 1988; Huckin and Coady 1993). Beheydt, for example, observes that:

*For vocabulary learning ... it is absurd to learn words out of context, as isolated words do not reveal the inherent polysemous versatility and the context-dependent variation that are fundamental characteristics of the word* (Beheydt 1987:13).

Although all the existing literature very much emphasizes the preference for vocabulary acquisition in context, there is a general tendency for people to confuse ‘context’ with ‘text’ in vocabulary learning, the latter being ‘a coherent stretch of speech, as well as stretches of writing’ (Matthews 1997:376). Is the
phrase “blow his top” the context of the word “blow” in the sentence “He always blows his top” or is the whole sentence the context of the word “blow”? Or should we look at the word “blow” in relation to a longer passage in order to provide a proper context for it?

To clarify the concept of “context” in vocabulary learning for the present research, first let us see how The Oxford Concise Dictionary of Linguistics defines context.

**Context:** Any relevant features of the setting in which a form appears or might appear. Suppose, e.g. that one person shouts to another ‘Let’s get out of here!’ Within the sentence uttered, get is in a ‘context’ formed by the surrounding words let’s—out of here! The surroundings in which it was uttered might, e.g. have been in a room full of noisy machinery: that is an aspect of the ‘context’ that explains why it was shouted. (Matthews 1997:72).

This definition, in fact, includes two kinds of context; one is the verbal context and the other, nonverbal context. The verbal context refers to the linguistic (including grammatical and semantic) environment of the target word, while the nonverbal context is the nonlinguistic, or the global environment (see Engelbart & Theuerkauf 1999). The classification is listed below.
For the purpose of this thesis, it is not necessary to define each sub-type of context. But in the above discussion we have made one thing clear: the phrase "blow his top" does provide a context for the word "blow", a verbal context, and so does the whole sentence "He always blows his top", a sentential context.

To relate the above discussion to the present research, we may say that to learn a metaphorical sense of a word used in a sentence that is organized by conceptual metaphor, is certainly to learn the target word in context. The metaphorical sentence provides the verbal context for the metaphorical word, while the conceptual metaphor provides nonverbal or social context of the target language.

Since learning vocabulary is for retention, a pertinent issue to be investigated is whether all contextual clues are equally effective in both learning and retention, or maybe some kind of contextual clues work more effectively than others. The
issue of the effectiveness of learning words in the sentential context versus learning words in the context of longer texts is worth investigating. As far as this thesis is concerned, however, I will not go into the details of the effectiveness of these varying contextual clues, though some of these will be addressed in later sections.

2.2.3 L2 vocabulary learning and acquisition

The distinction between second language learning and second language acquisition is made by Krashen (1982). He characterizes acquisition as a ‘natural’ process, where there is no ‘conscious focusing on linguistic forms’. This refers to picking up a second language through exposure. Second language learning, by contrast, is a conscious study of the target language. In most of the literature, however, ‘learning’ and ‘acquisition’ are used interchangeably. As this dissertation deals with Chinese learners of English as a foreign language, both vocabulary ‘learning’ and ‘acquisition’ will be used interchangeably.

2.2.4 Summary

In this section, I have briefly discussed some key concepts and terms relevant to the discussion of vocabulary acquisition, to prepare the ground for further discussion. First I described what foreign language vocabulary learning implies.
Second, I discussed 'context'. In the end, I discussed the terms 'learning' and 'acquisition'.

2.3 Vocabulary Acquisition Research in the Past Thirty Years

What has happened to vocabulary acquisition research in the past 30 years and what are the current trends? To answer this question, I have conducted a comprehensive review, which covers articles focusing on different aspects of lexical acquisition published by over 30 international journals. Table 2.1 lists articles appearing in 8 leading language journals, which are more or less directly focused on L2 language teaching and learning. The articles included are about lexical acquisition in the context of EFL or ESL which deal with theoretical topics concerning vocabulary; reports of quantitative and qualitative empirical research; other articles dealing with the teaching and learning of vocabulary; vocabulary memorizing mnemonics and strategies, etc. The other journals surveyed do not focus directly on language acquisition, but contain articles dealing with memory, cognition, etc. They are listed in the footnote* below.

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<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
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<td>---------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>

There are several striking phenomena to be noted in Table 2.1. Firstly, as a leading journal devoted mainly to L2 studies, "Studies in Second Language Acquisition" published a special issue on the second language lexicon in 1987 containing 7 articles. 12 years later, another special issue on the same topic by the same journal appeared in 1999 containing 8 articles. Wesche and Paribakht stated in the introduction to the 1999 issue that:

"Unlike the 1987 collection, which argued for recognition of the importance of the lexicon in a field dominantly concerned with the acquisition of syntax, the authors of the present collection assume the central importance of lexical acquisition" (Wesche and Paribakht 1999:175).
Even though both special issues are on lexicon, the nature of the two issues differs greatly. The 1987 collection was focused on the importance of the lexicon and the topics dealt with by the authors were diverse. It was published after a period of relative neglect of the lexicon in SLA. The 1999 collection, by contrast, dealt with core issues in L2 lexical acquisition from multiple perspectives; it was published after 12 years of ever increasing recognition of the importance of the lexicon from many researchers. Secondly, the number of research articles has increased exponentially. Take another leading journal *Applied Linguistics* as an example. “A new look at vocabulary in EFL” (McCarthy, 1984) was the first article on vocabulary research ever published by this journal. There were altogether only four vocabulary acquisition articles published in the 1980s (McCarthy 1984; Carter 1987; Li 1988; Kerim-Zade, et al. 1989). In the same journal, the number of vocabulary research articles tripled during the next ten years from 1990-1999. Thirdly, it is clearly indicated in Figure 2.3 that the state of ‘being ignored’ in vocabulary research started to change dramatically after mid 1980s. Book publications have also shown the same trend (e.g. Arnaud & Bejoint 1992; Coady & Huckin 1997; Haastrop & Viberg 1998; Harley 1995; Hatch & Brown 1995; Huckin & Coady 1993; Nation 1990; Schmitt & McCarthy 1997). Meara (1992) has documented the same trend showing that in the 1980s there was an exponential growth in lexically oriented L2 research.

It can be concluded from the brief discussion that in the past 30 years the central position of the lexicon has been gradually recognized. Researchers started to investigate vocabulary learning from a variety of perspectives.
In summary, in the past 30 years, vocabulary research has gone from gradually acquiring recognition of its central position in language learning to becoming a booming field of study from late 1980s. Since Section 2.3 serves as a general overview, we will not go into details about specific theories in this huge literature. A detailed literature review and discussion will be provided from Section 2.4 through Section 2.9.

2.4 A Framework For Reviewing EFL Vocabulary Learning

It is not easy to systematically review the huge vocabulary acquisition literature of the past 30 years, which come with a variety of perspectives and focus on different aspects of vocabulary acquisition. Ellis (1994:18), however, proposed a useful framework for exploring the vast field of second language acquisition, which is adopted in Table 2.2.
**Table 2.2: a framework for investigating L2 acquisition (Ellis 1994:18)**

<table>
<thead>
<tr>
<th>Focus on learning</th>
<th>Explanation</th>
<th>Focus on the learner</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Area 1</strong></td>
<td><strong>Area 2</strong></td>
<td><strong>Area 3</strong></td>
</tr>
<tr>
<td>Characteristics of learner language</td>
<td>Learner-external factors</td>
<td>Learner-internal mechanism</td>
</tr>
<tr>
<td>Errors</td>
<td>Social context</td>
<td>L1 transfer</td>
</tr>
<tr>
<td>Acquisition orders and developmental sequences</td>
<td>Input and interaction</td>
<td>Learning processes</td>
</tr>
<tr>
<td>Variability</td>
<td>Communication strategies</td>
<td>Knowledge of linguistic universals</td>
</tr>
<tr>
<td>Pragmatic features</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This framework has gained wide acceptance and has been found effective for describing second language acquisition. As L2 vocabulary acquisition is one important component of L2 language acquisition, this framework should, obviously, be generally applicable to describing L2 vocabulary acquisition. For the purpose of the present thesis, we are only interested in the vocabulary related literature, which form a sub-area in each of the four areas. They are Characteristics of learners' vocabulary (Area 1), vocabulary learning material (Area 2), vocabulary learning process (Area 3), and vocabulary learning strategies (Area 4). To incorporate these 4 sub-areas into Chinese EFL learning context, I propose the following modified framework to review literature. The four sub-areas I will review in Sections 2.5 – 2.8 are in bold letters in Table 2.3.
Table 2.3: a framework for investigating L2 vocabulary acquisition

<table>
<thead>
<tr>
<th>Focus on learning</th>
<th>Focus on learner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Explanation</td>
</tr>
<tr>
<td><strong>Area 1</strong></td>
<td><strong>Area 2</strong></td>
</tr>
<tr>
<td>Characteristics</td>
<td>Learner-external</td>
</tr>
<tr>
<td>of learner</td>
<td>factors</td>
</tr>
<tr>
<td>language</td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td>Vocabulary</td>
</tr>
<tr>
<td>Learners’</td>
<td>learning</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>material</td>
</tr>
<tr>
<td>(Section 2.5)</td>
<td>(Section 2.6)</td>
</tr>
</tbody>
</table>

2.5 Chinese EFL Learners’ Vocabulary

This section is concerned with the characteristics of Chinese EFL learners’ vocabulary. Three surveys have been reviewed which focused on three different perspectives. The first is on how their teachers see the students’ vocabulary. The second is on how the learners themselves see their vocabulary, and the third survey is a corpus-based study on the learners’ vocabulary characteristics. Table 2.4 provides a preview of these three surveys, which will be discussed in Section 2.5.1, Section 2.5.2, and Section 2.5.3 respectively.
Chinese EFL Learners’ Vocabulary

Table 2.4: Three surveys on Chinese EFL learners’ characteristics of vocabulary

<table>
<thead>
<tr>
<th>Surveys</th>
<th>References</th>
<th>Brief comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert view</td>
<td>e-mail survey of 40 EFL professors</td>
<td>Restricted repertoire</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of contemporary usage and idiomatic usage</td>
</tr>
<tr>
<td>Learner’s view</td>
<td>Survey of 50 sophomores of English major</td>
<td>Vocabulary is the biggest problem in writing</td>
</tr>
<tr>
<td>Corpus based survey</td>
<td>Chinese Learners’ English Corpus (Gui 2000)</td>
<td>High error rate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Restricted repertoire</td>
</tr>
</tbody>
</table>

2.5.1 An expert view on Chinese EFL learners’ vocabulary

This survey was part of the author’s graduate course project for English 5600 (Second Language Writing) completed in the Chinese University of Hong Kong. It helps to show the English language experts’ perceptions of their Chinese EFL students’ vocabulary.

In order to explore Chinese EFL learners’ problems with writing, an e-mail survey was conducted in March 2001. A survey message was sent to 50 experienced professors of English (containing both native and non-native speakers) teaching or having once taught in China. In order to get a higher rate of response, the survey was in the form of one simple question concerning English writing in general, and not directly focused on vocabulary. The question was: “What do you think is the most significant problem for Chinese university students...
of EFL learners in writing in English?" This simple question was used as people would most likely ignore a long comprehensive questionnaire and give no response at all.

Forty of them responded, including 7 native-speaker professors of English and 33 Chinese professors of English. The writing problems encountered by Chinese students can be classified as "surface" problems and "deep" problems. The former refers to language problems; the latter, to cultural problems, such as Chinese ways of thinking. As the former are relevant to the present study, they are summarized below. I have categorized the language problem into three broad categories: vocabulary, grammar/syntax, and rhetoric. The detailed items in each category and the respondents' frequency by Chinese professors of English are listed in Table 2.5.

As is obvious, vocabulary problems are ranked the highest in the Chinese professors' responses. Among the problems, the limited amount of vocabulary, wrong usage of certain lexical items, and shades of meaning were frequently mentioned. The idiomatic problem, emphasized by English native experts in their responses, was also noted and stressed by a Chinese professor of English: "They are poor in the use of idiomatic expressions that native speakers are familiar with".
Table 2.5: Chinese professors' views on students' problem areas

<table>
<thead>
<tr>
<th>Category</th>
<th>Specific items</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocabulary</td>
<td>General</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Idiomatic expressions and Phrasal lexicon</td>
<td>6</td>
</tr>
<tr>
<td>Grammar/syntax</td>
<td>General</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Articles</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Prepositions</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Conjunctions</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Adverbs</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Tense</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Subject-verb agreement</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Passive voice</td>
<td>1</td>
</tr>
<tr>
<td>Rhetoric</td>
<td>Sentence pattern</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Organization of writing</td>
<td>6</td>
</tr>
</tbody>
</table>

English native experts' view

Seven English native professors responded to my survey. Two were teaching in Mainland China at the time of this survey. One was in the US, two in Hong Kong, and two in New Zealand. What they shared is that they all had a background of teaching Chinese EFL students. The frequency counted is listed in Table 2.6.
Table 2.6: Native English professors' views on students' problem areas

<table>
<thead>
<tr>
<th>Category</th>
<th>Specific items</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocabulary</td>
<td>Idiomatic and Phrasal lexicon</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Contemporary usage</td>
<td>4</td>
</tr>
<tr>
<td>Grammar/syntax</td>
<td>General</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Articles</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Count vs. mass nouns</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Inverted word order</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Inflection</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Tense</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Subject-verb agreement</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Passive voice</td>
<td>1</td>
</tr>
<tr>
<td>Rhetoric</td>
<td>Sentence pattern</td>
<td>1</td>
</tr>
</tbody>
</table>

In total, again the vocabulary is the most problematic area. Under the category of vocabulary, 5 out of 7 native speakers (that is, 71.4% of the native respondents) considered idiomatic and phrasal expressions highest among the reported vocabulary problems. One native speaking professor commented:

_The whole of the native phrasal lexicon is a problem, since most Chinese learners are taught by non-native speakers and do not have access to much contemporary vernacular speech_ (quoted from his e-mail response, 2001).

Another native-speaking professor observed that in his class students used English words of 50 years ago as current usage. A third native-speaking teacher commented “Colloquial expressions often come out wrong on paper”. One general impression is that idiomatic and contemporary usage appears to be a problem
facing native Chinese teachers of English. Another cause for lack of contemporary lexicon may be the out-dated textbooks used in Mainland China. Yet another native speaker teacher stated:

    I've been noticing a lot of oddities in the use of set expressions, formulaic speech. These oddities occur in the China Daily, too. (I call them "oddities" because they aren't really errors, but either sound odd or are okay but overused).

In summary, according to the survey of both native and non-native English experts, Chinese EFL learners at university level have limited vocabulary, lack idiomatic expressions, and are not so familiar with contemporary usage.

2.5.2 Learners' own evaluation

The purpose of this survey was to see how Chinese learners of English evaluate their own vocabulary status, to see if there is a great discrepancy from their teachers' comments on them. The subjects were 50 English major sophomores from the English Department of the Chinese University of Hong Kong attending the course "English Writing" taught by Dr George Braine. Data was collected in September 2000, As one of the course assignments, the students were required to write a one-page long paper entitled "Analyzing my writing problems". Problems mentioned were categorized and analyzed by their
frequencies.

Vocabulary problems were the highest compare with other problems, such as, grammar problems, syntax and cultural problems. Among vocabulary problems, the limited amount of vocabulary, wrong usage of certain lexical items, and failure to correctly grasp meaning are most frequently mentioned. One student wrote:

*In my opinion, the weakness of my writing is the low level of vocabulary. I can't express myself in different ways that means I use same words (even the same word) many times to describe one thing.*

These students' views are largely in agreement with the professors' views. However, these conclusions lack data support. We now turn to a corpus study to find some evidence.

2.5.3 A corpus survey of Chinese EFL learners' vocabulary

The Chinese Learner English Corpus (CLEC) is a big project supported by China Social Science Foundation and is housed in the Guang Dong Foreign Language and Foreign Trade University. It is now available on the Internet.

There are two striking phenomena revealed by CLEC. Firstly, the errors in vocabulary amount to over 50% of the total errors. *The more advanced learners*
commit fewer errors in syntax, but comparatively more errors in vocabulary.

Vocabulary errors stand out as the highest among all error types. (For the specific analyses on vocabulary errors, see Gui 2000). Secondly, besides the problems of inappropriate use of words and other errors, Chinese learners also have a restricted repertoire. This observation is independently corroborated by the word types found in the CLEC (14598), as opposed to the Brown corpus (50406) and the LOB corpus (39868) (figures for native speakers) (Gui 2000). The details are presented in Table 2.7.

<table>
<thead>
<tr>
<th>Corpus</th>
<th>Type</th>
<th>Token</th>
<th>Type/token ratio</th>
<th>Log type/token ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown</td>
<td>50406</td>
<td>1014232</td>
<td>0.049699</td>
<td>0.782946</td>
</tr>
<tr>
<td>Lob</td>
<td>39868</td>
<td>1359411</td>
<td>0.029327</td>
<td>0.7501</td>
</tr>
<tr>
<td>Clec</td>
<td>14598</td>
<td>1029795</td>
<td>0.014176</td>
<td>0.692577</td>
</tr>
</tbody>
</table>

It may be observed that there is an urgent and desperate need to expand the lexicon and enrich the vocabulary power of the Chinese EFL learners.
2.5.4 Conclusion

The three surveys together show clearly that the *more advanced the Chinese EFL learners, the higher rate of vocabulary errors* relative to the grammatical ones; *Chinese EFL learners have a very limited vocabulary*; and in the eyes of both the native teachers and Chinese EFL teachers, *idiomatic errors and contemporary usage problems feature prominently*. Vocabulary is the most problematic area for the Chinese tertiary students.

2.6 Vocabulary Learning Material

2.6.1 Organization and presentation of learning materials

There are many ways to organize and present the lexical materials input for learning. Words can be presented, for example, in syntagmatic relation or paradigmatic relation with other words (using non-technical terms, in a horizontal relation or a vertical relation). This relation can be elaborated below:

\[
\begin{aligned}
tall \\
young
\end{aligned}
\]

The *old man* is sitting under the tree.

\[
\begin{aligned}
short
\end{aligned}
\]

Thus, the word *old* is in a syntagmatic relation with *the*, and *man*, etc, and in a paradigmatic relation with *young*, *short*, etc. To see the above two kinds of
relation in a different perspective, we can say that the target words can either be syntagmatically in a phrase, sentence or a piece of text, or be paradigmatically in different semantic relations. The five most frequently used ways of organizing and presenting target words in the existing literature are summarized in Table 2.8. In this dissertation I am most interested in some empirical research on the ways of presenting words. The literature did not show any of this kind of empirical research on the ways of organizing words by "conceptual metaphor", which I will discuss in section 2.6.3. Among the very little literature on empirical research, I found "clustering words by semantic features", which I will have a look in a separate section (2.6.2). Now I will briefly comment on the remaining three methods, including word pairs, sentence context and textual context below.

<table>
<thead>
<tr>
<th>Ways of organizing material</th>
<th>Selected References</th>
<th>Brief comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word pairs</td>
<td>Mondria (1994)</td>
<td>For beginners</td>
</tr>
<tr>
<td>Sentence context</td>
<td>Birch &amp; Garnsey (1995)</td>
<td>To focus on the target words in written sentences</td>
</tr>
<tr>
<td>Textual context</td>
<td>Mondria (1991) Etc.</td>
<td>Through different tasks (reading, guessing from context, etc)</td>
</tr>
</tbody>
</table>

Presenting words in **word pairs** with equivalents provided in the mother tongue is the easiest and the simplest way of learning words. It is suitable for the
beginners, since they have not yet acquired much lexical or syntactic knowledge.

Learning words through **textual context** is very common, but there are many uncontrollable variables in this method since various tasks may be involved. Therefore there is rarely any empirical research on the comparison between learning words in 'sentence context' and in 'textual context'. There are, however, some experiments (e.g. Birch 1995) investigating the effects of focus on memory for words in written sentences. The result suggests that focus on a certain word in a sentence enhances memory for its specific identity and for its phonological properties. As further research is required on the issue of how to organize written sentences, there is little pedagogical practice in this area.

### 2.6.2 Clustering words by semantic features

Clustering words by their semantic features such as synonyms or antonyms was proposed by Rudzka's (1981, 1985). Rudzka's studies can serve as typical examples using this method. In her books *The Words You Need* and *More Words You Need*, Rudzka first presents in each unit a short text, followed by a semantic field analysis of those target words appearing in the text. Table 2.9 is a semantic grid for components of words meaning 'being surprised' quoted from Rudzka (1981:65).
Table 2.9: a semantic grid for components of words meaning 'being surprised' taken from Rudzka (1981:65)

<table>
<thead>
<tr>
<th></th>
<th>Affect with wonder</th>
<th>Because unexpected</th>
<th>Because difficult to believe</th>
<th>So as to cause confusion</th>
<th>So as to leave one helpless to act or think</th>
</tr>
</thead>
<tbody>
<tr>
<td>surprise</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>astonish</td>
<td>+</td>
<td></td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>amaze</td>
<td>+</td>
<td></td>
<td></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>astound</td>
<td>+</td>
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<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>flabbergast</td>
<td>+</td>
<td></td>
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<td>+</td>
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</tbody>
</table>

It was long claimed, without empirical data, that this way of presenting target words is superior in retention to non-semantic related words. This method was not challenged until the 1990s when Tinkham (1993, 1997), and Warning (1997) tested the claim. Tinkham first tested the subjects' rates of learning semantically related and semantically unrelated new L2 words. The findings strongly suggest that students have more difficulty learning new words presented to them in semantic clusters than they do learning semantically unrelated words. To further confirm his result, Tinkham (1997) conducted another series of experiments 4 years later with different tasks. Again, the results indicate that semantic clustering impedes vocabulary learning while thematic clustering (such as, *beach, sunny, swim, ...*) can enhance new vocabulary learning. A close replication of Tinkham’s experiments was conducted by Warning (1997), using Japanese words. The negative effect of learning words in semantic sets was confirmed again.
2.6.3 Conceptual metaphor in expanding lexicon

Nattinger (1988) and McCarthy (1990) were among the few early researchers who included metaphor sets as ways of grouping words. The basic argument is that of conceptual metaphor proposed by Lakoff and Johnson (1980), which suggests that a group of linguistic metaphors can be organized under a conceptual metaphor. Unfortunately, the existing literature (including Dirven 1985; MacCarthy 1990; Nattinger 1998; Lazar 1996, etc) has suffered at least two disadvantages: (1) none of them provided empirical evidence that this organization of words can facilitate learning; (2) the positive role of conceptual metaphor is not investigated in a wider cognitive context, e.g. in the context of image schemas and embodied experiences. Details about image schemas and their relation to L2 vocabulary acquisition will be further reviewed and discussed later.

2.6.4 Summary

In Section 2.6, I first examined the types of relation between a lexical item and other elements from the perspective of syntagmatic and paradigmatic relations. Then I discussed and compared the effectiveness of some of the ways of presenting words. Semantic clustering has been empirically shown to have a negative effect, in contrast to thematic clustering. Focusing on words in written sentences can facilitate learning in some ways. The potential of associative links provided by conceptual metaphor has been noted, but there is a lack of empirical research on its possible positive effects.
2.7 Vocabulary Learning Process

2.7.1 Cognitive qualities of input and their influences on processing and retention

We now turn to Area 3 of the framework proposed in Section 2.4. Area 3 examines the internal mechanism of learners; it attempts to explain why a certain strategy is more effective than another from the perspectives of cognition, psychology, etc. Table 2.10 lists the cognitive factors and some hypotheses concerning internal mechanisms drawn from existing empirical research.

Vocabulary Learning Process

Table 2.10: Cognitive factor/explanation on learning and retention

<table>
<thead>
<tr>
<th>Cognitive factor/explanation on retention</th>
<th>Selected references</th>
<th>Brief comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Paivio, et al (1994)</td>
<td>Concrete words are easier to recall</td>
</tr>
<tr>
<td></td>
<td>Walker (1999)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Etc.</td>
<td></td>
</tr>
<tr>
<td>Exposure frequency effect</td>
<td>Rott (1999)</td>
<td>Two encounters during reading can significantly affect learner's vocabulary growth. 10 exposures are needed for full acquisition</td>
</tr>
<tr>
<td></td>
<td>Huckin &amp; Coady (1999)</td>
<td></td>
</tr>
<tr>
<td>Word frequency effect</td>
<td>Carr (1885)</td>
<td>High frequency words are easier to recall and take less time for identification</td>
</tr>
<tr>
<td></td>
<td>Morton (1969)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Becker (1979)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Monser (1989)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Macleod &amp; Kampe (1996)</td>
<td></td>
</tr>
<tr>
<td>Incidental/intentional learning</td>
<td>Huckin &amp; Coady (1999)</td>
<td>Incidental learning is through different tasks</td>
</tr>
<tr>
<td></td>
<td>Laufer &amp; Hulstijn (2001)</td>
<td></td>
</tr>
<tr>
<td>Level of Processing Hypothesis</td>
<td>Hamann (1996)</td>
<td>The deeper the material is processed, the better it is memorized</td>
</tr>
<tr>
<td></td>
<td>Richardson (1998)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thapar (1994)</td>
<td></td>
</tr>
<tr>
<td>Involvement Load Hypothesis</td>
<td>Hulstijn (2001)</td>
<td>Mainly task-induced involvement</td>
</tr>
<tr>
<td></td>
<td>Laufer &amp; Hulstijn (2001)</td>
<td></td>
</tr>
<tr>
<td>Metacognitive knowledge</td>
<td>Wenden (1998)</td>
<td>Selective attention Self-initiation (see section 2.6 for discussion)</td>
</tr>
<tr>
<td></td>
<td>Gu &amp;Johnson (1996)</td>
<td></td>
</tr>
</tbody>
</table>
The concreteness effect on ease of processing has been much discussed. It has been repeatedly pointed out that concrete words or expressions are easier to memorize and have a higher recall rate than abstract ones, as concrete words or expressions (such as ‘a fat boy’) can invoke mental imagery while abstract words (such as ‘philosophy’) can not. This effect has been incorporated in the Dual Coding Theory (referred to in 1.2; detailed discussion to be found in 4.2), the theory was first proposed by Paivio et al (1968) and developed by Paivio (1969, 1980, etc.) and others, and has attracted scholars’ continuous attention over the past forty years. This theory will be further discussed at length in Chapter 4.

The exposure frequency effect and the word frequency effect are two different concepts: the first with the encounter frequency of a new word, and the latter with the frequency of occurrence of a word in a language. Rott (1999) investigated the frequency of exposure on acquisition of second language vocabulary. The results indicated that only two encounters with unfamiliar words during reading significantly affected learners’ vocabulary growth. Two or four exposure frequencies resulted in fairly similar retention, but six exposures produced significantly more vocabulary knowledge. This was investigated in incidental vocabulary learning through reading. In fact there is no general agreement as to how many and what kinds of exposure are needed because there are so many variables. Saragi, Nation and Meister’s study (1978) suggested at least 10 exposures were needed for full acquisition. Nation’s (1990) survey concluded that between 5 and 16 exposures were needed for full acquisition.
For the word frequency effect, Cattell's empirical observation was regarded as one of the earliest studies of this kind. Cattell (1886) demonstrated that the frequency of occurrence of a word in a language affects even the most basic processing of that word (its speed of recognition). Since then, word frequency has been a persisting subject of study for researchers concerned with the identification or recognition of words (e.g. Morton 1969; Becker 1979; Monsel, et al, 1989). In general, these studies have shown that high-frequency words are identified faster than low-frequency words.

Incidental vocabulary learning is acquiring vocabulary through being exposed to different tasks without conscious focus on memory for words. In explicit learning, conscious learning of word itself is the main task. As there is a wide range of learning tasks involved in these two kinds of learning, it seems difficult to compare the effectiveness of incidental and explicit learning of vocabulary.

In the next two sections (2.7.2; 2.7.3), I will focus on two major theories listed in Table 2.10: the 'level of processing hypothesis' and the 'involvement load hypothesis', as these two hypotheses can provide a comprehensive explanation of why a certain method can lead to a higher level of retention.

2.7.2 Level of Processing Hypothesis

In the early 1970s, a breakthrough in the study of learning and memory came about with the seminal work of Craik and Lockhart (1972), from which, together
with other scholars’ hypotheses, grew the depth (or level) of processing hypothesis.

Craik and Lockhart did an experiment in which students were given a list of words, and for each word they asked one of the five questions below. The questions require different degrees of cognitive depth to process (Craik and Lockhart 1972:49). The first requires less whereas the fifth requires most.

1. Is there a word?
2. Is the word printed in capitals, or in lower-case letters?
3. Does it rhyme with...?
4. Is it a member of ...category?
5. Does it fit into the following sentence?

Craik and Lockhart argued that the possibility of new information being stored in long-term memory is not determined by the length of time that it is held in short-term memory but rather by the shallowness or depth with which it is initially processed. The deeper the decisions a task forces on a learner, the superior the retention and recall. With this theory, the effectiveness of most of the above discussed strategies can be explained. For instance, why words can be better learned in context: Stevick believes that “the reason vocabulary is easier to learn in context than in isolated word lists is that such meaningful contexts permit this more complex and deeper processing” (Stevick 1976:30). It also explains why keyword plus semantic processing (see 2.6.2) is superior to keyword only.
Craik and Lockhart further postulated several levels of processing depth. For example, processing the meaning of a new lexical item takes place at a rather deep level whereas processing the phonological form takes place at a rather shallow level. That is why the semantic processing of lexical items results in higher retention than phonological processing. In the subsequent years, the level of processing theory was challenged, refined and modified. Despite its popularity, two problems remain: (1) what exactly constitutes a level of processing, and (2) how do we know that one level is 'deeper' than another.

Craik and Tulving (1975) state that what is critical to retention is not simply the presence or absence of semantic encoding, but the richness with which the learning material is encoded. Researchers of knowledge representation, attention, memory have not yet provided a satisfactory theoretical explanation of learning and memory in terms of quality and quantity (duration and frequency) of information processing (Anderson 1995, Ch.6; Baddley 1997, Ch.7). Yet, they agree that processing new lexical information more elaborately (such as, paying more attention to the word's pronunciation, orthography, grammatical category, meaning, and semantic relations to other words) will lead to a higher level of retention than processing new lexical items less elaborately.

In an effort to propose a more comprehensive theory to explain vocabulary learning and memory, Hulstijn and Laufer (2001) have proposed the Involvement Load Hypothesis. To this we now turn.
2.7.3 Involvement Load Hypothesis

The basic argument of the Involvement Load Hypothesis proposed by Hulstijn and Laufer (2001) is that the retention of unfamiliar words is, generally, conditional upon the degree of involvement in processing these unfamiliar words. That is, it is conditional upon who has set the task, what kind of tasks, whether the new words have to be searched, and whether they have to be compared, or combined with other words. The greater the involvement load, the better the retention.

This hypothesis has been empirically tested and supported by a series of experiments conducted by Hulstijn and Laufer. For example, in Hulstijn and Laufer (2001), EFL learners from two countries participated in two parallel experiments testing whether retention of vocabulary acquired incidentally is contingent on the amount of task-induced involvement. Both short and long term retention of ten unfamiliar words was investigated in three learning tasks — reading comprehension, comprehension plus filling in target words, and composition writing with target words. The results suggested that retention was highest in the composition task, lower in reading plus fill-in, and lowest in the reading only. It has thus been shown that the more the involvement load, the higher the retention.
2.7.4 Summary

In Section 2.7, I reviewed some cognitive factors in and certain hypotheses about vocabulary learning. Firstly, I discussed the concreteness effect, which refers to the fact that some words can evoke images in people's minds. Words with this quality can be more easily memorized than words without it. Secondly, I reviewed and discussed word exposure frequency and word frequency. Both have an effect on retention. Word exposure frequency refers to the number of times a learner encounters a certain word. It is generally agreed that 5-10 exposures are needed for full acquisition. Word frequency is the tendency of a certain word to appear in that language. Some words tend to appear more frequently than others. For example, the word "he" should be more frequently used than the word "sense". Thus "he" is a word with higher word frequency, and easier to memorize than the word "sense". Thirdly, I have focused on two major hypotheses; they are "the level of processing hypothesis" and "the involvement load hypothesis". Both can explain the effect of some learning strategies, and can explain why a certain strategy has a better retention over another. But "the Involvement Load Hypothesis" has a wider scope of explanation.
2.8 Vocabulary Learning Strategies

2.8.1 Vocabulary learning strategies

We now turn to Area 4, that is, what kind of strategies a learner adopts to learn the material. A review of the selective literature in the EFL/ESL context helps to identify a common range of vocabulary learning strategies (listed in Table 2.11).

<table>
<thead>
<tr>
<th>List of learning strategies</th>
<th>Selected references</th>
<th>Brief comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metacognitive strategies</td>
<td>Gu &amp; Johnson (1996)</td>
<td>Selective attention Self-initiation</td>
</tr>
</tbody>
</table>

Table 2.11: Vocabulary learning strategies
Table 2.11 indicates there are seven broad types of strategies in the existing literature. Most of them are not directly relevant to the present research. Take for example, "Dictionary strategies", "Guessing strategies", "Note-talking strategies", "Rehearsal strategies", "Metacognitive strategies", and so on. And there are few existing studies in the literature concerning the empirical research using these strategies.

In the following section, I will focus, for the present purposes, on reviewing some empirical studies related to keyword mnemonics, rote rehearsal, and semantic processing, since the other strategies are not directly related to my present research.

2.8.2 Key word mnemonics, rote rehearsal, and semantic processing

Among the mnemonics of vocabulary-remembering strategies, the *keyword method* is relatively more frequently mentioned. The most common version of the keyword method involves the construction of interactive visual images. The learner generates an image of the definition referent when interacting with a keyword, which is a familiar concrete word that resembles a salient part of the unfamiliar target word. For instance, the English word *carlin* means *old woman*. Using the keyword *car*, a learner might generate an image of an old woman driving a car. When presented with the word *carlin* later, ready retrieval of *car* occurs because of its acoustic similarity to *carlin*, which leads to recall of the linking image containing the *old woman*.
Keyword mnemonics has attracted huge attention since it was first described and discussed by Atkinson (1975). Most of the mnemonic research compared the effectiveness of the keyword method to that of a non-strategy condition, and proved that keyword method enjoyed high retention rate. Some interesting empirical studies comparing the keyword method with rehearsal and semantic processing were conducted by van Hell et al. (1997) and Brown et al. (1991).

Brown et al. (1991) conducted a series of experiments to compare three strategies: keyword, semantic processing, and keyword plus semantic processing. Subjects at two levels of proficiencies were divided into three treatment groups. The results show that the keyword method facilitated vocabulary acquisition only for lower-proficiency students. The results of the delayed recall suggested that the combined keyword-semantic strategy was superior to the other two strategies used separately. This conclusion can be explained by the depth of processing theory discussed in the previous section (2.7.2).

Comparing the keyword method to rote rehearsal, van Hell (1997) conducted another series of experiments. The learners were assessed immediately after the learning phase as well as after a 1-week and a 2-week delay. The results showed that for experienced learners, rote learners' performance was better than that of the keyword method; for inexperienced learners, rote learners and keyword learners recalled the same proportion of words, but keyword learners required a longer retrieval time.
2.8.3 Summary

To conclude, in this part I have reviewed the literature dealing with vocabulary learning strategies. Learners have used a variety of strategies to acquire new words. It remains a problem to empirically test if a specific strategy is more effective than the others. Among the strategies, the keyword method has attracted researchers' attention in the past three decades; it has proved to have good effectiveness relative to non-strategic learning for inexperienced learners but may not have any advantage for experienced learners over rote learning and semantic learning.

2.9 The Acquisition of Idioms and Proverbs

It was observed in Section 2.5 that the biggest learning problem for advanced Chinese EFL learners tends to be idioms/idiomatic expressions and contemporary usage, which undoubtedly contain a lot of phrasal and metaphorical expressions. Another problem area of vocabulary learning for advanced learners could be the culturally loaded proverbs. The topic of the present research is on metaphorical expressions, idioms and proverbs; it is natural that due review attention should be paid to the three areas of vocabulary acquisition for advanced EFL learners. The reason that proverbs are included is not because proverbs are used frequently, it is just because that the link between proverbs and conceptual metaphors is as well established as that between idioms and conceptual metaphors.
2.9.1 The learning of idioms and proverbs

Native speakers of English acquire some hundreds and thousands of phrasal lexical items, which are a significant part of the linguistic furniture of the human mind. A subset of these phrases is idiomatic expressions, a problematic area for even advanced L2 learners, as has been noted in Section 2.5. There is no denying that idiomatic expressions challenge most learners of English as they seem to crop up without rhyme or reason. Things are considerably easier when it comes to learning the rudiments of the language like the essentials of grammar, some elaborate constructions such as inversion, for instance. But as soon as students reach an intermediate level, they begin to quail at the prospect of dealing with phrases whose meaning is at odds with the meaning of the words comprising them and where, worst of all there, seems to be no systematic organization.

The difficulty comes from the fact that there seems to be no 'handle' to systematically deal with the acquisition of idioms and proverbs. Visiting a library, one is likely to find a handful of dictionaries of idioms. There are also a lot of publications on the structure, processing, interpretation, and semantics of idioms (e.g. Cacciari & Tabossi 1993; Everaert et al. 1995), which are not directly related to the present research. But there is relatively little research on the systematic acquisition of both idioms and proverbs even for native speakers, let alone for L2 learners. The reason is very simple: because each idiom or proverb may have its own origin, or may be related to a certain historical event, classical reading, or to other sources, these idioms or proverbs can hardly be organized under a system.
In the field of cognitive linguistics, a close link has been set up, since the publication of Lakoff and Johnson (1980), between conceptual metaphors and idioms and proverbs (for a full discussion of conceptual metaphor, please see Chapter 3). As conceptual metaphors themselves are in a system, this makes it possible to organize idioms and proverbs in this conceptual metaphor system. We will now have a look at this area and see how this link is set up.

2.9.2 The cognitive motivation for the meaning of idioms and proverbs

It is a common phenomenon that most languages have many idioms with quite similar figurative meaning. For example, English has many idioms meaning getting angry (e.g. blow your stack, hit the ceiling, blow off steam). Why would speakers use these expressions to mean “to get very angry”? It has been empirically revealed (Gibbs 1992) that both idioms and proverbs do have underlying motivation of conceptual metaphors for their figurative meaning. The following is a selected list of literature in this area in recently years (Table 2.12).
### Table 2.12: references on cognitive motivation of idioms and proverbs

<table>
<thead>
<tr>
<th>Motivations</th>
<th>Selected reference</th>
<th>Brief comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>On proverbs</td>
<td>Gibbs &amp; Beiel (1995), Gibbs &amp; Strom et al (1997)</td>
<td>Proverbs have the same motivation as idioms</td>
</tr>
</tbody>
</table>

It has been both theoretically argued and empirically supported that idioms are (partially) motivated by source-to-target domain conceptual metaphors. Firstly, the cognitive linguistic analyses of idioms provide some evidence to support the idea that idioms do not exist as separate units within the lexicon but actually reflect coherent systems of metaphorical concepts (e.g. Lakoff 1987; Kovecses 1986). For example, the idiomatic expressions *blow your stack, flip your lid, hit the ceiling, lose your cool* appear to be motivated by the conceptual metaphor **ANGER IS HEATED FLUID IN A CONTAINER**. This is one of the conceptual mappings between different source and target domains that form part of our conceptualization for anger. Secondly, this conceptual knowledge has been uncovered through a detailed examination of speakers’ mental images for idioms (Gibbs & O’Brien 1990). Take, for example, the idiom *spill the beans*. In order to form a mental image for this idiom, ask yourself the following questions (Lakoff 1987):
Where are the beans before they are spilled?

How big is the container?

What caused the beans to spill?

Is the spilling accidental or intentional?

Once they've been spilled, are the beans in a nice, neat pile?

Where are the bean supposed to be?

After the beans are spilled, are they easy to retrieve?

Answers to the above questions can help one to explore deeper how the conceptual metaphors motivate the understanding of those idioms. These conceptual metaphors are MIND AS CONTAINER, and IDEAS ARE ENTITIES. That's why “taking out an entity from a container” (spill the beans) means releasing a secret.

In experiments (Gibbs & O'Brien 1990), it has been shown that participants can form consistent mental images for idioms with similar meanings because of the constraints of the same conceptual metaphors. Data obtained through different experiments (Gibbs & O'Brien 1990; Gibbs 1992; Nayak & Gibbs 1990; Kovecses 1996; Gibbs, et al 1997) further support the hypothesis that idioms with similar figurative meanings are motivated (at least partially) by conceptual metaphors. Experiments were also conducted to investigate the mental images of proverbs (Gibbs & Beital 1995; Gibbs & Strom et al 1997). Similar results were obtained. Even though from a critical point of view, the issue remains that how many idioms and proverbs may possess this kind of feature or it is only true for
part of the idioms and proverbs in a language. This issue should not hinder us for further research based on the result since linguistic data can never be one hundred percent clear-cut.

Based on Gibbs et al's research, we can now draw an important conclusion: that both idioms and proverbs (at least a certain amount of them) reflect metaphorical mappings between source and target domains linked by conceptual metaphors. This conclusion means that idioms and proverbs can be organized by conceptual metaphors, which provides us another possibility, that is, it is possible to acquire idioms and proverbs in groups using the conceptual metaphor system, rather than to pick them up individually. We will return to this in Chapter 3 (Sections 3.3 and 3.6).

2.9.3 Summary

The figurative meaning of both idioms and proverbs can be motivated (at least partially) by the conceptual metaphors that link the source domain to the target domain through metaphorical mapping. There is, however, no empirical research on using conceptual metaphors as an organizer to acquire EFL idioms and proverbs.
2.10 What the Conceptual Metaphor and Image Schema Based Approach Can Offer to Vocabulary Development/Learning

It was argued in Sections 2.6.3 and 2.9 that metaphorical expressions, idioms and proverbs can be linked to "conceptual metaphors", and thus linked to "image schemas" (See Section 1.3). Theoretical issues concerning "conceptual metaphors" and "image schemas", and their relation with linguistic expressions, will be further elaborated in Chapters 3 and 4. The advantages can be summarized as a preview of what conceptual metaphors and image schemas can offer to vocabulary learning:

a) Metaphorical expressions, idioms and proverbs can be organized by conceptual metaphors and learned in a systematic way.

b) Metaphorical expressions, idioms and proverbs linked by image schemas can be associated with diagrams; according to the Dual Coding Theory (Section 1.3, further elaboration in Section 3.4) “diagrams are worth a thousand words”, (Clark & Paivio 1991: 152).

c) Through metaphorical mapping, words in the abstract target domain can be associated with their concrete meaning in the concrete source domain, concrete words can evoke mental imagery, thus promoting memory.

d) Image schemas have psychological reality; if people are aware of them, then
image schema can promote memory (Gibbs & Colston 1995).

e) Nonverbal signs are the deep structure of language and meaning is the event of an association of nonverbal and linguistic signs. When a meaning occurs, the body enters language in the form of quasi-perceptual readings of the world” (Ruthrof 2000:1).

f) Neural Support for Conceptual Metaphors: Recent neural research appears to support the view that associations between two conceptual domains (e.g. the concrete source domain and the abstract target domain) are naturally, automatically and unconsciously built up. Metaphorical mappings would leave permanent neural connection across the conceptual domains (Lakoff 2001, personal communication). An infant’s subjective experience of AFFECTION is typically related to its sensory experience of WARMTH, that is, the warmth of being held by the mother/care-taker. The association of affection with warmth would leave behind a permanent neural connection/ pathway and would give rise to the establishment of a cross-domain conceptual metaphor, such as Affection is Warmth. (Obviously this may not completely an issue of metaphor, it is also related to metonymy).

g) Since metaphorical words, idioms, and proverbs are organized in a network of conceptual metaphors and image schemas, more learning tasks can be designed for acquisition with those links. Based on the involvement load hypothesis (2.7.3), the more load is involved, the better the retention.
h) Most importantly, the conceptual metaphor and image schema system can organize a large amount of words, idioms and proverbs. According to Goatly and Ding (2002) over 8,000 words can be organized by around 100 conceptual metaphors.

2.11 Conclusions

The following represents the summary points of Chapter 2.

For vocabulary acquisition in general

(1) In the past 30 years the central position of the lexicon has been gradually recognized. From the late 1980s there was an exponential growth in lexically oriented L2 research. Researchers started to investigate L2 vocabulary acquisition issues from a variety of perspectives.

(2) A single lexical item can be in either syntagmatic or paradigmatic relations with others. Syntagmatically, a lexical item can be in a phrase, clause, sentence or longer text. Paradigmatically, a lexical item can be in a relation of synonymy or antonymy. Therefore, besides being in a word list, a word can be learned either in context (such as in sentence context or text) or through semantic clustering.

(3) To truly reflect and explain the process of lexical development of a foreign
language, the term called ‘lexical unit’ is introduced. The process of acquiring vocabulary is the process of acquiring lexical units. Learning a foreign language vocabulary may include ‘learning a new sense for a familiar form’. (Section 2.3.1).

(4) English L2 Learners have used a variety of strategies to acquire new words. But it remains a problem to empirically test which specific strategy is more effective than others. Among the strategies, the keyword method has attracted researchers’ attention in the past three decades; it has proved to have good effectiveness over non-strategic learning for inexperienced learners, but may not have superior advantage for experienced learners over rote learning and semantic learning.

(5) To focus on the words in sentence context can facilitate learning, but how to systematically organize sentences remains a problem.

(6) Most of the existing vocabulary learning mnemonics can only work effectively on a limited amount of words, not on a large number of words in a systematic way.

(7) The concreteness quality of words, word exposure frequency, and word frequency all have positive effect on retention.

(8) The level of processing hypothesis and the involvement load hypothesis
together can explain why a certain method can be more effective than another.

(9) According to the level of processing hypothesis and the involvement load hypothesis, the more links, more elaborations or more details in context provided with the target words, the more effectively the words are learned. The more attention is focused on the target words, the better the target words are learned. The more load is involved, the better the retention.

(10) Conceptual metaphor is a special new way to organize lexical items. It can be hypothesized from a theoretical point of view that this organization can facilitate memory as conceptual metaphor is in people's ideological system, and links abstract domains to concrete ones. There is, however, a lack of empirical research to support this hypothesis.

(11) According to three surveys, Chinese EFL learners lack idiomatic expressions and contemporary usage and have a very limited repertoire. Vocabulary is the most problematic area for them; according to Gui (2000), the more advanced a Chinese EFL learner is, the higher number of lexical errors (s)he commits, relative to errors in syntax.

(12) There are relatively few proposals on vocabulary learning methods that are aimed directly at improving Chinese EFL learners' vocabulary power.

To conclude: it seems high time that some effective, systematic ways were
identified to enhance Chinese EFL learners' vocabulary power. One possible way, I would argue, could be the “Conceptual Metaphor and Imaged Schema Based Approach”.

For the Acquisition of Idioms and Proverbs

(13) The connection between idioms, proverbs and conceptual metaphors has already been established in cognitive linguistics and psychological studies. Yet there is no empirical research on the effectiveness of using conceptual metaphors as organizers to help L2 learners to acquire EFL idioms and proverbs.

All the conclusions above strongly imply that it is possible to acquire metaphorical expressions, idioms, and proverbs through the organization of conceptual metaphors and image schemas.
CHAPTER 3

EXPOSITION OF A CONCEPTUAL
METAPHOR & IMAGE SCHEMA BASED FRAMEWORK

3.1 Introduction

Chapter 3 describes in some detail the theoretical foundations underlying the Conceptual Metaphor and Image Schema Based Approach (hereafter known as the “CM & IS Approach”) to the acquisition of metaphorical expressions, idioms and proverbs.

This chapter begins with a concise explanation of five interrelated key technical terms (3.2) relevant to our basic understanding of the “CM & IS Approach”. This is followed by an exposition of ‘a theory of conceptual metaphor’ (Lakoff and Johnson 1980; Lakoff 1993) (3.3). The following Section provides a more in-depth exploration of the theory of ‘image schemas” (3.4). The next Section discusses the application of “image schemas” to lexical semantic analysis (3.5). Chapter 3 ends with a “hierarchically structured framework”, which describes and explains systematically the origin of, and hierarchical relationships between, image schemas, conceptual metaphors, as well as lexical units such as words, metaphors, idioms, and proverbs (3.6).
3.2 Technical Terms

The five key terms that can help us understand the notion of "conceptual
to "conceptual
metaphors" and "image schemas" are 1) "domain", 2) "profile", 3) "conceptual
metaphor", 4) "metaphor set", 5) "image schema". They will be briefly explained
one by one below.

1) Domain

In cognitive linguistics, "domain" is a cognitive context for characterizing a
semantic unit or concept (Langacker 1987: 147). In Langacker's theory, most
concepts presuppose other concepts. They cannot be well defined except by
reference to other concepts either implicitly or explicitly. Take the concept
"KNUCKLE" for example; it presupposes the conception of a finger. It would be
virtually impossible to explain what a knuckle is without in some way referring to
a finger. Thus, "FINGER" provides the necessary context --- or "domain" --- for
the characterization of "KNUCKLE", and "HAND" is the domain for "FINGER"
and "KNUCKLE".

2) Profile

Profile means "include" or "take reference of". For example, the domain of
FINGER profiles the concepts of KNUCKLE and FINGERNAIL etc, or the
domain of "HAND" takes the concepts "FINGER", "KNUCKLE" and
"FINGERNAIL" as its references.
3) Conceptual metaphor

As noted in Chapter 1, conceptual metaphor is the most important concept in 'conceptual metaphor theory' (CMT) (Lakoff and Johnson 1980; Lakoff 1993). It is conceived of as a belief structure (e.g. "TIME IS MONEY") existing in people's conceptual system (Lakoff 1993), and is a "cross-domain mapping" which links the concrete source domain (such as "MONEY") to the abstract target domain ("TIME").

4) Metaphor set

A metaphor set is a cluster of linguistic metaphors organized under and relatable to a certain conceptual metaphor. For example, under the conceptual metaphor "THEORIES ARE BUILDINGS", we may have the following metaphors.

a. We need to buttress the theory with solid argument.

b. The argument collapsed.

c. The argument is shaky.

The above linguistic metaphors are all relatable in a different degree to the conceptual metaphor "THEORIES ARE BUILDINGS", thus forming a metaphor set.
5) Image schema

Image schemas are recurring basic abstract conceptual structures. They are believed to have originated from our bodily experiences, playing a crucial role in various cognitive processes, and helping to organize our experiences and structure our knowledge (Johnson 1987). Image schemas have many properties, which we will discuss in more detail in Section 3.4.

In summary, these five technical terms are interrelated. A domain profiles (includes) different concepts. A conceptual metaphor links different related domains and produces a metaphor set. Image schemas control conceptual metaphors in cross-domain mappings. These five terms are interrelated and are most crucial to the present study. The details of these terms will be further elaborated in later discussion in related theories (see Section 3.3.2 for “conceptual metaphors”; 3.3.4 for “domains”; 3.4 for “image schemas”).

3.3 A Theory of Conceptual Metaphor

3.3.1 A general classification of metaphor theories

I have to make clear at the outset that the whole thesis is about the application of conceptual metaphors in vocabulary acquisition in applied linguistics. The thesis is neither a detailed account of existing metaphor theories nor of their distinctions and classifications. What I am most interested in is what kind of
metaphors could be effective in learning vocabulary.

In order to determine and select the potential metaphors that could meet my requirement, I will have a very general classification of metaphor theories. Since in metaphor study, it seems that no one can pass Aristotle by silently, I will start with from Aristotle.

In his Poetics, Aristotle has a detailed description: "metaphor is the transference of a name from the object to which it has a natural application; this transference can take place from genus\(^1\) to species\(^2\) or species to genus or from species to species or by analogy" (Golden 1968:37). Aristotle gave specific examples to illustrate his statement. From genus to species: "This ship of mine stands there", to lie at anchor is a species of standing. Transference from species to genus: "Odysseus has truly accomplished a myriad of noble deeds", myriad is the equivalent of "many", for which the poet substitutes this term. Transference from species to species: "having drawn off life with a sword" and also "having cut with unyielding bronze", here to draw off is to cut and to cut is to draw off, both are subdivisions of "taking away". An analogy begins with this form "A is to B as C is to D". We say, "The C of B is the D of A". If old age is to life what evening is to day, then as Aristotle observes, we can metaphorically say that evening is "the old age of day", and old age "the evening of life".

---

\(^1\) Genus: a term of classification used in biology, refers to a group of animals or plants, below a family and above a species.

\(^2\) Species: a set of animals or plants, members of which have similar characteristics to each other and which can breed with each other.
Since Aristotle, various theories of metaphor appeared. Especially, in the second half of the twentieth century, a variety of theories and approaches has blossomed. They are in different fields of language study and from different perspectives. The most famous classification may be Max Black’s (1962) three views distinction: “substitution views”, “comparison views” and “interaction views”. The “substitution views” take metaphor as a replacement of a proper or literal term; the “comparison views” treat metaphors as abbreviated similes, and their meanings as those of the corresponding comparison; while the “interaction views” hold that at least one term of a metaphor changes its meaning, and this change often leads to a result that cannot be properly paraphrased (Beardsley 1962), thus metaphor is the interaction between two terms.

After Black, Mooij (1976) also made an important attempt to classify metaphor theories by distinguishing between ‘monistic’ and ‘dualistic’ theories. According to dualistic theories, metaphorically applied words retain their literal reference at the same time carry a second reference because of their metaphorical function; in ‘monistic theories’, words lose their normal reference but carry on an abnormal and non-literal reference, which leads to the metaphorical interpretation.

A more recent classification of metaphor theories proposed by Leezenberg (2001) puts metaphor theories in an even wider context, and can give us a clearer picture to see metaphor theories. More importantly, this classification scheme includes most (if not all) of the major metaphor theories. Leezenberg classifies
metaphor theories from two perspectives: (1) at what level is a metaphor accounted for? Is the metaphorical interpretation within linguistic or just outside linguistic theory? If a metaphor is accounted for within linguistic theory, then the levels are syntax, semantics, and pragmatics. If not, then it is outside linguistic proper; (2) through what means does a hearer determine the metaphorical interpretation, for example, in virtue of the properties that the referents have, in virtue of the descriptive information associated with the expressions used, or in virtue of the concepts or mental representation that are expressed by the words. Thus, a hearer can understand a metaphor in virtue of similarity between objects referred to, that is, in virtue of the properties that the referents of the metaphor have in common; this is what Black calls 'a comparison view'. Leezenberg holds that such views are generally 'referentialist', because they crucially involve the referents of the expressions used. From another perspective, the hearer understands metaphor through the meaning of linguistic expressions, that is, the descriptive information. This comes to 'interaction views', which Leezenberg classifies as 'descriptivist' since these approaches take metaphorical interpretation to be guided by the descriptive information. And finally, quite different from the above two perspectives, one may hold that metaphorical meaning arises neither from resemblances between objects nor from descriptive information, but rather from cognitive mechanism such as the ability to see one thing as another, or as reasoning in analogies. Such approaches Leezenberg refers to as 'conceptualist views' because they assign a crucial role to the interpreter's mental or conceptual capacities. Thus Leezenberg proposes the following paradigm to describe metaphor theories (Table 3.1).
Table 3.1: A classification scheme of metaphor theories (Leezenberg 2001, 11)

<table>
<thead>
<tr>
<th>Basis of interpretation</th>
<th>Referentialist ('comparison')</th>
<th>Descriptivist ('interaction')</th>
<th>Conceptualist</th>
</tr>
</thead>
<tbody>
<tr>
<td>(syntax)</td>
<td>Chomsky</td>
<td>Bickerton</td>
<td>Reinhart</td>
</tr>
<tr>
<td>semantics</td>
<td>Mooij; Henle</td>
<td>Black I; Beardsley; Stern; Goodman</td>
<td>Lakoff &amp; Johnson</td>
</tr>
<tr>
<td>pragmatics</td>
<td>Grice</td>
<td>Black II; Searle; Martinich</td>
<td>Levinson; Sperber &amp; Wilson</td>
</tr>
<tr>
<td>Outside linguistics proper</td>
<td>Davidson</td>
<td></td>
<td>Lakoff &amp; Johnson</td>
</tr>
</tbody>
</table>

As I said earlier that the present research is not about the theories of metaphor, nor to propose metaphor theories of any kind, rather it is motivated by searching for an affective vocabulary acquisition method to improve Chinese learners' restricted repertoire. In the light of the literature review of vocabulary acquisition in Chapter 2, especially the 'level of processing hypothesis' (2.7.2) and 'involvement load hypothesis' (2.7.3), I am most interested in metaphors that could satisfy the following (reasons also listed): (A) the more context links the metaphors can provide, the better for vocabulary learning; (B) the wider context the metaphors can provide, the better they can facilitate learning; (C) in quantity, the more metaphors that can be grouped together, the better for learning. Looking across table 3.1, I will argue that Lakoff and Johnson's conceptual metaphor theory can be a better candidate to satisfy my (A) to (C) criteria above. This is because if conceptual metaphor theory holds water, then conceptual metaphor exists in a conceptual system. In terms of organizing bigger number of lexical
items, conceptual metaphor can also be a better candidate, because through cross-domain mapping a series of metaphors can be produced. And these metaphors are organized under another METAPHOR at the conceptual level, which is called ‘conceptual metaphor’. Last but not the least, the conceptual theory (labeled as ‘Lakoff & Johnson’ in table 3.1) is the only one that allows overlap between linguistics and non-linguistics proper. It can, therefore, provide more links and a wider linguistic context for metaphors. The conceptual metaphor theory has received fuller development in the past two decades. It is natural that the development of theories is accompanied by argument and different opinions. Conceptual metaphor theory, too, encounters different voices, which I will mention in later discussion. This should not hinder me to embark on empirical research on its effectiveness in vocabulary learning since we have seen the benefits that conceptual metaphor theory could bring to vocabulary acquisition.

Based on the considerations above, I will give a detailed account of conceptual metaphor theory and further justify that it could be an effective organizing method in vocabulary acquisition (Section 3.3.2).
3.3.2 A theory of conceptual metaphor

A new paradigm in metaphor study was introduced by Lakoff and Johnson in their ground-breaking book *Metaphors We Live By* (Lakoff and Johnson 1980). Their main position is that metaphor “is a cross domain mapping in the conceptual system”. This was later more fully described in Lakoff (1993), and known as ‘conceptual metaphor theory’. In this theory, metaphors are not mere poetical or rhetorical embellishments. Lakoff and Johnson hold that metaphors are a part of everyday speech that affects the ways we perceive, think, and act --- they are pervasive in everyday language. Take the Internet for example. Some years ago, the then U.S. Vice President Gore exploited the INTERNET IS A HIGHWAY metaphor when he announced the Clinton administration’s National Information Infrastructure initiative in December 1993. Gore is worth quoting here at length for discussion.

*Today, commerce rolls not just on asphalt highways but along information highways. And tens of millions American families and business now use computers and find that the 2-lane information pathways built for telephone service are no longer adequate...This kind of growth will create thousands of jobs in the communications industry.*

*To understand what new systems we must create though, we must first understand how the information marketplace of the future will operate.*

*One helpful way is to think of the National Information Infrastructure as a network of highways—much like the Interstates begun in the '50s.*
These are highways carrying information rather than people or goods. And I'm not talking about just one eight-lane turnpike. I mean a collection of Interstates and feeder roads made up of different materials in the same way that roads can be concrete or macadam—or gravel. Some highways will be made up of fiber optics. Others will be built out of coaxial or wireless.

But—a key point—they must be and will be two way roads. These highways will be wider than today's technology permits. This is important because a television program contains more information than a telephone conversation; and because new uses of video and voice and computers will consist of even more information moving at even faster speeds. These are the computer equivalent of wide roads. They need wide roads. And these roads must go in both directions (Rohrer 1997).

Table 3.2 lists the correspondences between the internet domain and the highway domain.
Table 3.2: A mapping of the **INTERNET IS A HIGHWAY (CYBERSPACE case)**

(Rohrer 1997)

<table>
<thead>
<tr>
<th><strong>HIGHWAY (source domain)</strong></th>
<th><strong>INTERNET (Target domain)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway (source domain)</td>
<td>transmission pathways(cables, etc)</td>
</tr>
<tr>
<td>Space</td>
<td>cyberspace</td>
</tr>
<tr>
<td>Vehicles</td>
<td>computers(telephones, TV, etc)</td>
</tr>
<tr>
<td>Goods transported</td>
<td>information</td>
</tr>
<tr>
<td>Fuel</td>
<td>electricity</td>
</tr>
<tr>
<td>Drivers</td>
<td>users</td>
</tr>
<tr>
<td>Destinations</td>
<td>information supply sites</td>
</tr>
<tr>
<td>Journey</td>
<td>downloading or uploading</td>
</tr>
<tr>
<td>Marketplace</td>
<td>commercial information suppliers</td>
</tr>
<tr>
<td>Impediments to motion</td>
<td>technological difficulties</td>
</tr>
<tr>
<td>(roadblocks, bumps, mechanical trouble, etc.)</td>
<td></td>
</tr>
</tbody>
</table>

In the above example, **INTERNET IS HIGHWAY**, we can see the cross-domain mapping is from the source concrete domain (HIGHWAY) to the abstract target domains (INTERNET). The mapping is not one to one, but a whole system is mapped into another conceptual system. We think of one abstract concept in using the terms and structure of another relatively concrete concept.
Now I return to conceptual metaphor (CM). The following are among the central claims of Lakoff and Johnson (Lakoff 1993, Lakoff and Johnson 1980) which have potentials in vocabulary leaning and related to the present research.

(1) Metaphor is not just language but also a matter of conceptual thinking.

(2) CM is a cross-domain mapping of one conceptual gestalt-structure (SOURCE DOMAIN) onto another conceptual gestalt-structure (TARGET DOMAIN).

(3) CM represents a systematic correspondence between two domains.

Conceptual metaphor theory has been widely accepted in the past two decades. This does not mean that it is a perfect theory. In his "The Contemporary Theory of Metaphor Revisited" (Engstrom, 1999), Engstrom suggested a revision of the theory. I will summarize the major points that are related to the present research. Engstrom holds that the point (1) mentioned above is too narrow, because metaphor also involves prepositional thought, while point (2) above only applies to a description of the initial stage of mapping. But none of Engstrom's "revisions" reduces this theory's potential in vocabulary acquisition.

For the purpose of the present research, I am interested in all the above three points, especially in point (3), that is, a systematic correspondence between two domains. Now I will take a look at how this can be used to serve the present research (Section 3.3.3 below).
3.3.3 Conceptual metaphor links concrete and abstract domains

According to the third characteristic I listed, that is, "The systematicity in the linguistic correspondence", a conceptual metaphor represents the correspondences between two domains in a systematic way. Take, for example, the conceptual metaphor THEORIES ARE BUILDINGS for further elaboration. Words used in the source domain BUILDINGS are systematically mapped onto the target domain THEORIES, and the organizer or the link is the conceptual metaphor THEORIES ARE BUILDINGS. This mapping relationship is illustrated in Figure 3.2.

![Diagram](image)

**THEORIES ARE BUILDINGS**

BUILDINGS
- Buttress
- Collapsed
- Shaky
- etc

THEORIES
- Buttress
- Collapsed
- Shaky
- etc

*Concrete source domain*  *Abstract target domain*

*Figure 3.1: conceptual metaphor links concrete domain to target domain*

To look at the fact that a CM links two domains from a different perspective, we can find that what the CM links, in fact, is also a group of words which can be used in two conceptual domains and mean differently. Or to put it another way,
the CM systematically organizes the lexical items that are used metaphorically in the target domain. Further elaboration on the relation between CM and lexical items will be presented diagrammatically in Section 3.3.4 below.

3.3.4 Summary: conceptual metaphor linking metaphor sets, idioms and proverbs

The major contribution of the CMT is that conceptual metaphor enables us to organize metaphorical expressions (that is, metaphor set) in a systematic way. This conclusion, together with the observation in Section 2.9 that the idioms and proverbs can also be linked to CM, can be represented in Figure 3.2.

![Conceptual hierarchy diagram](image)

**Figure 3.2:** The hierarchical structure of conceptual metaphor and its linguistic realizations
There are two levels in this diagram. Conceptual metaphor exists at the conceptual level; at linguistic level, there are metaphorical expressions, idioms, and proverbs as the realization of the conceptual metaphor. This diagram will be expanded with the incorporation of image schemas (see Section 3.6).

3.4 The Theory of Image Schemas

3.4.1 Image schemas are recurring patterns

'Image schema' is another very important term in cognitive semantics and is often discussed together with conceptual metaphor, as these two terms are interrelated. Image schemas were first discussed by Lakoff (1987), Lakoff and Turner (1989), and Johnson (1987). Roughly, image schemas are recurring basic abstract conceptual structures that occur in our construal (conceptualizations) of the world, and appear to play a fundamental role in various cognitive semantic processes (see Section 3.2.5).

Image schemas are embodied or bodily based (Johnson 1987), and acquired through our physical experience of being and acting in the world: for example, perceiving the environment, and moving our bodies and exerting and experiencing force. Image schemas can structure our experiences and give rise to the structure of our knowledge, and are used to organize thought across a range of more abstract domains. Because image schemas are acquired in the concrete spatial
world, most of them can be represented in highly abstracted simple diagrams 
(Johnson 1987; Dewell 1994; Brugman 1981). They are analog structures of 
image schemas. Johnson (1987) recognized a number of image schemas as 
recurrent patterns, shapes, and regularities of our actions, perceptions, and 
conceptions. Take, for instance, our daily experience: there are countless 
experiences that have a starting point and an end. Examples:

E.g.

1) We go to university from home.
2) Look at a long train from the first car to the last.
3) A water drop rolls from the table onto the ground.
4) To fly from Hong Kong to Sydney.
5) The highway links Beijing and Shanghai.

All these follow either a spatial or a temporal path from one point to another. 
From these a PATH schema can be abstracted, which has a starting point A and an 
end point B, as in Figure 3.3.

A _____ B

Figure 3.3: PATH SCHEMA

The examples come from the physical and spatial world, that is, from the 
physical or concrete domains. Once this image schema of PATH is acquired, it can 
be extended to other abstract domains through metaphorical mappings. For
example, "Birth is the beginning of life; death is the end"; "I experienced that strange feeling from the beginning to the end". In many languages, this image schema is also lexicalized. In Japanese, it is "kala...marde", and in Chinese it is "cong...dao".

Let us look at another example. In our physical experience there are numerous concrete objects that have visible boundaries; and we are in constant contact with such objects by going in and out of these concrete boundaries. With experiences captured by the following examples:

E.g.

1) I take out a bottle of milk from the refrigerator.

2) I pour the milk out of the bottle.

3) I pour the milk into a cup.

We eventually form an image schema of CONTAINER (or INSERTIÓN if we emphasize the process of entering), and may extend it into non-concrete (abstract) domains. For example, one can be "in the room", but one can also be "in a business" or "in trouble". In these cases, 'business' and 'trouble' are metaphorically taken as CONTAINERS. In this way, an image schema has been extended from a concrete to an abstract domain. The following two diagrams represent the CONTAINER SCHEMA and the INSERTION SCHEMA.
Lakoff believes that our experiences are largely structured in and by image schemas, and that even abstract reasoning is based on image schemas (Lakoff 1990). Through metaphorical mapping, numerous different events can share the same image schema. This is how image schemas are associated with conceptual metaphor. In Section 3.4.2, we turn to a hypothesis concerning the relation between conceptual metaphor and image schemas.

3.4.2 The Invariance hypothesis: Image schemas in conceptual metaphor

Now we come to an essential point, the nature of the cross-domain mapping of conceptual metaphors. The metaphorical mappings (ref 3.3.2) are not arbitrary, but are controlled by "image schemas". Lakoff proposed the Invariance Hypothesis to explain the mapping, which goes as follows: "The Invariance Hypothesis: Metaphorical mappings preserve the cognitive topology (that is, the image schematic structure) of the source domain" (Lakoff 1990). The moral here is that if after mapping the image schema is preserved, the source domain and the
target domain should share the same (or similar) image schema. This suggests a
great potential in vocabulary study; that is, the senses of lexical items (lexical
units) in the source and target domains can be linked by image schemas; in other
words, image schemas control the cross-domain mappings of conceptual
metaphors. The result is that two domains are linked by a conceptual metaphor,
and both domains share the same image schema.

Both image schemas and conceptual metaphors have an experiential basis.
While image schemas are acquired in physical contact with the outside world and
possess many features that a conceptual metaphor by itself does not have. For
example, image schemas can be represented by abstract, visible diagrams. Image
schemas have many other features. In Section 3.4.3 we turn to the properties of
image schemas, and see how they can be exploited in lexical analysis.

3.4.3 The major properties of image schemas

Image schemas have at least the following major properties: (1) Image
schemas are a subtype of domains; (2) Image schemas can be represented by
diagrams; (3) Some image schemas can function as a Plus-minus parameter; (4)
Image schemas are dynamic as well as static in nature. These four areas will be
discussed in turn.
(1) Image schemas are a subtype of domains

I briefly introduced, 'image schema' and 'domain' in Section 3.2, and discussed image schemas in detail in Section 3.4.1. In fact, image schemas and domains are related and inseparable. In her latest research, Clausner (1999) has very convincingly argued that the image schema itself is a subtype of domain. Langacker (1987, 1991) distinguishes two types of domains, locational and configurational. Clausner argues that it is concepts in domains that are locational and configurational, not the domains themselves. Clausner then analyzes image schemas and shows how they function like domains in which are found both locational and configurational concepts.

The important point here is that if an image schema is a domain, then it can profile/support words as a domain does. According to cognitive semantics, concepts do not occur as isolated, atomic units in the mind, but can only be comprehended in a context of presupposed background knowledge structure. 'Domain' is the most generic term for this background knowledge structure. In the domain of TIME, it profiles concepts like 'week', 'year', 'daytime', 'night', 'month'. If image schemas are domains, they should also profile concepts and the words associated with them. If this is so then words profiled by image schemas could be associated with diagrams representing those image schemas. This will have a potential value in vocabulary acquisition. We will return to the point in Section 3.5.1.
(2) Image schemas can be represented by diagrams

It has been shown above (see 3.4.1) that image schemas are acquired from spatial relations, therefore we can use abstract diagrams to represent them in an analog structure of images. We cannot exactly draw image schemas, since the nature of an image schema may be dynamic. What we draw is an analog structure of an image schema. This diagram, by imagination, can be related to many experiences, thus it can be very useful in facilitating vocabulary learning, as we will discuss in Chapter 4. Since image schemas can group or profile words, the diagram can be used as an associative bonding or link in word store and retention.

(3) The plus-minus parameter

Krzesowski (1993) discussed one important property shared by most (if not all) image schemas, namely what he calls a "plus-minus" parameter. Each image schema tends to be biased as to the positive and negative connotations it expresses metaphorically. For instance, the CENTER is often positively valued as compared with the PERIPHERY. BALANCE is valued over imbalance in our experience, as well as in the metaphors based on those experiential structures. This characteristic is related to the other oppositions characterizing the "me-first" orientation, discussed by Lakoff and Johnson (1980:132), such as up-down, front-back, and here-there, because the conceptual referential point for those
orientational oppositions is the canonical person, who functions in an upright position to maintain his/her balance, looks and moves forward, exists here not there. Krzeszowski (1993) discusses the following examples of the plus-minus parameter:

WHOLE-PART
CENTER-PERIPHERY
BALANCE versus imbalance
LINK versus no link

Cienki (1997) adds the following to the list:
ENABLEMENT/RESTRAINT REMOVAL—BLOCKAGE
FULL-EMPTY
NEAR-FAR
MERGING-SPLITTING
STRAIGHT versus NOT STRAIGHT

These image schemas can be linked to lexical items with positive and negative meanings. We will come back to this in lexical semantic analysis in Section 3.5.

(4) The static versus dynamic nature of image schemas

Image schemas can be realized in either a static or dynamic fashion. This is a
property common to almost all image schemas (Cienki 1997:6). Most image schemas can represent a state of being as well as a process; for example, we may experience the PATH image schema in a dynamic way when we are moving, going from one point to another, but also as a static thing, the spatial route that we have traversed or that we can traverse. The image schema BALANCE can be experienced as a static state, a state of balance (balance as a noun), or as something we do, the dynamic activity of maintaining one’s balance (balance as a verb).

3.4.4 Summary

A summary of the characteristics of image schemas is presented below:

1. Image schemas are acquired from people’s physical experiences in the outside world, and with the feature of embodiedness.

2. Image schemas are abstract skeletal structures, and can help people to structure and organize experiences and knowledge.

3. As image schemas are acquired mainly from spatial relations, they can be represented in the analog structures of diagrams. Image schemas also have the characteristics of being a subtype of domain, being static and dynamic, as well as functioning as a plus-minus parameter.

4. Image schemas control cross-domain mapping.
Last but not least, a relation between image schema and conceptual metaphor has been set up (see Section 3.4.2). Therefore, the framework in Section 3.3.6 (Figure 3.4) can be extended. I will modify this structure in a later discussion in Section 3.6.

3.5 Image Schemas in Lexical Semantic Analysis

The properties of image schemas discussed above can be applied to semantic analysis. I will first discuss the relation of image schemas and lexical items (Section 3.5.1), then the functions of image schemas in semantic analysis (3.5.2), in which a new method of semantic analysis will be tentatively proposed, that is, "image schematic feature analysis" (3.5.3). Section 3.5.4 will offer a summary.

3.5.1 Relations between image schemas and words

I have already established a relationship between image schemas and lexical items in 3.4.3 part (1). I will elaborate on this relation below.

Langacker distinguishes two types of domains, locational and configurational; as stated in his (1987) work "A predicate specifies a location or a configuration in some domain. Accordingly we can speak of a domain as being either locational or configurational" (Langacker 1987:152). To simplify the issue, I will use the
domain TEMPERATURE as an illustrative example. Temperature profiles concepts such as HOT, WARM, LUKEWARM, COOL, and COLD. These concepts are locational since they are points or regions in the domain which depend on a reference point, namely LUKEWARM, which functions as a relative norm. However, the concept DAYTIME is configurational because it profiles a duration of points in TIME, and does not depend on a calibrated reference. Any period of daylight may be called DAYTIME and does not require a calibration with respect to the concept NOW. This is not the case for TEMPERATURE.

Clausner (1999) has shown that it is the concepts in domains that are locational and configurational, not the domains themselves. Then he found both locational and configurational concepts in image schemas. For example, the concepts ‘beginning’ and ‘end’ are locational in the PATH schema, while ‘contents’ and ‘inside’ are configurational in the CONTAINER schema. Clausner convincingly argued that image schemas are also domains, a sub-type of domain.

The above discussion has shown that there exist strong links between image schemas and lexical items. Another fact can further illustrate this point: many image schemas have been identified by lexicographers as important category labels. For example, in Roget’s Thesaurus (Kirkpatrick 1987), CLASS I is “Abstract Relations” in which there are the subcategories of “Relation”, Order”, “Time”. Class II is about Space in which many subcategories parallel with many of the image schemas discussed. For example, the category “containment” and “limits” parallel the boundedness of the CONTAINER image schema. The
category “Capacity” parallels the content of the CONTAINER image schema, and so on. Thus, these are the links between image schemas and vocabulary found from a different perspective.

Let us summarize the major points of the above discussion by quoting Clausner’s statement:

_Collected under these categories are a large number of words which express concepts. These concepts must be profiled in some semantic domain. Yet the semantic structures which provide the domains for these concepts are what we have been calling image schemas. We take this as central evidence that image schemas are a special kind of domain, which we call image schematic domain_ (1999:16).

Take the CONTAINER image schema as an example. Lindner (1983) successfully analyzed over one thousand phrasal verbs with UP and OUT. These verb-particles fall into different CONTAINER schemas. CONTAINER schemas fundamentally involve IN-OUT orientation and Lindner shows they account for various senses of _in, into, and out of_. This is a further support for the idea that image schemas are a special kind of domain and can profile words.

The point is already clear here that if an image schema is a domain, then it can profile lexical items or concepts as a domain does. For example, the domain of TIME profiles concepts like ‘week’, ‘year’, ‘daytime’, ‘night’, and ‘month’. 
The image schema “CONTAINER” profiles concepts like ‘containments’ and ‘limits’. In fact, image schemas cannot only group or profile lexical items, but can also be used in analyzing of polysemy; the following section provides a discussion of this.

3.5.2 The application of image schemas in lexical semantics

Image schemas have been introduced into lexical analysis in the analysis of polysemy. For example, Brugman (1981), followed by Lakoff (1987), showed that the preposition *OVER* can be analyzed as a chained system of senses using image schemas and natural image schema transformations. Dewell (1994) published another article “*Over again: Image schema transformation in semantic analysis*”. I will show below that Lindner (1983) analyzed over one thousand phrasal verbs with UP and OUT schemas. Now we will focus on how image schemas are used in analyzing lexical items. We will use the following as illustrative examples: prepositions and verbs, antonymous adjectives, and analyzing words with positive/negative meaning.

(1) **Prepositions and verbs**

So far, there are some researches dealing with prepositional analysis using image schemas since most prepositions can be used to express spatial relations
and also can be extended to abstract domains through metaphorical mapping (e.g. Brugman, 1981; Dewell 1994; etc.). This kind of analysis has already been extended to verb + prep structure. Lindner’s (1983) treatment of verb plus particles sets an example in this area. Her study is concerned with verb-particle constructions with up and out in English. She analyzed over 600 cases of the construction: verb + out (e.g., take out, spread out, throw out, pick out, leave out, shout out, draw out, pass out), and over 1100 cases of the construction: verb + up (e.g., raise up, break up, give up, wake up, shake up, think up). In contrast with the standard view that these represent unrelated semantic atoms, she found a small number of prototypical schematic structure that could be systematically extended to cover nearly all occurrences of the verb-particle construction under study. For the particle out, she identified three basic image schemas (Figure 3.6, 3.7, 3.8).

John went out of the room.
Pump out the air.
Let out your anger.
Pick out the best theory.
Drown out the music.
Harry weasled out of the contract.

Figure 3.6: OUT 1

Pour out the beans.
Roll out the red carpet.
Send out the troops.
Hand out the information.
Write out your ideas.

Figure 3.7: OUT 2
The train started out for Chicago.  

Figure 3.3: OUT 3  

(LM = Landmark; TR = Trajector)

The visual diagram is only a partial image of the actual schema, which is the pattern of some particular experience. Take OUT1 for example, in “John went out of the room.” Here the circle (LM) represents the room (as container), and John moves along the arrow (as TR) out of the room. Obviously, the diagram of the OUT1 schema only gives us one idealised image of the actual schema, since the room need not be circular, John need not move along a straight line in leaving the room and there is a break (the door). Nevertheless, this is a typical OUT movement. This schema can represent an enormous number of orientational possibilities, as in the following examples.

1) Mary got out of the car.
2) Spot jumped out of his pen.
3) He squeezed out some toothpaste.
4) Tear out that cartoon and save it.
5) Get out of bed.

(2) Anonymous adjectives

Some image schemas can be applied to the analysis of anonymous adjectives, such as the SCALE image schema discussed by Johnson (1987).
Consider the metaphor MORE IS UP. It organizes a large number of our experiences, which are also reflected in linguistic expressions. The following are examples taken from Johnson (1987:121):

**MORE IS UP**

The crime rate keeps *rising*.

The number of books published *goes up and up* each year.

That stock has *fallen* again.

You’ll get a *higher* interest rate with them.

Our sales *dropped* last year.

Our financial reserves couldn’t be any *lower*.

**SCALE schema represented in the diagram below.**

```
   B

  /

 /  

A
```

*Figure 3.9: SCALE*

The SCALE schema is basic to both the quantitative and qualitative aspects of our experiences. Scale seems to permeate the whole of human experience, even where no precise quantitative measurement is possible. Consequently this
experientially basic structure of our grasp of both concrete and abstract entities is one of the most pervasive image-schematic structures in our understanding.

In analyzing gradable adjectives and their antonyms, we can extend the SCALE diagram to the opposite direction, take the center A as the reference norm.

In analyzing adjectives like "beautiful-ugly" "good-evil", the trajector is positioned either "above" the norm region or "below" it. As Johnson observed "Scales have a cumulative character of a special sort. If you are collecting money and have accumulated $15, then you also have $10" (Johnson 1987:122). Similarly, if a trajector is located on the very top of the extended scale, that is, "most beautiful", the trajector also includes "beautiful". Gradable adjectives and their antonyms can be usefully treated in this visual way.
(3) Applying image schemas in analyzing words with positive/negative meaning

I discussed the properties of image schemas (Section 3.4.3). The image schemas themselves are often structured in a binary manner. For example, WHOLE-PART, CENTER-PERIPHERY, BALANCE-IMBALANCE, LINK-NO LINK, ENABLEMENT-RESTRAINT, REMOVAL-BLOCKAGE, FULL-EMPTY, NEAR-FAR, MERGING-SPLITTING, STRAIGHT-NOT STRAIGHT. Words collected under such schemas naturally form antonyms, some with negative meaning, their opposites with positive meaning. The concept “Dominant” is in the CENTER of a situation then “undominant” is on the PERIPHERY. “Full” is good, then its opposite “empty” is “bad” (‘I am full’ vs. ‘my stomach is empty’). More example like, “that’s only part of the story, tell me the whole of it”.

The above discussion shows that a huge number of lexical expressions possess image schematic features in one-way or the other which can be roughly represented in diagrams.
3.5.3 A new way of analyzing lexical meaning: Image schematic feature analysis

Mandler (1988, 1992) convincingly argued that infants acquire some basic image schemas at the preconceptual stage, and then extend these image schemas to acquire other abstract concepts through metaphorical mapping. If this is so, then a large number of concepts in the language system can be traced back to relatively few image schemas. Section 3.5.2 exemplified Mandler’s conclusion. These huge number of concepts, therefore, possess image schematic features and many concepts should share the same image schemas. Therefore image schematic features might be a common feature of most vocabulary. We could analyze words into image schematic features as we do words in semantic feature analysis. The above discussion in 3.5.2 that image schemas can be used in semantic analysis has already supported this point.

In semantic feature analysis, we can analyze a word using semantic features, for example “bachelor” is analyzed as [+HUMAN], [+MALE], [-MARRIED], [+ADULT]. We can have a similar treatment with image schematic feature analysis. In analyzing a word, we use two things to describe it: the label of the image schema and a simple visual diagram. For instance, to analyze the verb “go”, go: [PATH, A → B ]; or the verb “stuff” in the meaning of “stuffing something into something”, stuff: [INSERTION, ] . Each polysemous word may have several image schemas, such as the preposition ‘over’ as treated by Brugman (1981). Conversely, under each image schema, we can also collect as
many words as possible, as is done by Linder referred to in Section 2.5.2 in dealing with verb plus particle structures. This could be further developed into a theory, which may provide a stronger interpretation of lexical meaning than the well-known semantic feature analysis in that image schemas could be visualized through simple diagrams, which could facilitate language learning.

Under each image schema, a group of words or even a large number of words could be collected. For example, under the PATH schema: $[\text{PATH}, \text{ A} \rightarrow \text{B} ]$, we could at least collect the following words: go, travel, journey, wander, tour, immigrate, transfer, tread a path, proceed, advance, move, pass(through), make a journey, leave for, depart, expatriate, take one's leave. Polysemous words may have several or a group of interrelated image schemas, such as the preposition "over", for details see Dewell (1994), and Brugman (1981). Obviously, only a certain amount of lexical items can be represented in this way in a certain degree of clarity.

3.5.4 Summary

In this Section, I have discussed three major things: image schemas and words, image schemas and semantic analysis, and image schematic features of vocabulary.

I have set up a relationship between image schemas and domains showing
image schema is a subtype of domain; thus image schemas can profile concepts as
domains do. Image schemas have been used in analyzing polysemous
prepositions, compound verbs, antonymous adjectives and in analyzing positive
and negative meaning. Since metaphorical mapping makes it possible for abstract
metaphorical meaning to possess the features of image schemas, it can be
imagined that a huge amount of vocabulary has image schematic properties.

3.6 Conclusions: The Hierarchical Structure

The major contribution of Chapter 3 is that all the theoretical discussions and
relations among image schemas, conceptual metaphors, domains, and lexical
items enable us to establish a hierarchical framework to link them together. In
other words, a certain amount of metaphorical expressions, idioms, and proverbs
can be linked up in a network structured by conceptual metaphors and image
schemas. In Section 3.3, I set up a relation between conceptual metaphor and
metaphorical expressions, idioms and proverbs (see Figure 3.6 in Section 3.3.6).
In Section 3.4.2, a relation between conceptual metaphors and image schemas was
set up. In Section 3.5, connections among image schemas, vocabulary, and
diagrams were also established. The set of relations can be summarized in the
following framework, using the PATH schema as an illustrative example.
Figure 3.11: The Hierarchical representation of image schema, conceptual metaphor and linguistic expressions

The various linguistic realizations ( <1>, <2>, <3>, <4> ) at level 4 are exemplified below:

E.g. <1> PATH schema profiled lexical items:

*depart, separate, leave for* (at starting point ...); *arrive...* (at arriving end);
*stopover* (in the process)

E.g. <2> Metaphor set:

A. It's a *long, bumpy road*.
B. We're *at a crossroads*.
C. We're *spinning our wheels*.

Etc.
(The metaphor set is organized under the conceptual metaphor LIFE IS A JOURNEY)

E.g. <3> Idioms:
B. We'll **cross** the bridge when we come to it.
C. Look before you **leap**.

E.g. <4> Proverb: rolling stone gathers no moss.

The following is an elaboration of the above structure at different levels using the PATH schema as an example. I have to make clear at one issue that the four levels is not a clear-cut relation, for example, without 'linguistic expressions' all the three levels from level 1 to level 3 cannot be expressed at all. Therefore I only use these four levels to describe the relations among experiences, image schemas, conceptual metaphors, and linguistic expressions (only those organized by conceptual metaphors and profiled under image schemas).

**At Level 1: Experiential level—Embodied Experiences (of PATH schema)**

In the physical/concrete world, people experience various actions with a starting point and an end: “to come to the office from home”, “to fly from New York to London”.

**At Level 2: Image schematic level**

From these moving and traveling experiences, people acquire the PATH image schema.
At Level 3: Level of conceptual mapping

Through metaphorical mapping, people acquire many conceptual beliefs (conceptual metaphor) that are linked to source domains. In the case of PATH, LOVE IS A JOURNEY (following a PATH), LIFE IS A JOURNEY (also following a PATH), and so on.

At Level 4: Level of linguistic expressions

To realize the CONCEPT at level 3, we have many metaphor sets, idioms, and proverbs in language expressions. In the case of PATH, it has lexical items, metaphorical expressions, idioms and proverbs as exemplified above. (see the 4 groups of examples from e.g. <1> to <4> immediately below the Figure 3.12)

Diagram:

As PATH is acquired from spatial relations, all experiences following the PATH schema, even if abstract, can be metaphorically illustrated in the abstract diagram. If it is concrete experience, then A is the starting location (such as “home”), and B is the final “location” (such as “office”), the whole experience is, for instance “to come to the office from home”. If the experience is an abstract one, then A is the initial state of the experience, while B is the final state.

PATH image schema

\[ \text{A} \rightarrow \text{B} \]

*Figure 3.12: PATH schema*
As image schemas and conceptual metaphors possess special cognitive values, it can be hypothesized that the acquisition of the expressions (at level 4) can be facilitated. Specific hypotheses will be formulated in Section 3.7 below.

3.7 The Proposed Hypotheses

The framework proposed in Figure 3.12 offers a number of testable hypotheses with regard to the role of conceptual metaphors and image schemas in lexical acquisition in general and the acquisition/learning of metaphors, idioms and proverbs in particular. I formulate a basic null hypothesis: **conceptual metaphors and image schemas cannot facilitate the learning of metaphorical expressions, idioms and proverbs**. Under this general hypothesis, I have the following 5 null hypotheses:

Hypothesis 1: Conceptual metaphors cannot facilitate the learning of the metaphorical senses of the words in the target domain; this will be tested in section 5.2.

Hypothesis 2: Conceptual metaphors introduced via Chinese cannot enhance the learning of the metaphorical senses of the English words in the target domain better than conceptual metaphors introduced via English; this will be tested in section 5.3.
Hypothesis 3: Image schemas cannot facilitate the learning of the metaphorical senses of the words in the target domain; this will be tested in section 5.4.

Hypothesis 4: Conceptual metaphors and image schemas cannot facilitate the learning of English idioms; this will be tested 5.5.

Hypothesis 5: Conceptual metaphors and image schemas cannot facilitate the learning of English proverbs; this will be tested in section 5.6.

Before I subject these hypotheses to full experimental tests, I will introduce and discuss some theoretical evidence to support the effectiveness of conceptual metaphors and image schemas in acquiring linguistic expressions.
CHAPTER 4

THEORETICAL SUPPORT FOR THE CONCEPTUAL METAPHOR AND IMAGE SCHEMA BASED APPROACH

4.1 Introduction

In Section 3.6, I set up a “hierarchical representation” of the present approach and proposed a general hypothesis with 5 specific null hypotheses. In this chapter, I will review three areas of work, which appear to provide theoretical support for the “CM & IS Approach”. They are: (1) The Dual Coding Theory (DCT) (Section 4.2); (2) The Psychological Reality of Image Schemas (Section 4.3); and (3) The Psychological Reality of Hierarchical Structures (Section 4.4). Finally, Section 4.5 provides a concluding summary.

4.2 Dual Coding Theory

I will begin this Section by stating the major claims of the “Dual Coding Theory” (DCT) (Section 4.2.1), followed by reviewing some empirical studies (Section 4.2.2) and the “bilingual version of DCT” (Section 4.2.3). Section 4.2.4 links DCT to the present research of “conceptual metaphor and image schema-based approach”. Section 4.2.5 offers a summary.
4.2.1 Major claims of “Dual Coding Theory”

DCT attempts to explain cognition, comprehension and memory in terms of two systems: one is the verbal system specialized for dealing with language, and the other is the non-verbal system (called the imagery system) for representing and processing world knowledge about objects and events. According to this theory, information is stored in two codes, the verbal information in the verbal system, the imagery information in the imagery system. (Paivio 1969, 1981, 1986, 1991; Gee, et al 1999).

The verbal system contains visual, auditory, articulatory, and other modality-specific verbal codes. Non-verbal representations include modality-specific images for shapes, environmental sounds, actions, skeletal or visceral sensations related to emotion, and other nonlinguistic objects and events (Clark and Paivio 1991). The two systems work independently, but are interconnected.

DCT further assumes that information stored mentally in two codes should be better comprehended and remembered than information stored only in one code. When information is encoded both verbally and non-verbally (e.g. as an image), the information is elaborated so promoting comprehension and a strengthened memory trace. Because concrete language readily evokes mental images, it has a natural advantage over abstract language. Information that is dually coded (i.e. concrete language) should be remembered approximately twice as well as information that is singly coded (e.g. abstract language).
The current central implication of DCT is the concreteness effect on memory: concrete words are easier to recall due to the way they are coded. This is the main reason why experiments on DCT mainly focused on testing the effect of concrete words, phrases, and sentences (e.g., Clark 1978, 1984, 1987, 1988; Clark and Paivio 1984, 1987, 1988; Marschark and Paivio 1977; D’agostino, et al. 1977; Klee, et al. 1973; Gee, et al. 1999; Harris, et al. 1997; Holcomb, et al. 1999; Sadoski, et al. 1997). In the following sections, I will review some empirical literature.

4.2.2 Empirical studies of concreteness effects

In this section, I will review some empirical studies, and focus on Walker and Charles (1999) in relatively more detail, which may shed more light on the present research.

Most early experiments about DCT were conducted at word level, mainly to compare the differences in coding pictures and words and to establish that there are two systems in coding. Examples of such experiments include Paivio (1967), D’Agostino (1977), and Harris, et al (1977).

Walker and Charles (1999) “Concrete words are easier to recall...” is one of the most up-to-date articles on the concreteness effect at the lexical level, in
which, immediate serial recall and maximal speech rate were assessed for concrete and abstract words. Walker and Charles' study contains three experiments. Experiment 1 showed an advantage for spoken recall of concrete words that was independent of speech rate. Experiment 2 showed an equivalent effect with written recall. Experiment 3 showed that the concreteness effect was still present when recall was backward rather than forward. The experimental process is as follows.

The first step of the experiment is to select concrete and abstract words. Words vary in their concreteness. Words referring to real, tangible objects, materials, or persons are said to be highly concrete (e.g., monkey, tree). Other words are more abstract, and they refer to ideas and concepts that cannot be directly experienced by the senses (e.g. truth, logic). Words were rated by subjects, each word was given a score from 1 to 7, where a high score means that you feel the word to be very concrete, and a low score means that you feel the words to be very abstract. Table 4.1 lists some examples used in this experiment and their concreteness scores.
Table 4.1: Concreteness Rating (adapted from Walker and Charles 1999:1271)

<table>
<thead>
<tr>
<th>Concrete words</th>
<th>Concreteness</th>
<th>Abstract words</th>
<th>Concreteness</th>
</tr>
</thead>
<tbody>
<tr>
<td>tooth</td>
<td>7.00</td>
<td>guilt</td>
<td>1.86</td>
</tr>
<tr>
<td>plate</td>
<td>6.50</td>
<td>trend</td>
<td>1.86</td>
</tr>
<tr>
<td>cream</td>
<td>6.25</td>
<td>luck</td>
<td>1.94</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In this experiment, altogether 16 words of each kind were selected: one syllable concrete words, one syllable abstract words, three syllable concrete words and three syllable abstract words. All experiments were based on the word list for various tasks. For instance, in experiment 1, the recall of one-syllable and three-syllable concrete and abstract words were compared. This was done by examining serial recall of seven-item lists. It was demonstrated that participants' ability to hear and repeat a list of words was substantially affected by concreteness. The same effect was also found in experiment 2 when the recall was written instead of spoken and in experiment 3 when the recall was backward rather than forward.

Experiments on the concreteness effect were also conducted at sentence level (e.g. Begg and Paivio 1969; Klee and Eysenck 1973). Experiments of this kind were still intended to prove the hypothesis of DCT, that is, concrete sentences are coded and stored primarily as non-verbal images. The theoretical findings imply specifically that a concrete sentence, such as “The thin monkey sits on the tree”, can be in imagination represented as an action picture in which the meaning of the
entire sentence is summarized as one organized unit, or complex image. The sentence is transformed into a non-verbal code in which the information is stored spatially, in parallel, rather than sequentially as a string of words. The information contained in abstract material is assumed to remain linked more closely to the sequentially organized verbal units. In the experiments, it was also shown that with concrete sentences subjects recognize semantic changes more readily than changes in their wording when the meaning remains unchanged. This means that because meaning remains unchanged wording changes are not noticed much, that is, the concrete sentence is not primarily coded at the verbal level. In contrast with abstract sentences (e.g., “The possible truth proved a civil complaint”), changes in wording were more noticeable than semantic changes. These findings are consistent with the hypothesis that concrete sentences are coded and stored mainly as non-verbal images.

On the sentence level, tests of comprehension were also conducted, such as Klee and Eysenck (1973). Klee and Eysenck obtained comprehension latencies of sentences varying in concreteness and meaningfulness under conditions of visual interference and verbal interference. It was proved that concrete sentences were more rapidly comprehended than abstract sentences.

Experiments on DCT at the sentence level have been widely conducted in the 1980s and the 1990s from many approaches, and have consequently made DCT a comprehensive theory in memory, psychology, cognition and psycholinguistics. For instance, one of the latest studies on DCT is an investigation of dual coding,
context-availability, and concreteness effects in sentence comprehension from an
electrophysiological point of view (Holcomb and Kounios 1999). The result was
interpreted as an extended dual coding account of semantic processing. There is a
clear tendency for modern technology to be incorporated into the DCT related
research at the sentence level. Research by Holcomb and Kounios (1999) serves
as a good example. DCT has also found its way in bilingual theory, to which I turn
below.

4.2.3 A bilingual version of “Dual Coding Theory”

The bilingual dual coding model, which is now known as “The Bilingual
Version of Dual Coding Theory” (BVDCT), was first proposed by Paivio and
Desrochers in the early 1980s (Paivio and Desrochers 1980) and has been
developed through experiments. BVDCT is a specific version of the independent
approach to bilingual cognition, and it also includes a common representational
system. The BVDCT includes all of the general assumptions presented in DCT
and adds some specific ones concerning the relations between the verbal
representational systems corresponding to the two languages — L1 and L2, and of
each of the two languages to the non-verbal system.

In the BVDCT, the non-verbal imagery system is assumed to be functionally
independent of both verbal systems for L1 and L2. This implies that bilinguals can
remember, perceive, and think about non-verbal objects and events without the
intervention of either language system. Conversely, they can think verbally without constant input from the non-verbal system. Those systems are at the same time only functionally interconnected at the referential level, so that verbal activity in either L1 or L2 can be influenced by the same imagery system. This means the two verbal systems corresponding to the speaker’s two languages have referential interconnections to the image system that are partly shared and partly independent. That is, the verbal equivalents in L2 for words or concepts in L1 may or may not activate the same non-verbal representational information.

The earliest experiments to test the implications of BVDCT were conducted by Paivio and Lambert (1981). In one experiment, some French-English bilinguals were presented with a mixed list of pictures, French words, and English words. The subjects (bilinguals) responded by writing the English name of each picture, translating each French word into English, and for the English words, they simply copied them. They used the three methods to treat the three kinds of stimuli. They were not told before doing this experiment that they would be doing a recall test after exposure to the stimuli. After the input of the stimuli, they were then given a surprise free-recall test for the English words they had written down in response to the pictures, translating, and copying. A second test followed, which reversed the encoding and recall tasks. The subjects were shown only English words and, in response to encoding cues, they imagined and quickly sketched the pictures of the referents of one third of the words, translated one-third into French, and copied the remaining one-third. Then they were asked to recall the English stimulus words they had previously been shown. The results are listed in Table 4.2.
Table 4.2: Percent correct recall in experiment 1

<table>
<thead>
<tr>
<th>Stimuli</th>
<th>Picture</th>
<th>French word</th>
<th>English word</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct recall</td>
<td>49%</td>
<td>32%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Table 4.3: Percent correct recall in experiment

<table>
<thead>
<tr>
<th>Stimuli</th>
<th>Sketch</th>
<th>Translate</th>
<th>Copy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct recall</td>
<td>55%</td>
<td>38%</td>
<td>18%</td>
</tr>
</tbody>
</table>

In both experiments, superior recall is shown for imaged than for verbally coded words, and superior recall for bilingually as opposed to unilingually coded words.

In a later study, Vaid (1988) used synonyms in addition to translation and copying only. The synonym generation task was compared to translation, copying, and imaging in Spanish-English bilinguals and English monolinguals. Although words in the synonym condition were better recalled than copied words, imaged and translated words were better remembered than synonyms. It is argued that a dual coding view offers a parsimonious account of these findings.

A major implication of the bilingual version of DCT for L2 language learning
is that in learning a second or foreign language, direct associations with suitable non-verbal referents are very important, because these referents (objects, events, behaviors, emotions) are cognitively represented, and constitute the knowledge of the world that L2 must tap into if it is to be used meaningfully. The richer and more direct the referential interconnections, the more efficient L2 use will be. Relating DCT to the current research, I will discuss how it supports the conceptual metaphor and image schema-based approach.

4.2.4 How DCT supports the “Conceptual Metaphor and Image Schema Based Approach”

The DCT is entirely about the advantages of learning concrete words or sentences, while what I am interested in here is the acquisition of metaphorical expressions, idioms, and proverbs. How can these two orientations be related?

I have discussed that the connecting point of metaphorical expressions (and idioms and proverbs) and concrete expressions is CONCEPTUAL METAPHOR, which relates the abstract target domain to the concrete source domain (Section 3.3.4). In fact even without the linking bridge of conceptual metaphor, the processing of figurative meaning is always involved in some way with the processing of literal meaning. The following provides a discussion of this.

Currently, there are two views about the processing of figurative language:
the contemporary and the traditional. The contemporary research on understanding figurative meaning holds that this is not fundamentally different from understanding literal meaning (e.g. Gibbs 1982, 1994; Keysar 1989, 1994; etc). The major claim is as follows:

(a) Literal language has no priority over nonliteral language: processing nonliteral language does not necessitate processing the surface literal meaning first. (e.g., Gibbs 1984: 287)

(b) Understanding literal and nonliteral language involves precisely the same complex comprehension processes and contextual information (Gibbs and Gerig 1989; Glucksberg 1989, etc). Specifically, metaphorical meaning is computed automatically in an obligatory manner, its interpretation requiring no triggering condition, i.e. a violation of a discourse rule (Keysar 1989:385). Thus understanding a metaphor (e.g. Example a) should be as easy as understanding literal language (e.g. b).

E.g.

a. My job is a jail.

b. Behind that high wall is a jail.

In contrast, the traditional theories (e.g. Grice 1975; Searle 1979) assume that the processing of literal and metaphorical meaning vary in the following ways:
(a) Literal interpretation has unconditional priority. The literal meaning of an utterance is always activated, and always prior to any other meaning.

(b) Metaphorical interpretation needs a triggering condition (i.e., a rule violation)

(c) Metaphorical meanings must be more difficult to understand; they should involve a sequential process. As a result, they should require more and different contextual support for their understanding.

There are certain phenomena that both the traditional and the contemporary theories find difficult to account. For instance, the traditional view cannot account for the fact that a rich context can neutralize the difference between the comprehension of literal and nonliteral language. Context longer than three sentences renders metaphoric and literal interpretations equally easy to process (Inhoff, Lima, and Caroll 1984; Ortony et al 1978). Kemper (1981) investigated proverb comprehension and found that the longer the paragraph, the easier it was to interpret proverbs figuratively.

The following phenomenon however cannot be accounted by the contemporary view. Blasko and Connine (1993) studied comprehension of less versus more familiar metaphors. They found that the literal meaning was always activated, and remained activated even after 300 ms delay. In understanding less familiar metaphors, the literal meaning was activated first, whereas the metaphoric meaning was available only in case the metaphor was highly apt. In understanding
less familiar metaphors, the metaphoric interpretation appeared only after 750 ms delay.

Concerning the shortcomings of both the traditional and the contemporary explanation, Giora (1997) has proposed the 'Graded Salience Hypothesis', which is applicable to both literal and figurative language. It goes as follows:

(a) Salient interpretation has unconditional priority over less salient interpretation: the most salient meaning of a word or an utterance is always activated.

(b) A novel interpretation of a salient meaning involves a sequential process, whereby the salient meaning is rejected as the intended meaning and reinterpreted. The more salient the interpreted language, the more difficult it is to reject as the intended meaning.

(c) Novel interpretation must be more difficult to derive; it should require more and different contextual support for its derivation

(Giora 1997: 200)

From the discussion above, we can infer that without rich context, literal meanings are always salient (e.g., Example a) and processed before metaphoric meaning (e.g., Example b).
a. That brick wall is *shaky*.

b. That argument is *shaky*.

This is also true for the polysemous senses involving two domains that are linked by CONCEPTUAL METAPHOR. The concrete meanings in the source domain are more tangible, more conventional and more familiar to readers, thus more salient, than the meanings in target domain (i.e. it would be difficult for the learner not to think of the concrete meaning of *shaky* at all when reading the sentence b).

Therefore I would argue that conceptual metaphor can facilitate memory for metaphorical expressions because when learners process the metaphorical senses in the target domain, their counterpart literal (concrete) senses are also accessed; according to DCT, concrete words can be dually coded and dual coding enhances memory.

In summary, DCT and BVDCT appear to support conceptual metaphor and the image schema approach for the following three reasons:

First, when metaphorical expressions are processed, their counterpart concrete meanings in the source domain can also be retrieved and processed in some way. Concrete meanings can invoke imagery, can be dually coded, and thus can enhance memory.
Second, even if the processing of some metaphoric meaning does not involve the activation of literal meaning, by the link of conceptual metaphor, learners can always be brought to be aware of the knowledge in the concrete domain. The association between metaphoric meaning and its counterpart can still be established.

Third, many lexical expressions can be related to image schema diagrams. According to BVDCT, "pictures and diagrams are worth a thousand words." Diagrams and visual images can be dually coded together with words, and can thus promote or enhance memory (Clark and Paivio 1991:152).

4.2.5 Summary

In summary, DCT has been developed through various experiments conducted over the past 40 years. It has been extended into several major disciplines, such as psychology, cognition, memory and education. Its main claim, the concreteness effect, has been successfully proved. Discussion of the processing of metaphoric meaning has shown that processing metaphoric meaning often involves the activation of literal meaning that readily invokes imagery. Thus, both DCT and its bilingual version support the "Conceptual Metaphor And Image Schema-Based Approach". In addition to DCT, the BLVDCT provides support to the present research in that a learner can directly access the diagrams which can be shared by both languages.
4.3 Psychological Reality of Image Schemas

In the hierarchical structure established in Section 3.6, image schemas occupy one level. Section 3.5 has indicated that image schemas can play a very important role in lexical learning. I will review evidence to show that image schemas do have psychological reality and play an essential role in cognition and learning. I will start with a brief discussion of "psychological reality" (Section 4.3.1).

To verify a theory to be psychologically real, evidence of various kind (such as, behavioral, neuropsychological, ontogenetic, and logical evidence) can be explored. To determine the psychological reality of image schemas, I will explore evidence from the following three areas: (1) "behavioral evidence", a discussion of empirical findings in Section 4.3.3; (2) "ontogenetic evidence", I will show in 4.3.4 that infants actually think in image schemas before they acquire language. (3) "neuropsychological evidence", I will discuss the neurological reality of conceptual metaphor to indirectly support the psychological reality of image schema (Section 4.3.5). Section 4.3.6 is a discussion that people even have schematic knowledge on diagrams. Section 4.3.7 is a summary.
4.3.1 What is psychologically real?

Theoretically speaking, if we say a linguistic theory is 'psychologically real', we mean that it contains rules that represent or at least approximate actual cognitive processes and categories with which we human beings operate. That is to say, if grammatical structures describe or are directly related to mental processing, storage, and recall, then they are psychologically real. (Brown 1987:150).

In practice, however, it is not an easy thing to verify the realist status of some theories. According to Cohen (2000), relevant evidence can be explored from different areas, such as: (1) behavioral evidence, consisting of experimental findings showing differences in response times, error rates, and quality of response; (2) neuropsychological evidence, consisting of case studies showing neuro-relation to the theory; (3) ontogenetic evidence, consisting of observations of child language and development from child to adult language; (4) logical evidence, consisting of arguments that the theory confers advantages in terms of efficiency and simplicity.
4.3.2 Behavioral evidence for the psychological reality of image schemas

A large body of research can be interpreted as supporting the claim that image schemas are indeed psychologically real and function in many aspects of how people process linguistic and non-linguistic information (e.g. Johnson 1987; Lakoff 1990; Lakoff and Turner 1989; Turner 1991, etc). If a theory has psychological reality, it must demonstrate itself empirically. To support the claim for the psychological reality of image schemas, Gibbs et al (1994) designed a series of four experiments to examine the role of several image schemas in understanding the polysemous word *stand*. I will briefly introduce these studies below.

In experiment 1, twenty-four undergraduates, who were English native speakers at the University of California, Santa Cruz, were brought into a fairly large room. The participants were told that the purpose of the study was to assess their intuition about physical experiences of standing. They were asked to close their eyes and concentrate on what it felt like to stand. Then in order to make their standing more salient, they were asked to perform different kinds of movements -- to bend to the right, to the left, to crouch down, to stand on their tiptoes. While they were still standing, the experimenter read them a brief explanation of the concept of an image schema. For example, the description for BALANCE stated: “Balance refers to your sense of symmetry or stability relative to some point with your body. As you stand there, do you feel a sense of balance?” Participants were
asked to rate how strongly that image schema was related to their experience of standing on a 7-point scale. Scale point 1 indicated that the description did not relate at all, while scale point 7 indicated that a description was strongly related. In this way, the top five most salient image schemas were selected. They were BALANCE, VERTICALITY, CENTER-PERIPHERY, RESISTANCE, and LINKAGE.

In experiment 2, thirty-five polysemous usages of *stand* in a phrasal context were selected from the Oxford English Dictionary, such as ‘*stand to attention*’, ‘*stand firm*’, ‘*to stand the test of time*’, and so on. These were written on thirty-five cards. Twenty-seven undergraduates from the University of California, Santa Cruz, participated as subjects to fulfill a course requirement. All subjects were native speakers of English. They did not participate in Experiment 1. These Participants were shown the cards and asked to judge the similarity for different usages of *stand*, and classify these 35 phrases into different categories. One finding from this experiment is that participants did not sort physical senses of stand separately from the non-physical or metaphorical senses. For example, the physical idea of *stand* in ‘*to stand at attention*’ was often grouped together with a metaphorical sense of *stand* as in ‘*let the issue stand*’, and ‘*to stand the test of time*’. In other words, concrete and abstract senses of *stand* are always put in the same category.

To further explore the relation between the identified image schemas and the different senses of *stand*, in Experiment 3 Gibbs and his colleagues examined
people's intuitions about the relative importance of these five salient image
schemas for different senses of *stand*. Twenty-seven undergraduates participated
in this study to fulfill a requirement for an introductory psychology course. All of
the subjects were native English speakers. These subjects did not participate in
either Experiment 1 or 2. The participants were first asked to stand up and focus
on different aspects of their bodily experiences of standing. Then they were
introduced the five image schemas of BALANCE, VERTICALITY, CENTER-
PERIPHERY, RESISTANCE, and LINKAGE. After that, the subjects were
provided with a booklet containing five pages. At the top of each page, was a
description of a particular image schema, followed by the 32 instances of *stand*.
The task for the subjects was to rate the degree of relatedness between the image
schema and each of the 32 uses of *stand*. This rating was made on a 7-point scale
with 1 meaning 'not at all related' and 7 meaning 'very strongly related'. The
subjects completed the same ratings for all 32 senses independently for each of the
5 image schema descriptions. It was found that different image schemas could
motivate different senses of *stand*, which means the understanding of the
polysemous senses of *stand* does relate to image schemas. For example, the
VERTICALITY schema motivates "stand at attention", "be at attention", and so on.
While the BALANCE schema motivates "stand on shaky ground" and others.

The data from these studies generally suggests that the meanings of the word
*stand* are not arbitrary for native speakers, but are motivated by people's recurring
bodily experiences (that is, image schemas) in the real world. These series of
empirical studies reported above exemplify that people do have psychological
reality for STAND-related image schemas. These studies constitute a strong empirical support for the claim that image schemas are indeed psychologically real and function in many aspects of how people process linguistic and non-linguistic information (e.g. Johnson 1987; Lakoff 1990; Lakoff and Turner 1989; Turner 1990).

4.3.3 Image schemas as conceptual primitives during infancy

We start from the question how children become able to think; how they go beyond perceptual categorization to form concepts during infancy.

The widely accepted answer to the question of how concepts are first acquired is mostly based on Piaget's (1952) theory of sensorimotor development. According to his theory, much of the first year and a half of life is taken up with developing perceptual (sensorimotor) categories of objects (for example, distinguish “ANIMATE” by observing, for instance, ‘a running cat’ and ‘Mum comes to milk’, and form “INANIMATE” by observing ‘furniture in the room’, and ‘lamp on the ceiling’ and so on), and concepts developed only when sensorimotor schemas become ‘internalized’, ‘speeded up’, and freed from ongoing perception and action.

Despite the popularity of his notion of “sensorimotor stage/period” for the child’s concept development, Piaget did not, as rightly pointed out by Mandler
(1992), provide a satisfactory theoretical account for the transition/transformation from sensorimotor or action schemas into concepts. His “sensorimotor period” has also met with empirical challenges from researchers such a Leslie (1982), Spelke (1985), Meltzoff (1988), and Baillargeon, De Vos & Grader (1989).

Spelke (1985) provides evidence which suggests that infants do not require such a long period of experience to learn the most basic characteristics of objects. From as early as three months of age, infants live in a stable perceptual world consisting of objects that are seen as coherent, bounded things; separate from the background, and behave in predictable ways (Spelke 1985). By 4 to 5 months they understand that objects are both solid and permanent, and they have begun to differentiate causal from noncausal object motion (Leslie 1982). Recent evidence has shown that conceptual representation is not long delayed, and that concepts are developing concurrently with the development of sensorimotor schemas. For example, one of the criteria that Piaget (1952) used to demonstrate conceptual activity was recall of absent objects or events. Because recall requires the infant to re-present information not given by current sensorimotor activity, Piaget thought that such recall did not occur until about the middle of second year. However, it has been demonstrated by Baillargeon, Devos, & Graber (1989) that recall can occur as early as 8 months of age. Recall of past events over 24-hr delay has been shown at 9 months (Meltzoff 1988).

Pinpointing the inability of Piaget’s theory to explain the pre-conceptual stage during infancy, Mandler (1992) proposed “image schemas” as conceptual
primitives and used them to explain the pre-conceptual stage and concept formation. Mandler proposes that there exists an innate perceptual analysis mechanism, by which infants analyze perceptual activities into image schemas. Through the perception of different movements through space such as 'Mum coming to give her/him milk', 'the cat running away', 'a milk bottle falling to the floor', and so on, the infant sees many objects moving in many different ways and directions, but many a recurrent movement can be redescribed in a less detailed form as following a path through space. This becomes the PATH image schema. Mandler (ibid) argues that infants, even from an early age, represent information at more than one level of description. The first level is the result of perceptual analysis that categorizes objects, movements, and events. At the second level, infants analyze objects and events into another form of representation that contains only fragments of the information originally processed. Information at this level is basically spatial and is represented in analog form by means of image schemas. They are such image schemas as PATH, SELF-MOTION, and CONTAINMENT. that form the earliest meanings that the infant mind represents. This level of representation is a productive, open system, and allows the infant to form a conceptual system, which contains the information needed to form images, to recall, and eventually to plan. Among the functions played by image schemas after the infants grow into children will be the function of controlling cross-domain mappings from concrete to abstract domain (see Chapter 3). Mandler's claim connects well with the current discussion of image schemas and conceptual metaphors in that Lakoff et al (e.g. Lakoff 1993, Johnson 1987) only discuss the embodied nature of image schemas, but did not touch upon the issue that from
when these image schemas are acquired.

In summary, infants acquire their conceptual system on the basis of image schemas. Put another way, infants think in image schemas during infancy before they have acquired language.

4.3.4 The neurological reality of conceptual metaphor

I have, so far, discussed the psychological reality of image schemas from the behavioral and the ontological perspectives. The psychological reality of image schemas can also be explored from the perspective of the neurological reality of conceptual metaphors. If the source-to-target domain mapping conceptual metaphors have neurological reality, then image schemas must also be neurological real.

There is little literature concerning the study of conceptual metaphor from a neurological perspective. The brief discussion provided below is based on an unpublished paper by Lakoff entitled “Metaphor and Blending From a Neural Perspective”. Lakoff states that associations between two conceptual domains (e.g., the concrete source domain and the abstract target domain) are naturally, automatically and unconsciously built up. Metaphorical mappings would leave permanent neural connections across the conceptual domains (Lakoff 2001, personal communication). An infant’s subjective experience of AFFECTION
is typically related to its sensory experience of Warmth, that is, the warmth of being held by the mother/care-giver. The association of affection with warmth would leave behind a permanent neural connection/pathway and would give rise to the establishment of a cross-domain mapping on the conceptual metaphor Affection IS Warmth. Should this be true for conceptual metaphors concerning emotions, it could very well be true to conceptual metaphors related to other domains of experience. Further research in this new sub-area of conceptual metaphor study may throw more new lights on this issue.

4.3.5 Schematic knowledge of spatial diagram representation

In Chapter 3, I discussed that image schemas can be represented in spatial diagrams. If we further explore the relationship between image schemas and their diagrams, the further question may be asked “can these diagrams be helpful in learning and thinking?”. Are there any differences between spatial diagrams representing image schemas and diagrams not representing image schemas? I will provide a discussion on this aspect.

There have been studies documenting the usefulness of diagrams in instructional texts for enhancing learning outcomes (e.g. Hegarty & Just 1993; Levin 1989; Mayer & Galini 1990; Sweller, Chandler, Tierney, & Cooper 1990). Besides the static function of illustration, diagrams can also serve a dynamic role during problem solving. They are in agreement with the nature of image schemas,
which can also be dynamic as well as static (see Section 3.4). Kindfield (1993/1994) reported the use of diagrams generated by people with varying degrees of training in genetics (from a single introductory course to a Ph.D. degree program) while they reasoned about the process of meiosis. All the subjects spontaneously negotiated some kind of diagrams during the course of their problem solving. They used diagrams as tools for thinking.

Similarly, there is also empirical evidence (Norvick et al, 1999) that people have abstract schematic knowledge for spatial diagram representations. In order to

\begin{center}
\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{tree.png}
\caption{A hierarchy or branching structure}
\end{figure}
\end{center}

\begin{center}
\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{matrix.png}
\caption{A matrix with rows and columns}
\end{figure}
\end{center}
assess the nature of people's knowledge concerning the applicability conditions for spatial diagram representations. Norvick et al (1999) devised a series of selection tasks in which the participants were asked to select the most appropriate type of representation from a list of alternatives for each problem expressed in a short text. The results showed that their selection accuracy was higher when the subjects were led to rely on spatial diagrams (see the three diagrams in figures 4.1 to 4.3) than when they were led to rely only on the specific verbal examples. The conclusion of this study indicated that each of these three spatial diagram representations has a consistent, canonical spatial embodiment to which it would be easy to ‘attach’ the applicability conditions. Other alternative representations used in this study, such as diagrams representing “parity” and “parts and wholes”, do not have a consistent, canonical spatial embodiment. In other words, subjects do not have abstract schematic knowledge for other diagrams provided. Those diagrams are not rooted in people's experiences.

In summary, this study has shown that people do have schematic knowledge for spatial diagrams. In the case of image schemas, people should have different applicability conditions for spatial diagrams representing image schemas.
4.3.6 Summary

In Section 4.3, I have discussed the psychological reality of image schemas from different perspectives, with 3 perspective types of evidence: behavioral, neuropsychological, ontogenetic; and all other existing literature can be seen as 'logical evidence' to make the 4th type of evidence. The evidence so far discussed appear to lend support to the psychological reality of image schemas, and thus, to have important implications for learning and memory.

4.4 Psychological Reality of Hierarchical Structures

A salient feature of the structural framework established in Section 3.6 is that the structure is hierarchical, with image schemas and conceptual metaphors occupying two intermediate levels. In what follows, we attempt to find out if the hierarchical structure has psychological reality.

I will first discuss the hierarchical organizations in various domains (4.4.1); then, I will provide empirical, neuropsychological and ontogenetic evidence to support the psychological reality of hierarchical structure (4.4.2); Section 4.4.3 will discuss the advantages of hierarchical structure. Section 4.4.4 is a summary of Section 4.4.
4.4.1 Hierarchical organizations in various domains

A definition of "hierarchy" from a recent linguistics text states as follows:

*Hierarchy:* any ordering of units or levels on a scale of size, abstraction, or subordination. E.g. a phrase structure tree assigns a hierarchical structure to sentences; levels of representation are often seen as forming a hierarchy from phonetics upward; Jesperson's theory of ranks which proposes a hierarchy of primary, secondary, and tertiary (Matthews 1997:161).

Hierarchical presentations are used in different subject disciplines, such as Chomsky's hierarchical model of generative grammar (1957) or the hierarchical organization of conceptual categories. What these hierarchical organizations share is that they consist of different levels of representation with different characteristics at each level. Take the hierarchical organization of behavior for example; the higher levels concern the whole organism and includes goals and intentions; the lower levels are concerned with component actions. In the hierarchical organization of conceptual categories, the basic level provides the most useful information: The categories we get in touch with daily are at the basic level.

In the discussion of conceptual metaphor and the image schema-based approach in Chapter 3, I established a hierarchical organization. At the linguistic level there are the linguistic expressions in the form of metaphorical expressions,
idioms, and proverbs. Going higher up, we find the conceptual metaphor — image schema — embodied experiences respectively.

In the following discussion (4.4.2 and 4.4.3), I will concentrate on the various kinds of evidence, and answer the following questions: does hierarchical structure have psychological reality, as image schemas do? If yes, what implications does it have for learning? I will turn to the question of psychological reality first.

4.4.2 Evidence for the psychological reality of hierarchical structure

There is a rich literature on the evidence of psychological reality for different kind of hierarchical structures. I will discuss some of the most relevant evidence from the behavioral, the neuropsychological, and the ontogenetic perspective.

Behavioral evidence

In a study (Stanhope, et al 1993) of long-term retention of the novel *Hard Times* by Charles Dickens, the participants were asked to make true-false judgments about facts from different hierarchical levels of the novel. Most errors occurred for subordinate-level items, fewer for intermediate-level items, fewest for superordinate-level items. It was concluded that memory for higher-level information was boosted because it could be inferred from general knowledge schema, whereas it was impossible to infer specific lower level details.
Neuropsychological evidence

There is plenty of neuropsychological evidence for the reality of different levels of the hierarchical representation of autobiographical memory. Evidence has shown that the lowest level of the hierarchy is vulnerable to aging, depression, and brain injury. A study conducted by Holland and Rabbitt (1990) indicated that although older adults could recall specific events from their past lives they recalled fewer details. Similarly, Cohen et al (1994) found young adults tended to produce “flashbulb-type” memories of a dramatic public event with highly detailed and accurate recall; older adults’ memories were more likely to be vague and generalized with marked loss of specific details. For these phenomena there can only be one explanation, that is, these hierarchical levels are neuropsychologically real.

Ontogenetic evidence

There is compelling ontogenetic evidence to show that there are age effects in the acquisition of different levels of conceptual hierarchies. Experiments (Rosch, et al 1976) concerning sorting tasks with young children indicated that sorting at the basic level was perfect at three years old, and superordinate sorting improved with age. This result shows that higher levels of representation are acquired later.
4.4.3 The advantages of hierarchical structure

Concerning the hierarchical representations, the following questions should be asked. Can cognitive operations be facilitated by hierarchical representations? What is the point of representing knowledge and information at a higher, more general level as well as at a lower specific level? The following are some major advantages of this hierarchical model.

Firstly, "all the evidence shows that general representations are more resistant than specific representations to errors, trauma, and forgetting" (Cohen 2000:29). Clinical studies (Baddeley & Wilson 1986; Williams 1996) have shown that generalized memories remain intact when depressions, dementia, or head injury have impaired specific memories. Studies of long-term retention of knowledge have repeatedly shown that higher level knowledge is better retained than lower level, specific knowledge. Therefore, a general level ('a higher level' or 'superordinate level') representation seems to provide robust and long-term back-up files which are relatively immune to error and decay and which allow at least some of the specific information that has been lost to be reconstructed.

Secondly, the reconstruction of specific level from general level knowledge is possible to some degree because general representation is inference rich. Missing values in specific memories can be inferred from the default values of general schemas. In a study of memory for objects in a room (Brewer & Treyen 1981), some of the remembered objects had been inferred from a general schema.
of a graduate student's office. According to Calvo and Carreiras (1991), memory for text can be amplified by inferences. Inferencing of this kind fills out specific memories and achieves greater completeness.

Thirdly, another important advantage of a general level representation is that it is "analogy transparent". At a general level, current experience is perceived as analogous to previous experiences. Thus the crucial process of mapping source domain knowledge and structure onto new target domains spans the whole range of cognition from solving mathematics problems to responding appropriately to social situations that share the same structure. In learning, this analogous nature of structure makes it a good tool for acquiring new knowledge, and for linking the new to the old. And most importantly, the two domains form a kind of existing schema.

4.4.4 Summary

In this Section (4.4), I have discussed the psychological reality of hierarchical structure. The evidence has been drawn from a range of perspectives, including the behavioral, ontogenetic, and neuropsychological. The major advantages of hierarchical models includes the fact that information at higher levels in representation is more resistant than specific representations to errors, trauma, and forgetting; reconstruction of specific from general level knowledge is possible to some extent; finally there is "analogy transparence": at a general level current
experience is perceived as analogous to previous experience, thus facilitating new cognition.

The structure established in Section 3.6 is hierarchical, and should possess at least some of the advantages discussed in this section.

4.5 Conclusions

In this chapter I have discussed three major theoretical strands: the dual coding theory, the psychological reality of image schemas and hierarchical structure. Each of them provides theoretical support for the current study in various ways, as summarized below.

Supports from Dual Coding Theory

(1) Conceptual metaphor links or bridges two domains, the concrete domain and the abstract domain. The learning of metaphorical senses in the target domain can be facilitated when learners are made aware of the concrete senses in the source domain to which they are related by conceptual metaphors. When metaphorical expressions are processed, their counterpart concrete meanings in the source domain can also be retrieved and processed. Concrete meanings can invoke imagery and therefore can be dually coded, thus enhancing memory.
(2) Learning of idioms and proverbs can also be facilitated by the concrete domain information conveyed by conceptual metaphors, because the understanding of idioms and proverbs is often motivated by the source to target domain mapping of conceptual metaphors.

(3) Metaphorical expressions, idioms and proverbs can be associated to image schemas, which can be spatially represented in diagrams; according to dual coding theory, “diagrams are worth a thousand words” (Clark & Paivio 1991: 152). Diagrams can be dually coded with words, thus promoting memory.

Supports from the Psychological Reality of Image Schemas

(4) Image schemas have psychological reality. If people are aware of them, their memory could be promoted.

(5) Conceptual metaphor has neurological reality. The associations between two conceptual domains are naturally, automatically and unconsciously built up. Metaphorical mappings should leave permanent neural connections across conceptual domains.

(6) People have abstract knowledge for image schematic spatial diagrams. These spatial diagrams can be used as tools for thinking and learning.
Supports from the Psychological Reality of Hierarchical Structures

(7) General representations are more resistant than specific representations to errors and forgetting. Conceptual metaphor and image schemas function as two higher-level representations for metaphorical expressions, idioms, and proverbs.

(8) Reconstruction of specific level knowledge from the general is possible to some extent because general representation is inference-rich.

(9) The analogous nature of structure makes it a good tool for acquiring new knowledge and linking the new to the old.

(10) “Nonverbal signs are the deep structure of language and meaning is the event of an association of nonverbal and linguistic signs. When a meaning occurs, the body enters language in the form of quasi-perceptual readings of the world” (Ruthrof 2000:1). This quotation is relevant to our current study since diagrams of image schemas can be regarded as the “nonverbal signs”. When we associate these “nonverbal signs” with image schemas and conceptual metaphors, we find meanings expressed by linguistic metaphors, idioms, and proverbs.
CHAPTER 5

METHODOLOGY: EMPIRICAL SUPPORT FOR THE
CONCEPTUAL METAPHOR & IMAGE SCHEMA BASED APPROACH

5.1 Introduction

Section 3.6 established a hierarchical framework that links metaphorical expressions, idioms and proverbs together with conceptual metaphors and image schemas, based on which, Section 3.7 proposed the basic null hypothesis with 5 null sub-hypotheses. Discussions of three major theoretical strands in Chapter 4 appear to shed much light on these hypotheses. Until now, however, there have been no empirical studies to test them. This Chapter contains an account of a group of 5 studies to verify the 5 hypotheses. They will be discussed from Sections 5.2 to 5.6 respectively. Section 5.7 is a summary.

In each section, I will first introduce how and why the hypothesis has been formulated and then how the materials have been designed; this will be followed by a discussion of the methodological procedure. Each study follows a similar process, that is, pre-test --- teaching and learning --- posttest --- questionnaire --- one-week delay test. Group 1 is always the control group, and Group 2 (and group 3 in Hypotheses 4 and 5) is always the experimental group.

The subjects of all the studies were first year or second year undergraduates in
Mainland China. And all the learning and teaching were conducted between 9, May – 7, July 2001. Detailed information about the subjects of each experiment will be described accordingly. All the subjects (385 in total) groups were different from each other.

All the papers from the experiments were marked and scored in 100-score system according to the marking schemes. The marking was done by a three-person group including the researcher, the other two were teachers in the Ocean University of Qingdao. In the case of the 16 proverbs (or idioms) in the test paper in H4 and H5, the scores are transferred into 100-score system.

5.2 Experiments on Hypothesis 1

5.2.1 Hypothesis 1

Hypothesis 1

*Conceptual metaphors cannot facilitate the learning of the metaphorical senses of words in the target domain.*

This hypothesis focuses on the mnemonic function of conceptual metaphors in learning the metaphorical senses of the lexical items in the target domain. Take the conceptual metaphor "THEORIES ARE BUILDINGS" for example. Under this conceptual metaphor, there is a metaphor set using the following metaphorically: “construct”, “buttress”, “collapse”, and “shaky”, etc. This relation
can be demonstrated in Figure 5.1.

![Diagram](image)

*Figure 5.1: Hierarchical structure of two domains linked by conceptual metaphor “THEORIES ARE BUILDINGS”*

### 5.2.2 Materials

In identifying the lexical items for experimental use, I observed the following principles: (a) these metaphor sets must be organized under what are generally accepted to be conceptual metaphors. (b) The lexical items in the metaphor sets organized under the conceptual metaphors must not be familiar to the subjects, so they do not already know the metaphorical senses of the words at the pre-test stage. This makes comparing the pre-test and the post-test results meaningful. To observe (a), I drew on the Berkeley metaphor website (http://cogsci.berkeley.edu/metaphors/) in January 2001 and selected metaphor.
sets containing 100 linguistic metaphors organized under 12 major conceptual metaphors (see Appendix 24).

To observe (b), I consulted Thorndike's vocabulary book (1972) for their frequency (see Appendix 25). The majority of the target words or expressions selected are below the frequency of 29, which means these words are beyond the 3000 basic vocabulary frequency according to Thorndike (1972).

Next, I edited these 100 linguistic metaphors into a test paper, which was piloted with 28 undergraduate students from the English Department of the Chinese University of Hong Kong. In this test, subjects were required to define the metaphorical words. Based on the pilot results of the 28 students, these 100 words were arranged in a list according to their degree of difficulty (see Appendix 26).

40 words were selected from "100 word list with degrees of difficulty" (Appendix 26). It is necessary to do the 'narrow down' selection through this pilot, because this can increase the reliability of the material. The cut-off number at 40 was based on two considerations: first, since a teaching period is 40-50 minutes in most universities in Mainland China, materials containing more than 40 metaphor sentences would be difficult to finish within the fixed time limit of one teaching period; second, the number 40 is convenient in marking in a 100-mark system, since each question is 2.5 marks. The 40 words selected are listed at the top of the "100 word list with degrees of difficulty", meaning they are the
most unfamiliar among the 100 metaphors. They are organized under 6 conceptual metaphors. Based on the 40 metaphor sentences each containing a target word used metaphorically, I have designed the test paper for H1 (see Appendix 1), and learning material for both groups (see Appendices 2, 3 and 4).

The major difference between the learning materials for Group 1 and Group 2 is that the material for Group 1 is organized by semantic topics such as “Anger”, and that for the experimental Group 2 is organized by conceptual metaphors such as ANGER IS HEAT. This arrangement is fair, as material for Group 1 is not organized in random order. If the result is positive, then it indicates that conceptual metaphor is a more effective framework for facilitating vocabulary acquisition, as opposed to a framework of simple semantic organization.

5.2.3 Methodology

Subjects:

The subjects for H1 were 76 non-English majoring freshmen (2000-2001) from the Ocean University of Qingdao, China. They had 4 teaching hours of English every week. As they were facing the challenge of passing the China National English Band 4 Exam in the following term, all were well motivated to improve their vocabulary power. These 76 students belonged to two classes. Class 1 had 36, which became Group 1 in our experiment, and Class 2 had 40, which became Group 2. With the permission of their English teacher, two teaching hours
of their normal English class were used for these experiments and an additional 15 minutes for the one-week delayed test.

**Procedures:**

The following (table 5.1) is a summary of the teaching and testing procedures.

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-test: 15 minutes</th>
<th>Teaching and Learning 50 minutes</th>
<th>Post-test: 15 minutes</th>
<th>Questionnaire 5 minutes</th>
<th>One-week delayed test: 15 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1(36) Test paper for H1 (Appendix 1)</td>
<td>Step 1: discussion of the organizing themes in learning material (Appendix 2) Step 2: learning material organized by topics (Appendix 2)</td>
<td>Test paper for H1 (Appendix 1)</td>
<td>See Appendix 27</td>
<td>Test paper for H1 (Appendix 1)</td>
<td></td>
</tr>
<tr>
<td>Group 2(40) Same as above</td>
<td>Step 1: discussion of conceptual metaphor (Appendix 3) Step 2: learning material organized by conceptual metaphor (Appendix 4)</td>
<td>Same as above</td>
<td>Same as above</td>
<td>Same as above</td>
<td></td>
</tr>
</tbody>
</table>
Both groups follow the following 5 steps:

Step 1. Pre-test: 15 minutes
Step 2. Teaching and Learning: 50 minutes
Step 3. Post-test: 15 minutes
Step 4. Questionnaire: 5 minutes
(One week after learning)
Step 5. One-week delay test: 15 minutes

The time spent on each step for both groups was the same. Materials used for each step were also the same except for Step 2, discussing and learning, in which the same linguistic metaphors were taught in different organizing methods. In the 50 minutes teaching and learning period for group 1, the teacher discussed the organizing themes and explained all the material in detail with each student holding a copy in their hand. The first 10 minutes was spent on discussing the organizing topics. Then the explanation of the whole material took about 20 minutes. In the remaining 20 minutes, the students kept going over the material by themselves with some explanations from the teacher in response to questions.

In the 50 minutes teaching and learning period for group 2, a 10-minute discussion was held, using the material “Discussion Material for Group 2 in Hypothesis 1” (see Appendix 3). The purpose of this discussion was to familiarize the students with the basic techniques for dealing with conceptual metaphor. After the discussion the teacher explained the “Learning Material for Group 2 in Hypothesis 1” (see Appendix 4) in the same way as was done for Group 1. The teacher explained how and why these sentences were related to conceptual
metaphors; the process took about 20 minutes. In the remaining 20 minutes, the
students kept going over the material by themselves and asked some questions.

Neither group was told that there would be another test one week after
learning.

5.3 Experiments on Hypothesis 2

5.3.1 Hypothesis 2

Hypothesis 2

Conceptual metaphors introduced via Chinese do not enhance the learning
of the metaphorical senses of the English words in the target domain better than
conceptual metaphors introduced via English.

H2 is formulated based on the following theoretical input. In the discussion of
conceptual metaphor, Lakoff has shown that conceptual metaphor is not English
specific:

"Metaphorical mappings vary in universality; some seem to be universal,
others are widespread, and some seem to be culture specific" (Lakoff 1993:
245)
This statement is, in fact, supported by Yu’s (1999) book from the perspective of Chinese: as far as our literature review can show, this is the first book using Chinese data to support Lakoffian metaphor theory. It is shown in Yu’s book that Chinese and English share many conceptual metaphors. For example, both English and Chinese share the emotion metaphor “ANGER IS HEAT”. Under this metaphor there are two sub-metaphors for both English and Chinese, among which both English and Chinese share “ANGER IS FIRE”. Besides “ANGER IS FIRE”, the other sub-metaphor in English is “ANGER IS HOT FLUID IN A CONTAINER”, while in Chinese it is “ANGER IS A HOT GAS IN A CONTAINER” (Yu 1999; Li 2000b). See the examples below.

Examples:

E.g. 1(a).

English: “ANGER IS FIRE”

--Those are inflammatory remarks.
--She was doing a slow burn.
--He was breathing fire.

E.g. 1(b).

Chinese: “愤怒是火” (fen nu shi huo)

“ANGER IS FIRE”

--别惹我发火.(bie re wo fa huo)
  not cause me emit fire
  Don’t arouse me to lose temper.
--他正在火头上.(ta zheng zai huo tou shang)
  he is at fire top
  He is at the top of his anger.
E.g.2 (a).

English: “ANGER IS HOT FLUID IN A CONTAINER”
--You make my blood boil.
--I had reached the boiling point.
--She got all steamed up.

E.g.2 (b)

Chinese: “ANGER IS A HOT GAS IN A CONTAINER”
--我可受不了这窝囊气.(wo ke shou bu liao zhe wo nang qi)
I can not bear this unfair gas.
I can not bear this unfair anger.
--他脾气很大.( ta pi qi hen da)
He lung gas big.
He has a big temper.

These examples show that English and Chinese do indeed share many conceptual metaphors. As the subjects were native speakers of Chinese and study English as a foreign language, one wonders whether conceptual metaphors introduced via the subjects’ mother tongue, Chinese, would enhance their learning of the metaphorical senses of the target words better than conceptual metaphors introduced via English.

Based on the discussion above, Hypothesis 2 is formulated.
5.3.2 Materials

Among the 6 conceptual metaphors (which can organize 40 selected linguistic metaphors (see 5.2.2), Chinese shares 5 of them (the first 5 of the 6 conceptual metaphors below). To add “THEORIES ARE BUILDINGS”, which Chinese can also share with English, there are altogether 6 conceptual metaphors. They are as follows:

Six Conceptual Metaphors Shared by Both Chinese and English

1. ANGER IS HEAT
2. A PROBLEM IS A BODY OF WATER
3. ACTION IS SELF-PROPELLED MOTION
4. IDEAS ARE FOOD
5. EXTERNAL APPEARANCE IS A COVER
6. THEORIES ARE BUILDINGS

Under these six conceptual metaphors, forty linguistic metaphors are selected, based on which, a test paper and the learning materials for both groups were designed (see Appendix 5 to Appendix 9).

5.3.3 Methodology

Subjects:

The subjects for H2 were 49 non-English majoring freshmen (2000-2001 grade) from the Ocean University of Qingdao, China. Group 1 had twenty-one,
Group 2 had twenty-eight. Their backgrounds are similar to those participating in H1.

**Procedures:**

H2 follows the same procedure as in H1 (see 5.2.3), that is, going through 5 steps with the same length of time spent on each step. Both groups spent 10 minutes discussion on conceptual metaphor in Step 2. The ten-minutes discussion in Group 1 was about English conceptual metaphors, while in Group 2, the discussion is about Chinese conceptual metaphors. The other difference between the two groups lies in the way material organized used in Step 2. See the summary below:

Group 1: Given 6 English conceptual metaphors and the 10 minutes discussion was conducted in English and the learning of 40 linguistic metaphors was in English.

Group 2: Given 6 Chinese conceptual metaphors and the 10 minutes discussion was conducted in English and the learning of 40 linguistic metaphors was also in English.

(Test paper for H2, see Appendix 5; discussion material for Group 1, see Appendix 6; discussion material for Group 2, see Appendix 8; learning material for Group 1, see appendix 7; learning material for Group 2, see Appendix 9).
5.4 Experiments on Hypothesis 3

5.4.1 Hypothesis 3

Hypothesis 3

*Image schemas cannot facilitate the learning of the metaphorical senses of words in the target domain.*

A given image schema can be instantiated in many different kinds of domains; the abstract structure can be metaphorically projected onto a vast range of experiences. This makes it possible for one image schema to organize a huge number of lexical items.

*Studies in cognitive linguistics suggest that over two dozen different image schemas and several image schema transformations appear regularly in people's everyday thinking, reasoning and imagination* (Johnson 1987: 356).

As has already been discussed (see Section 3.5.2), Susan Lindner has investigated over 600 cases of verb-particle constructions with *out*, such as *take out, spread out, throw out, etc.* and 1100 cases of the construction verb *+ up, e.g. raise up, break up, give up.* She found a small number of prototypical schematic structures that could be systematically extended to cover almost all occurrences of the verb-particle construction under study. For the particle *out*, she identified three basic image schemas (see 3.5.2 for details).
5.4.2 Materials

I used the CONTAINER schema as a way of organizing lexical items. This is a widely discussed image schema (Johnson 1987; Cienki 1997). It is also very typical in that it displays the bodily motivation of image schemas, since as Johnson once pointed out, the human body can be metaphorically regarded as a container:

Our encounter with containment and boundedness is one of the most pervasive features of our bodily experience. We are intimately aware of our bodies as three-dimensional containers into which we put certain things (food, water, air) and out of which other things emerge (food and water wastes, air, blood, etc). We move in and out of rooms, clothes, vehicles, and numerous kinds of bounded spaces; we manipulate objects, placing them in containers (cups, boxes, cans, bags, etc). In each of these cases there are repeatable spatial and temporal organizations. In other words, there are typical schemata for physical containment (Johnson 1987:21).

This CONTAINER as source domain can be mapped into many other target domains since, as Gibbs once stated:

The same image schema can be instantiated in many different kinds of domains because the internal structure of a single schema can be metaphorically understood (Gibbs and Beital 1995:356).
The CONTAINER schema functions like the abstract structure of an image and is connected to a vast range of different dynamic experiences showing the same recurring structures. An obligation can be a CONTAINER, which is why we say "I can't get out of it, I'm locked into it". And investments can be a CONTAINER, "We pooled our funds for the venture"; "We have poured our money into bonds". In this way the CONTAINER schema links a large range of domains related to a vast number of metaphor sets.

From the word list constructed in H1 (Appendix 26:100 word list with degrees of difficulty), I selected twenty-five metaphors that are related to the CONTAINER schema, and they are organized under the following six conceptual metaphors:

ANGER IS HEAT

THE BODY IS CONTAINER FOR ANGER

DIFFICULTIES ARE CONTAINERS

OBLIGATIONS ARE CONTAINERS

EMOTIONS ARE ENTITIES WITHIN A PERSON

INVESTMENTS ARE CONTAINERS FOR LIQUIDS

Learning materials and the test paper for H3 (see Appendices 10-13) were based on these twenty-five linguistic metaphors organized under the above six conceptual metaphors.
5.4.3 Methodology

Subjects:

The subjects were fifty-two English major freshmen from the Ocean University of Qingdao, China. There were twenty-three in Group 1, twenty-nine in Group 2.

Procedures:

As the hypothesis is concerned with the mnemonic function of image schemas, the experimental group needed to be fully informed of the CONTAINER image schema. After the routine pre-test before entering into the learning stage, Group 2 had a discussion. The purpose of the discussion was to make the students fully aware of the CONTAINER image schema and how it applies to the human body.

"Teacher: we are going to learn 25 words in 25 sentences. These sentences are directly or indirectly (that is, metaphorically) related to the Human Body As A Container."

The following are the initial questions discussed in the class.

*Question:* What's in your mind about your own body? (Clue: the body is a...)

*Question:* What does your body contain? (Clues: head, stomach, legs...)

*Question:* What does your head contain? (Clues: brain, different organs...)
Question: Besides different organs, what else can you head contain? (Clues: ideas, learning...)

Question: In what way is your body (head) similar to a container like a cup, or a bottle?

After the above discussion was completed, the subjects were presented with a piece of paper containing the above questions (see Appendix 12: Discussion Material for Group 2 in Hypothesis 3); meanwhile they were asked to draw two abstract diagrams, one of the human body, the other of a container of any kind. This was done for them to internalize the idea that the HUMAN BODY is a CONTAINER. Representative diagrams drawn by 3 subjects are shown in appendices 28-30.

In the teaching and learning stage, the teacher mainly focused on the reason why CONTAINER can motivate the understanding of the linguistic metaphors. On the learning materials distributed to the experimental group (Group 2), an abstract diagram of a circle representing an abstract CONTAINER is provided (see Figure 5.4), this is to reinforce the CONTAINER image schema in their mind. Using a circle diagram to represent a CONTAINER schema is often found in the literature, such as in Johnson (1987).
Table 5.2 below summarizes the whole learning process and the materials used for both groups:

Table 5.2: Testing and learning procedures and materials used for H3

<table>
<thead>
<tr>
<th>Steps</th>
<th>Pre-test: 10 minutes</th>
<th>Teaching and Learning 35 minutes</th>
<th>Post-test: 10 minutes</th>
<th>Questionnaire 5 minutes</th>
<th>One week test: 10 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 (20) Test paper for H3 (Appendix 10)</td>
<td>Step 1: Discussion of conceptual metaphors Step 2: Learning material organized by conceptual metaphor (Appendix 11)</td>
<td>Test paper for H3 (Appendix 10)</td>
<td>See Appendix 27</td>
<td>Test paper for H3 (Appendix 10)</td>
<td></td>
</tr>
<tr>
<td>Group 2 (23) Same as above</td>
<td>Step 1: discussion and drawing diagrams (Appendix 12) Step 2: learning material organized by image schemas (Appendix 13)</td>
<td>Same as above</td>
<td>Same as above</td>
<td>Same as above</td>
<td></td>
</tr>
</tbody>
</table>
Group 2 started with the pre-test, to be followed by discussion and drawing. Then, the teacher explained the whole set of materials (see Appendix 13: Learning Material for Group 2 in Hypothesis 3). Students had just enough time to go over the materials once before time was up. The whole process took 35 minutes.

Subjects in Group 1 (control group) did not go through the process of discussing containers and the human body as a container; nor did they draw diagrams. While as a parallel activity to the discussing and drawing in Group 2, subjects in group 1 discussed conceptual metaphors and how those linguistic metaphors are related to the organizing conceptual metaphors while they were learning the learning materials organized by conceptual metaphors; the materials did not contain the abstract diagram of a circle as CONTAINER. In summary, the teacher explained conceptual metaphor first then discussed the materials (see Appendix 11: Learning Materials for Group 1 in Hypothesis 3), then the subjects went over the materials themselves about twice and the teacher told them to stop when the 35 minutes was up. The whole procedure for both groups is summarized below.

**Summary of learning and testing procedures for H3:**

Step 1. Pre-test: 10 minutes
Step 2. Teaching and Learning: 35 minutes
Step 3. Post-test: 10 minutes
Step 4. Questionnaire: 5 minutes
   (After one week)
Step 5. One week delayed test: 10 minutes
5.5 Experiments on Hypothesis 4

5.5.1 Hypothesis 4

Hypothesis 4

*Conceptual metaphors and image schemas cannot facilitate the learning of idioms.*

Hypothesis 4 was formulated to determine whether conceptual metaphors and image schemas can facilitate learning idioms. H4 has three subject groups: Group 1 was the control group, for which the idiom learning materials were organized under semantic topics; both Group 2 and Group 3 were experimental groups but with different testing purposes: for Group 2 the materials were organized under the motivating conceptual metaphors to test if conceptual metaphors can facilitate idiom learning; for Group 3, the materials were related to mental images to see if they can facilitate idiom learning. Because for the available sixteen idioms, there exists a great difficulty to provide image schema to each idiom, in the design rich image was used as a way to activate image schemas.

Hypothesis 4 drew on the results of empirical studies conducted by Gibbs (1992) and Gibbs and O’Brien (1990). It is traditionally thought that idioms are dead metaphors. That is to say, they were once metaphoric but have since lost their metaphoricity over time and are now equivalent to literal phrases, so that *blow your stack* = “to get very angry”, *spill the beans* = “to reveal a secret” and so
on. Gibbs’ studies demonstrated that idioms are not dead metaphors; they have more complex meanings that are motivated by conceptual metaphors linking the idiomatic phrases to their figurative interpretations. The meanings of idioms are consistent with the source-to-target domain mappings of the conceptual metaphors that motivate their figurative meaning. If Gibbs’ result is correct, then conceptual metaphors should facilitate the learning of idioms. The present research has put aside the issue as how many idioms in the language could be organized or motivated in this way. Since the motivating (though partly) relation between these idioms and some conceptual metaphors has been set up, if conceptual metaphors can or can not facilitate the learning of those idioms can be tested.

5.5.2 Materials

In Gibbs’ experiments, five groups of twenty-five idioms (five idioms in each group) were used. Each group of idioms was about a single topic. Two conceptual metaphors were identified to (partly) motivate the understanding of the five idioms in each group.

In the present study, only sixteen out of Gibbs’ twenty-five idioms were selected as materials for learning and testing. This was due to the desire to make the number of idioms the same as the number of proverbs in H5, for which only sixteen proverbs were used (see Section 5.6.2). The sixteen idioms and their motivating conceptual metaphors are listed below.
Group One: Anger

Motivating Conceptual Metaphors: MIND IS A CONTAINER

ANGER IS HEAT

Idiom 1: hit the ceiling
Idiom 2: lose your cool
Idiom 3: foam at the mouth

Group Two: Exerting control/authority

Motivating Conceptual Metaphors: CONTROL IS A POSSESSION

CONTROL IS AN INVISIBLE FORCE

Idiom 4: crack the whip
Idiom 5: lay down the law
Idiom 6: call the shots

Group Three: Secretiveness

Motivating Conceptual Metaphors: MIND IS A CONTAINER

IDEAS ARE ENTITIES

Idiom 7: button your lips
Idiom 8: hold your tongue
Idiom 9: keep in the dark

Group Four: Insanity

Motivating Conceptual Metaphors: MIND IS A CONTAINER
MIND IS A BRITTLE OBJECT

Idiom 10: go off your rocker
Idiom 11: go to pieces
Idiom 12: lose your grip

Group Five: Revelation

Motivating Conceptual Metaphors: MIND IS A CONTAINER

IDEAS ARE ENTITIES

Idiom 13: spill the beans
Idiom 14: blow the whistle
Idiom 15: blow the lid off
Idiom 16: loose lips

The above sixteen idioms were built into the test paper and the learning materials for the three subject groups. The major differences among the learning materials for each group are as follows: for subject Group 1, the sixteen idioms were organized under five semantic topics, that is, “Anger”, “Exerting Authority”, “Secretiveness”, “Insanity” and “Revelation”. The motivating metaphors were removed from the materials; the figurative meaning of each idiom alone was given (See Appendix 16: Learning Material For Group 1 in Hypothesis 4). For subject Group 2, the above sixteen idioms were organized by the same five topics, but the motivating metaphors were provided (See Appendix 17: Learning Material For Group 2 in Hypothesis 4). For subject Group 3, in addition to the organizing topics and motivating conceptual metaphors, there was also a discussion about the
images behind each idiom (see Appendix 18: Discussion and Learning Material For Group 3 in Hypothesis 4).

The test paper was in the format of filling in the missing words to complete the whole idiom, such as “to spill ____” (fill in the beans). The Pre-test and the post-test used the same paper. In the one-week delayed test, one more requirement was added, that is, besides filling in the missing words to complete the idiom, it was also required to write the figurative meaning for each idiom. This requirement is added from the consideration that the test load in pre-test and post-test is little (only complete the spelling forms of the sixteen idioms), it is very likely that no significance can be shown, if it is so, then we could mark the meaning separately and compare the result on meaning. Therefore, there are four scores: pre-test, post-test, one week delayed test on idiom form, and one week delayed test on idiomatic meanings.

5.5.3 Methodology

Subjects:

The subjects for H4 were one hundred and twenty-seven English Major Sophomores (1999-2000) from the Teacher’s College, Qingdao University, China. This is a provincial university of Shandong. The students showed great enthusiasm to participate. Group 1, Group 2, and Group 3 had thirty-eight, forty-five and forty-four subjects respectively.
Procedures:

Table 5.3 summarizes the procedures and materials used for each group.

**Table 5.3: testing and learning procedures and materials used for H4**

<table>
<thead>
<tr>
<th>Steps</th>
<th>Pre-test: 5 minutes</th>
<th>Teaching and Learning: 35 minutes</th>
<th>Post-test: 5 minutes</th>
<th>Questionnaire: 5 minutes</th>
<th>One week test: 15 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 (38)</td>
<td>Test paper for H4 (Appendix 14)</td>
<td>Step 1: brief discussion on the topics. Step 2: Learning material organized by semantic topics (Appendix 16)</td>
<td>Test paper for H4 (Appendix 14)</td>
<td>See Appendix 27</td>
<td>One week Test paper for H4 (Appendix 15)</td>
</tr>
<tr>
<td>Group 2 (45)</td>
<td>Same as above</td>
<td>Step 1: brief discussion on conceptual metaphors. Step 2: Learning material organized by conceptual metaphors (Appendix 17)</td>
<td>Same as above</td>
<td>Same as above</td>
<td>Same as above</td>
</tr>
<tr>
<td>Group 3 (44)</td>
<td>Same as above</td>
<td>Step 1: brief discussion of images (appendix 31) Step 2: Learning material organized by conceptual metaphors and images (Appendix 18)</td>
<td>Same as above</td>
<td>Same as above</td>
<td>Same as above</td>
</tr>
</tbody>
</table>
To put it another way, all three subject groups followed the following five steps:

Step 1. Pre-test: 5 minutes

Step 2. Teaching and Learning: 35 minutes

Step 3. Post-test: 5 minutes

Step 4. Questionnaire: 5 minutes

(One week after learning)

Step 5. One week delayed test: 15 minutes

In the following I will further elaborate on the differences of the thirty-five minutes learning processes of three subjects Groups, I will start from Group 3.

Group 3:

The teacher first explained the explanatory notes, and then discussed the links between idioms and images (see Appendix 18). An image (see Appendix 31), taken from the South China Morning Post, was shown to the subjects to initiate a discussion as a possible way to explore (and approach to) the hidden image schemas. The discussion then moved towards the sixteen target idioms, with four questions being asked of each idiom. The discussion about the first idiom “hit the ceiling” is quoted below as an example.

Idiom: hit the ceiling (to become very angry).

Q: What image do you have in your mind when you read, "hit the ceiling"?

Q: Where does this force come from?
Q: What's the result after the ceiling was hit?

Q: Who hits the ceiling?

The subjects read through all the material once after the discussion was completed. The whole process took 35 minutes.

Group 2:

No image was mentioned or shown to this group, instead of exploring the images for idioms, Group 2 explored the links between idioms and conceptual metaphors. For example, for the first idiom “hit the ceiling”, the teacher would give the following explanation:

Why does ‘hit the ceiling’ mean ‘to become very angry? Because the mind is metaphorically taken as a container and anger is heat inside the container. When you become angry, the heat inside the container rises. When you become too angry, you have too much heat for the container to control, the heat will rush out of the container. Where does this heat go? It hits the ceiling! (This paragraph is taken from classroom teaching notes for this hypothesis)

Conceptual Metaphors: Mind Is a Container

Anger Is Heat

Idiom: hit the ceiling
Figurative meaning: to become very angry.

All the 16 idioms underwent similar discussion. The discussion was completed before the time limit; the subjects could use the remaining time to go over the material again until 35 minutes was up.

**Group 1:**

For Group 1, the material was different from that of Group 3 or Group 2 (see Appendix 16: Learning Material For Group 1 in Hypothesis 4). No conceptual metaphor was mentioned and no image was given. The following is the instruction.

*Instructions: we have a brief discussion on how people express the following topics: 'anger', ...*

*There are sixteen idioms below organized under five topics. The figurative meanings of the idioms are given. Learn and memorize the figurative meaning of the sixteen idioms.*

**Group One: Anger**

1. **Idiom:** hit the ceiling
   
   Figurative meaning: to become very angry.

2. **Idiom:** lose your cool

   Figurative meaning: lose one's calmness and self-control.
After the teacher finished the discussion and explanation of all the sixteen idioms, Group 1 had enough time to go over the materials several times by themselves until thirty-five minutes was up.

5.6 Experiments on Hypothesis 5

5.6.1 Hypothesis 5

Hypothesis 5

Conceptual metaphors and image schemas cannot facilitate the learning of proverbs.

Following the empirical studies on conceptual metaphor and idioms conducted in the early 1990s (Gibbs 1992; Gibbs and O'Brien, 1990), Gibbs started to explore the links between proverbs and conceptual metaphors (Gibbs & Beital 1995; Gibbs and Bogdanovich, et al. 1997). Traditionally, most psychologists assume that understanding the figurative meaning of proverbs requires various kinds of higher order cognitive abilities. Gibbs & Beital (1995) review the findings on proverb interpretation to examine the question of what proverb use and understanding reveals about the ways people think. The widely held idea that failure to provide a figurative interpretation of a proverb necessarily
reflects a deficit in specialized abstract thinking is rejected. The ability to correctly explain what a proverb means does not necessarily imply that an individual can think abstractly. Various empirical evidence suggests that the ability to understand many proverbs reveals the presence of metaphorical mappings that are ubiquitous in everyday thought.

Take for example the proverb “the fish rots from the head first”. This has complex specific interpretations because of people’s metaphorical mappings of information from the familiar source domain of “fish”, onto less familiar various target domains. Gibbs quotes a real life example on the use of this proverb. During the presidential campaign in 1988, the following story appeared in the Los Angeles Times on July 31 (Arora 1989):

Democratic presidential nominee Michael S. Dukakis stepped up his attacks on the ethical standards of the Reagan Administration on Saturday, offering his harshest criticism yet of the President’s role in the Pentagon procurement scandal.

Asked if he blamed President Reagan and Vice President George Bush, the presumed Republican nominee, personally for the corruption, Dukakis responded: “here is an old Greek saying...the fish rots from the head first. It starts at the top.” (p.274)

This cross-domain thinking involves understanding one domain of experience, in the above example, the domain of “politics”, in terms of a very
different and yet more concrete domain of daily life, “fish” (which starts to rot from the head). Based on this, Gibbs hypothesizes that the understanding of proverbs is motivated (or at least partly motivated) by the cross-domain mapping. This view is supported by a later study of people’s mental images about proverbs, in which specific conceptual metaphors are identified as motivating certain proverbs (Gibbs and Strom, et al 1997). Gibbs and his colleagues have shown empirically that the figurative meanings of proverbs are motivated by underlying conceptual metaphors that form a significant part of our ordinary conceptual system.

In the spirit of the above discussion, H5 was formulated to explore the connection between conceptual metaphors and image schemas and proverb learning for Chinese EFL students. Again I did not explore to what extent that in the English language how many proverbs can be motivated in the way Gibbs et al claimed to be. In order to be on a safer ground, all the proverbs and their identified motivating conceptual metaphors were drawn from Gibbs and Strom’s research.

5.6.2 Materials

In Gibbs and Strom’s (1997) empirical study, altogether sixteen proverbs were used. Through various stimuli and different processes, a pair of different conceptual metaphors were identified as (partly) motivating each of the sixteen proverbs. They are quoted below.
1. *A rolling stone gathers no moss.*

Conceptual Metaphors: LIFE IS A JOURNEY;

EXPERIENCING SOMETHING IS POSSESSING IT

2. *Too many cooks spoil the broth.*

Conceptual Metaphor: TOO MUCH OF SOMETHING IS DISORDER;

IDEAS ARE FOODS

3. *Don’t throw the baby out with the bath water.*

Conceptual Metaphor: BELIEFS ARE CHILDREN;

IDEAS ARE OBJECTS

4. *The early bird catches the worm.*

Conceptual Metaphor:

LIFE IS A STRUGGLE AGAINST AN OPPONENT;

ACHIEVED PURPOSES ARE ATTAINED POSSESSIONS

5. *One rotten apple spoils the whole barrel.*

Conceptual Metaphor: DISEASE IS AN ENEMY;

MENTAL HARM IS PHYSICAL HARM

6. *We’ll cross that bridge when we come to it.*

Conceptual Metaphor: PURPOSES ARE DESTINATIONS;
LIFE IS A JOURNEY

7. *Those who live in glass houses shouldn’t throw stones.*

   Conceptual Metaphor: MENTAL HARM IS PHYSICAL HARM;
   MIND IS A BRITTLE OBJECT

8. *Don’t put all your eggs in one basket.*

   Conceptual Metaphor: LIFE IS A CONTAINER;
   BELIEFS ARE POSSESSIONS


   Conceptual Metaphor:
   CAUSING TROUBLE IS MAKING SOMETHING ACTIVE;
   TO BE ALIVE AND SANE IS TO BE PHYSICALLY PRESENT

10. *You can lead a horse to water, but you can’t make him drink.*

   Conceptual Metaphor: DRINKING WATER IS MAKING PROGRESS;
   KNOWLEDGE IS WATER

11. *Don’t count your chickens before they are hatched.*

   Conceptual Metaphor: BELIEFS ARE POSSESSIONS;
   CONTROL IS VISUAL MONITORING
12. Look before you leap.
   Conceptual Metaphor: KNOWING IS SEEING;
   LIFE IS A JOURNEY

13. The bigger they are, the harder they fall.
   Conceptual Metaphor: SIGNIFICANT IS BIG;
   LIFE IS A STRUGGLE AGAINST AN OPPONENT

14. Scratch my back and I'll scratch yours.
   Conceptual Metaphor: EVENNESS IS FAIRNESS;
   TASKS ARE BURDENS

15. He would give you the shirt off his back.
   Conceptual Metaphor:
   HELPING SOMEONE IS GIVING HIM OR HER SOME OBJECT

16. Lighting never strikes twice in the same place.
   Conceptual Metaphor: LIFE IS A METEOROLOGICAL FORCE;
   ATTACK IS CONTACT

Based on the above sixteen proverbs and motivating conceptual metaphors, the test and learning materials are designed for H5 (See Appendices 19, 20, 21, 22, 23 ). The test paper was in the same format as that for idioms in H4, that is,
filling in the missing words to complete the whole proverb, such as "A ___ stone gathers no moss" (fill in rolling). In the one-week delayed test, besides filling in the missing words to complete the proverb, the subjects were also required to write the figurative meaning for each proverb. This requirement was marked separately. Therefore, there are four scores: the pre-test, the post-test, the one-week delayed test on proverb form, and the one-week delayed test on proverb meaning.

5.6.3 Methodology

Subjects:

The subjects for H5 were 90 English Major sophomores from the English Department, the Ocean University of Qingdao, China. They belonged to three classes, with 30 students in each class, to become Group 1, Group 2 and Group 3. They came from all over China.

Procedures:

3 subject groups in H5 followed the same procedure as that in H4 (Section 5.5.3) with the same length of time for each Step.

The difference among the three subject groups is the learning material used in Step 2. I will briefly introduce for each Group.
Group 1:

For Group 1, only the 16 proverbs and their figurative meanings were given. (see Appendix 21). The first proverb is quoted below for an example.

1. A rolling stone gathers no moss.

    Figurative meaning: a person who never settles down in life and collects few amenities (things needed to make life comfortable).

Group 2

For Group 2, an explanatory note about the links between proverbs and conceptual metaphor was given. Then the 16 proverbs and their figurative meanings, and the motivating conceptual metaphors were given (see Appendix 22). The following is an instruction and the first proverb taken from the learning materials.

**Instruction:** *There are 16 proverbs below; their figurative meanings are given in the brackets. For each proverb, two metaphors are provided which are believed to motivate the understanding of the proverb. Learn and memorize the proverbs. Try to refer to the metaphors when you comprehend each proverb.*

1. A rolling stone gathers no moss.

   *(Metaphors: Life Is A Journey; Experiencing Something Is Possessing It)*

   Figurative meaning: a person who never settles down in life collects few
amenities (amenities: things needed to make life comfortable).

**Group 3**

Material for Group 3 was a discussion about an image for each proverb (see Appendix 23). The teacher first explained the explanatory notes, and then the links between proverbs and images were discussed. An image (see Appendix 31), taken from the South China Morning Post, was shown to the subjects to initiate a discussion. Then the discussion moved on to the 16 target proverbs, 4 questions being asked for each proverb. The discussion about the first proverb “A rolling stone gathers no moss” is quoted below for illustration. For the same designing difficulties as Group 3 in H4, Group 3 in H5 has also adopted rich images as a way to explore image schemas, and in discussion the subjects explored the mental images behind each proverb.

1. Proverb: **A rolling stone gathers no moss** (a person who never settles down in life collects few amenities. amenities: things needed to make life comfortable.)

   Metaphors: **Life Is A Journey; Experiencing Something Is Possessing It**

   Q: what image is in your mind when you read “A rolling stone gathers no moss”

   Q: who is the stone?

   Q: what is the moss?

   Q: why is it rolling? Where does it start? Where does it end?
5.7 Summary

In this Chapter, I have designed 5 studies to test the 5 specific hypotheses proposed in Section 3.7. I have explained how the materials were identified, and how the test paper and learning materials were designed; I have also explained how testing procedures were administered. In total, 385 subjects participated in the experiments. The results for each hypothesis will be presented in Chapter 6.
CHAPTER 6

THE RESULTS

6.1 Introduction

In Chapter 5, I described the methodology, including why I formulated the hypotheses, how the materials were designed, and what the procedures of testing and learning were.

In this chapter, I will present the results for each study. The results have been fed into SPSS (10.0) and analyzed using independent sample T-Test analysis. In the following discussion, each section will include three parts:

1) Selected data from the output of SPSS,
2) Descriptive comments, and
3) Conclusions.

In the first part, only the most important data are selected from the output of SPSS, such as the \( P \) value and the means for each test. The means will also be represented in graphics. In the SPSS analysis, the confidence value is put at 95\%, which means, if \( P < 0.05 \), it is statistically significant. All the detailed SPSS outputs containing specific data are put in the appendix at the end of the dissertation. Section 6.2 to 6.6 will report the results from H 1 to H5. Section 6.7 will highlight the most important results across 5 Hs.
There is one more explanation to be given on the number of subjects. The valid number of subjects for analysis is slightly different from the number reported in Chapter 5. This is because in each study there were a few subjects who missed the one-week delayed test for various reasons and were therefore deleted from the analysis. The same number of subjects was chosen for analysis from all Groups in the same Hypothesis.

6.2 Results of Hypothesis 1

6.2.1 The output of SPSS

Table 6.1 shows the Means and P values of Hypothesis 1 from the outcome of independent sample T-test in SPSS (detailed output data, see Appendix 33).

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (Mean)</th>
<th>Group 2 (Mean)</th>
<th>P (Sig 2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>8.79</td>
<td>7.20</td>
<td>0.291</td>
</tr>
<tr>
<td>Post-test</td>
<td>29.32</td>
<td>52.12</td>
<td>0.000</td>
</tr>
<tr>
<td>One-week Test</td>
<td>21.06</td>
<td>37.27</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Figure 6.1 shows the means comparison in graphics.

![Graph showing means comparison](image)

**Figure 6.1: Graph: representation of the means in H1**

6.2.2 Descriptive comments

Table 6.1 shows that in the pre-test Group 1 and Group 2 are similar in means and $P$ ($>0.05$) has no significance at all. Therefore, both groups started at the same or similar level before learning. While after learning Group 2 outscored Group 1 in both posttest and one-week delayed test, $P$ ($<0.05$) becomes statically significant for both posttest and one-week delayed test.

The following is the subjects' opinion as reflected in the questionnaires. Both groups agree (scale average $>4$) that the learning material is informative and new, and that the teaching method is new. However, only Group 2, the metaphor group, agreed that the material is interesting and easier to memorize, and that this method could be a good method to increase vocabulary. On all six questionnaire items,
Group 2 outscored Group 1 (see Table 6.2).

<table>
<thead>
<tr>
<th>Table 6.2: The results of the questionnaires in H1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Item</strong></td>
</tr>
<tr>
<td>The learning material is Informative</td>
</tr>
<tr>
<td>The learning material is New</td>
</tr>
<tr>
<td>The learning material is Interesting</td>
</tr>
<tr>
<td>The teaching method is New</td>
</tr>
<tr>
<td>The teaching method makes things easier to memorise</td>
</tr>
<tr>
<td>This method can be a good method to increase vocabulary</td>
</tr>
</tbody>
</table>

6.2.3 Conclusion

Hypothesis 1, that Conceptual metaphor cannot facilitate the learning of the metaphorical senses of words in the target domain, can be rejected empirically.
6.3 Results of Hypothesis 2

6.3.1 The output of SPSS

Table 6.3 shows the Means and P values of Hypothesis 2 from the outcome of independent sample T-test in SPSS (detailed output data, see Appendix 34).

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (Mean)</th>
<th>Group 2 (Mean)</th>
<th>P (Sig 2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>4.52</td>
<td>5.95</td>
<td>.145</td>
</tr>
<tr>
<td>Post-test</td>
<td>30.81</td>
<td>52.76</td>
<td>.000</td>
</tr>
<tr>
<td>One-week Test</td>
<td>25.67</td>
<td>48.86</td>
<td>.000</td>
</tr>
</tbody>
</table>

The means comparison in graphics:

![Graph showing means comparison](image)

*Figure 6.2: Graphic representation of the means in H2*
6.3.2 Descriptive comments

Table 6.3 shows that in the pre-test Group 1 and Group 2 are similar in means and $P \ (> 0.05)$ has no significance at all. Therefore, both groups started at a similar level before learning. While after learning Group 2 outscored Group 1 in both posttest and one-week delayed test, $P \ (< 0.05)$ becomes statically significant for both posttest and one-week delayed test. This means the Chinese conceptual metaphor group exhibits superior result.

In subjects' opinion as reflected in the questionnaires (see Table 6.4), both groups generally agreed (scale average $>4$) to the six items listed in the questionnaires, and neither group outscored the other. It can be concluded that the students thought that both Chinese and English conceptual metaphors played a similar role in enhancing learning vocabulary. This is in agreement with the students' opinion in H1. The better score in testing in Group 2 may result from the Chinese introduction of conceptual metaphors, which may makes thing easier to understand.
Table 6.4: The results of questionnaire in H2

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>The learning material is Informative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td>5.05</td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>5.04</td>
<td></td>
</tr>
<tr>
<td>The learning material is New</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td>5.24</td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>5.36</td>
<td></td>
</tr>
<tr>
<td>The learning material is Interesting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td>5.05</td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>4.79</td>
<td></td>
</tr>
<tr>
<td>The teaching method is New</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td>5.01</td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>5.21</td>
<td></td>
</tr>
<tr>
<td>The teaching method makes things easier to memorise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td>4.81</td>
<td>4.29</td>
</tr>
<tr>
<td>Group 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>This method can be a good method to increase vocabulary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td>4.81</td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>4.79</td>
<td></td>
</tr>
</tbody>
</table>

6.3.3 Conclusion

Hypothesis 2, that Conceptual metaphors introduced via Chinese do not enhance the learning of the metaphorical senses of the English words in the target domain better than conceptual metaphors introduced via English, can be empirically rejected.
6.4 Results of Hypothesis 3

6.4.1 The output of SPSS

Table 6.5 shows the Means and $P$ values of Hypothesis 3 from the outcome of independent sample T-test in SPSS (detailed output data, see Appendix 35).

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (Mean)</th>
<th>Group 2 (Mean)</th>
<th>$P$ (Sig 2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>24.85</td>
<td>21.90</td>
<td>.411</td>
</tr>
<tr>
<td>Post-test</td>
<td>80.45</td>
<td>93.50</td>
<td>.000</td>
</tr>
<tr>
<td>One-week Test</td>
<td>67.10</td>
<td>83.70</td>
<td>.000</td>
</tr>
</tbody>
</table>

The means comparison in graphics.

Figure 6.3: Graphic representation of the means in H3
6.4.2 Descriptive comments

Table 6.5 shows that in the pre-test Group 1 and Group 2 are similar in means, and $P (> 0.05)$ has no significance. Therefore, both groups started at a similar level before learning. While after learning Group 2 outscored Group 1 in both posttest and one-week delayed test, $P (< 0.05)$ becomes statically significant for both posttest and one-week delayed test.

It is reflected in the questionnaires that both groups generally agree (scale average $>4$) to the six items listed. Group 2 outscores group 1 (except Item One) strikingly. This means that students agreed image schemas (Group 2) are a better method to increase vocabulary than conceptual metaphors (Group 1).
### Table 6.6: The results of questionnaire in H3

<table>
<thead>
<tr>
<th>Description</th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>The learning material is Informative</td>
<td>4.87</td>
<td></td>
</tr>
<tr>
<td>New</td>
<td>5.31</td>
<td></td>
</tr>
<tr>
<td>The learning material is Interesting</td>
<td>4.30</td>
<td></td>
</tr>
<tr>
<td>New</td>
<td>5.24</td>
<td></td>
</tr>
<tr>
<td>The teaching method is New</td>
<td>4.61</td>
<td></td>
</tr>
<tr>
<td>New</td>
<td>5.31</td>
<td></td>
</tr>
<tr>
<td>The teaching method makes things easier to memorise</td>
<td>4.17</td>
<td>4.83</td>
</tr>
<tr>
<td>This method can be a good method to increase vocabulary</td>
<td>4.74</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.80</td>
<td></td>
</tr>
</tbody>
</table>

### 6.4.3 Conclusion

Hypothesis 3, that *Image schema cannot facilitate the learning of the metaphorical senses of the words in the target domain*, can be empirically rejected.
6.5 Results of Hypothesis 4

6.5.1 The output of SPSS

Hypothesis 4 is different from the first three hypotheses in the following two ways. Firstly, H4 has three subjects groups: Group 1 is the control group using material organized by semantic topics; Group 2 is a conceptual metaphor group using material organized by conceptual metaphors; Group 3 is an image group using material linked with images (or we call it "image (schema) group). Secondly, there are 4 means data collection for each group, a pre-test, a post-test, one week delayed on the form of idioms, and one-week delayed test on the meaning of the idioms. Table 6.7 shows the means and P values (detailed data see Appendices 36, 37, 38).

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (Mean)</th>
<th>Group 2 (Mean)</th>
<th>Group 3 (Mean)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>32.75</td>
<td>35.25</td>
<td>32.5</td>
<td>.476</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.443</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.945</td>
</tr>
<tr>
<td>Post-test</td>
<td>95.5</td>
<td>97.0</td>
<td>98.25</td>
<td>.483</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.244</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.191</td>
</tr>
<tr>
<td>One-week T on form</td>
<td>92.0</td>
<td>92.0</td>
<td>92.25</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.908</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.934</td>
</tr>
<tr>
<td>One-week T on meaning</td>
<td>37.75</td>
<td>45.5</td>
<td>67.25</td>
<td>.115</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.000</td>
</tr>
</tbody>
</table>

Table 6.7: Means and P values in H4
The means comparisons of the pre-test, post-test and one-week delayed test on the form of the idioms for the three groups are given graphically below:

Figure 6.4: Graphic representation of the means (pre-test, post test, and one week test on form) for group 1, 2 and 3 in HP4

The means comparisons of the post test, the one-week delayed test on form and on meaning for the three groups are given graphically below:

Figure 6.5: Graphic representation of the means (post test, one week test on form and on meaning) for Group 1, 2 and 3 in H4
6.5.2 Descriptive comments

Figure 6.10 shows that the means for 3 subjects groups in pretest are at a very similar level (G1: 32.75, G2: 35.25, G3: 32.5). All $P$ values across 3 subjects groups (> 0.05) have no significance. It can be concluded that the three subjects groups started at a similar level before learning.

After learning, in the posttest the means for 3 subjects groups had a tremendous rise (G1: 95.5, G2: 97.0, G3: 98.25), but all $P$ values > 0.05. It can be concluded again that the three groups are still at a similar level, even though all subjects had made a great progress. The same result is shown for the one-week delayed test on form, the means are 92.0, 92.0, and 92.25 for the three groups; but all $P$ values > 0.05, so there was no significance.

The above discussion suggests that the three groups performed similarly and showed no significant difference in pre-test, post-test, and one week delayed test on the spelling form of idioms.

The only difference lies in the one-week delayed test on the meaning of idioms. The means are 37.75, 45.50, and 67.25 respectively for the three groups. $P$ value (0.057) for Group 1 and 2 is > 0.05; $P$ (0.00< 0.05) value for Group 1 and 3 is <0.05; $P$ value (0.00<0.05) for Group 2 and 3. This result suggests that the conceptual metaphor Group 2 is (marginally, $p = 0.057$) better than Group 1. The
image Group 3 is better than Group 2.

The following is the subjects' opinion as reflected in the questionnaires.

<table>
<thead>
<tr>
<th>Table 6.8: The results of questionnaire in H4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>strongly agree</td>
</tr>
<tr>
<td>agree</td>
</tr>
<tr>
<td>slightly agree</td>
</tr>
<tr>
<td>slightly disagree</td>
</tr>
<tr>
<td>disagree</td>
</tr>
<tr>
<td>strongly disagree</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>6.0000</td>
</tr>
<tr>
<td>5.0000</td>
</tr>
<tr>
<td>4.0000</td>
</tr>
<tr>
<td>3.0000</td>
</tr>
<tr>
<td>2.0000</td>
</tr>
<tr>
<td>1.0000</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>The learning material is Informative</td>
</tr>
<tr>
<td>Group 1</td>
</tr>
<tr>
<td>Group 2</td>
</tr>
<tr>
<td>Group 3</td>
</tr>
<tr>
<td>4.91</td>
</tr>
<tr>
<td>5.18</td>
</tr>
<tr>
<td>5.00</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>The learning material is New</td>
</tr>
<tr>
<td>Group 1</td>
</tr>
<tr>
<td>Group 2</td>
</tr>
<tr>
<td>Group 3</td>
</tr>
<tr>
<td>4.68</td>
</tr>
<tr>
<td>4.89</td>
</tr>
<tr>
<td>5.11</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>The learning material is Interesting</td>
</tr>
<tr>
<td>Group 1</td>
</tr>
<tr>
<td>Group 2</td>
</tr>
<tr>
<td>Group 3</td>
</tr>
<tr>
<td>4.11</td>
</tr>
<tr>
<td>5.35</td>
</tr>
<tr>
<td>5.10</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>The teaching method is New</td>
</tr>
<tr>
<td>Group 1</td>
</tr>
<tr>
<td>Group 2</td>
</tr>
<tr>
<td>Group 3</td>
</tr>
<tr>
<td>3.45</td>
</tr>
<tr>
<td>5.16</td>
</tr>
<tr>
<td>5.22</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>The teaching method makes things easier to memorise</td>
</tr>
<tr>
<td>Group 1</td>
</tr>
<tr>
<td>Group 2</td>
</tr>
<tr>
<td>Group 3</td>
</tr>
<tr>
<td>4.08</td>
</tr>
<tr>
<td>5.42</td>
</tr>
<tr>
<td>5.93</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>This method can be a good method to increase idioms</td>
</tr>
<tr>
<td>Group 1</td>
</tr>
<tr>
<td>Group 2</td>
</tr>
<tr>
<td>4.45</td>
</tr>
<tr>
<td>5.53</td>
</tr>
<tr>
<td>5.30</td>
</tr>
</tbody>
</table>

The means of each item for both Group 2 and Group 3 outscored those of Group 1, suggesting that conceptual metaphor group (G 2) and image group (G 3) are favored by subjects. Means in Item 2-5 for Group 3 outscored those of Group 2, suggesting that subjects favored image method (Group 3) better than conceptual metaphor one (Group 2). In item 6, for the issue if it can be a good method to increase idioms, both Group 2 and Group 3 strongly agreed.
6.5.3 Conclusion

The three groups' means in the pre-test, the post test, and the one week delayed test on form showed no significant difference across the three groups. However, there were significant differences between three groups in the one week delayed test on meaning. This really interested the present researcher. Though, the P value (0.057, single tailed) for group 1 and 2 is > 0.05, this is a marginal case. It is very close to significance. Also Both P values for Groups 1 and Group 3 (0.00<0.05) and for Groups 2 and Group 3 (0.00 <0.05) showed great significance, suggesting that image group is better than both conceptual metaphor group and semantic group.

Though I have had good reasons to adopt rich images as activation of image schemas, and to have explored mental images rather than image schemas themselves, rich images are still not image schemas in that rich images themselves are not abstract structures. Therefore, I cannot conclude that Hypothesis 4 *Conceptual metaphors and image schemas cannot facilitate the learning of English idioms* can be empirically rejected. I provide the following alternative that Conceptual metaphors and (mental) images can facilitate the learning of English idioms.
6.6 Results of Hypothesis 5

6.6.1 The output of SPSS

The format of Hypothesis 5 is the same as that of H4 in that H5 also has three subjects groups and four means data collection in each group. The four means are the pre-test, the post-test, one week delayed on the form of proverbs, and one week delayed test on the meaning of the proverbs. The difference between H4 and H5 lies only in the content that H4 is about 16 idioms, while H5 is about 16 proverbs. Table 6.9 shows the means and $P$ values (detailed data see Appendices 39, 40, 41).

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (Mean)</th>
<th>Group 2 (Mean)</th>
<th>Group 3 (Mean)</th>
<th>$P$ (Sig 2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>1.97</td>
<td>2.30</td>
<td>2.14</td>
<td>.724(Group 1 &amp; 2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.851(Group 2 &amp; 3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.864(Group 1 &amp; 3)</td>
</tr>
<tr>
<td>Post-test</td>
<td>78.78</td>
<td>95.56</td>
<td>94.9</td>
<td>.000(Group 1 &amp; 2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.674(Group 2 &amp; 3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.000(Group 1 &amp; 3)</td>
</tr>
<tr>
<td>One-week T on form</td>
<td>40.46</td>
<td>70.72</td>
<td>69.74</td>
<td>.000(Group 1 &amp; 2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.834(Group 2 &amp; 3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.000(Group 1 &amp; 3)</td>
</tr>
<tr>
<td>One-week T on meaning</td>
<td>19.74</td>
<td>37.66</td>
<td>49.51</td>
<td>.000(Group 1 &amp; 2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.004(Group 2 &amp; 3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.000(Group 1 &amp; 3)</td>
</tr>
</tbody>
</table>

The graphic representation of the means comparison of the pre-test, post-test and one-week delayed test on form of proverbs for the three groups is given in figure 6.6 below:
Figure 6.6: Graphic representation of the means (pretest, posttest, one week test on form) for Group 1, 2 and 3 in HS

The graphic representation of the means comparison of the post-test, one week delayed test on form and on meaning for three groups is given in Figure 6.7 below:

Figure 6.7: Graphic representation of the means (posttest, one-week delayed test on form and on meaning) for Group 1, 2 and 3 in HS
6.6.2 Descriptive comments

Table 6.9 shows that the means of the three subject groups in pre-test are 1.97, 2.30 and 2.14, and $P$ values (> 0.05) across three groups show no significance, suggesting that the three groups started at a similar level before learning.

In the posttest, the means rise greatly (G 1: 78.78, G 2: 95.56, and G 3: 94.9). The $P$ values are 0.00 (<0.05) for G1 and G2, 0.00 (<0.05) for G1 and G3, and 0.674 (>0.05) for G2 and G3, suggesting that both conceptual metaphor Group 2 and image Group 3 performed better than semantic Group 1, while there is no significant difference between Group 2 and Group 3.

In the one-week delayed test on form, the result is the same as the result shown in post-test that both Group 2 and Group 3 are significantly different from Group 1, while there is no significant difference between Group 2 and Group 3, that is, the conceptual metaphor and the image group.

In the one-week delayed test on meaning, the means are 19.73, 37.66, and 49.51, for the three groups. The $P$ value for Group 1 and Group 2 is 0.00 (< 0.05); the $P$ value for Group 1 and Group 3 is 0.00 (< 0.05); and the $P$ value for Group 2 and Group 3 is 0.004 (<0.05). These $P$ values suggest that the results of the three groups display in an ideal pattern, that Group 3 performed better than Group 2, which in turn performed better than Group 1. To put in another way, in learning the
meanings of proverbs (rather than the spelling forms only), image method (Group 3) is better than conceptual metaphor method (Group 2), which is better than semantic method (Group 1).

Table 6.10 shows the subjects' opinions reflected in the questionnaires.

**Table 6.10: The results of questionnaire in H5**

<table>
<thead>
<tr>
<th></th>
<th>strongly agree</th>
<th>agree</th>
<th>slightly agree</th>
<th>slightly disagree</th>
<th>Disagree</th>
<th>strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The learning material is Informative</td>
<td>Group 1</td>
<td>4.77</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>4.67</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 3</td>
<td>5.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The learning material is New</td>
<td>Group 1</td>
<td>3.73</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>4.23</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 3</td>
<td>4.61</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The learning material is Interesting</td>
<td>Group 1</td>
<td>4.43</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>4.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 3</td>
<td>5.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The teaching method is New</td>
<td>Group 1</td>
<td>4.43</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>4.70</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 3</td>
<td>5.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The teaching method makes things easier to memorise</td>
<td>Group 1</td>
<td>4.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>4.45</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 3</td>
<td>5.59</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This method can be a good method to increase idioms</td>
<td>Group 1</td>
<td>4.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>4.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 3</td>
<td>5.61</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.10 shows that almost all the six items (except in Item 1) in Group 3 outscored Group 2, and the means of Group 2 outscored Group 1. This result is in agreement with the testing results, suggesting that subjects favored the image method better than the conceptual metaphor method, and in turn favored the
conceptual metaphor method better than the semantic method. Figure 6.17 also shows that five items in Group 3 scored above point 5 (5: agree), among which two items in Group 3 (Item 5:5.59, Item 6: 5.61) scored above 5.5, which is very close to 'strongly agree' (point 6), suggesting that the subjects think it is easier to memorize proverbs using image method, and this method can be a good method to increase the power of proverbs.

6.6.3 Conclusion

From the description above, it can be concluded that among the three groups in the post-test and one-week delayed test on form, both groups 2 and 3 performed better than group 1, but there was no significant difference between groups 2 and 3. In the one-week delayed test on meaning, however, Group 3 performed better than Group 2, which in turn performed better than Group 1.

While for the same reason as I gave in 6.5.3 concerning the relation between rich images and image schemas, Hypothesis 5, that Conceptual metaphors and Image schemas cannot facilitate the learning of English proverbs, can not be completely empirically rejected. The following is what really has been verified: Conceptual metaphors and (mental) images can facilitate the learning of English proverbs.
6.7 Conclusions

In this Chapter, I have presented the results of the five studies and the subjects' opinion reflected from the questionnaires. The first three Hs were empirically rejected, while H4 and H5 were partly rejected. As H1, H2 and H3 are different from H4 and H5 in that each of the first three Hs contains two subject groups with three data collections, while both H4 and H5 contain three subject groups with four data collections, they are summarized separately below.

H1, H2 and H3:

The results of the pretest in each of the three hypotheses show that there was no statistical significance between the control group (G1) and the experimental group (G2), suggesting both groups started at a similar level before learning. The results of the posttest and one-week delayed test in each hypothesis show that the experimental group performed better than the control group, and show significant difference. The data from subjects’ questionnaires are in agreement with the testing results.

In other words, in facilitating learning metaphorical senses, both the conceptual metaphor and the image schema methods are better than the semantic method; that the image schema method is better than the conceptual metaphor method; and for those conceptual metaphors shared by both Chinese and English, to introduce them in Chinese is better than to introduce them in English.
H4 and H5

Results in the pretest in H4 and H5 show that the control group (Group 1) and the two experimental groups (Group 2 and Group 3) show no statistical significance, suggesting they started at a similar level.

In H4, the idiom test, no significance was shown in the posttest and the one-week delayed test on the form of idioms across the three subject groups. However, significance was shown in the one-week delayed test on the meaning of idioms. Group 3 (image group) performed better than Group 2 (conceptual metaphor group), and there was a significant difference; and Group 2 performed better than group 1 (semantic group), there was also significant difference.

In H5, the proverb test, significance was shown for Group 2 (conceptual metaphor) vs. Group 1 (semantic group), Group 3 (image group) vs. Group 1 in posttest, the one-week delayed test on the form, and the one-week delayed test on meaning. Significant difference for Group 2 and Group 3 was only shown in the one-week delayed test on meaning. The data from subjects’ questionnaires are in agreement with the testing results.

To put it another way, in facilitating learning idioms and proverbs, both the conceptual metaphor and the image methods are better than the semantic method; and the image method is better than the conceptual metaphor method. Students generally agreed with the conclusions. In the above discussion I used expression "image method" rather than "image schema method" even though 'image schema'
was contained in both hypotheses. As I mentioned, this is because it is extremely
difficult to represent all those idioms and proverbs in image schematic diagrams.
What I really did was to explore the mental images as a way to approach image
schemas.

To end this chapter, I provide the following general conclusions:

(A): Conceptual metaphors and image schemas CAN facilitate the learning of
the metaphorical senses of the words in the target domain.

(B): Conceptual metaphors introduced via Chinese CAN enhance the
learning of the metaphorical senses of the English words in the target
domain better than conceptual metaphors introduced via English.

(C): Conceptual metaphors CAN facilitate the learning of English idioms and
proverbs.

(D): (Mental) Images can facilitate the learning of English idioms and
proverbs.
CHAPTER 7

GENERAL DISCUSSION AND CONCLUSIONS

7.1 Introduction

In Chapter 6, I presented the results of the 5 studies. In this Chapter, I will provide a discussion of the results of the 5 Hypotheses, explaining each of them by referring back to the theories and evaluating the theoretical implications against the experimental results. I will also discuss the results across the 5 studies, that is, what the combination of the 5 Hypothesis can tell us and why.

In Section 7.2 I will discuss the role of conceptual metaphors in facilitating the learning of metaphorical senses. In Section 7.3 I will discuss the results of H2 concerning conceptual metaphors in English and Chinese. In Section 7.4 I will discuss the role of conceptual metaphors in motivating idioms and proverbs relating to H4 and H5. In Section 7.5 I will discuss the role of image schemas in organizing metaphorical expressions (H3), and role of images in idioms (H4) and proverbs (H5). In Section 7.6 I will present a general discussion of the subjects’ opinions across 5 studies. Section 7.7 will end this Chapter with a general summary of the conclusions.
7.2 Conceptual Metaphors As Organizers of Metaphorical Expressions

Among the five studies, only Hypothesis 1 is directly about the function of English conceptual metaphors in organizing metaphorical expressions; that is, *conceptual metaphors cannot facilitate the learning of the metaphorical senses of the words in the target domain*. This hypothesis was empirically rejected in the first study (see Section 6.2). Results of both the post-test and the one-week delayed test for Group 1 (G1) and Group 2 (G2) show significant difference. There is also a great difference among the subjects' opinions reflected from G1 and G2. Among 6 items of both groups, G2 has 4 highest means. For example, the highest one is in Item 2 "*The learning material is new*" (see Section 6.2.2), the mean is 5.41, close to "strongly agree", while the same item for G1 is 4.83, below "agree". The other three means (in Item 1, Item 3, Item 4) suggest that G2 agrees that this learning material is informative and interesting, and the teaching method was new. The sharpest contrast occurs in Item 3 "The learning material is interesting"; for this item, G2 is 5.36, while G1 is 3.86, suggesting G2 "strongly agree", G1 is below "slightly agree".

In fact, these results are explainable from the perspective of conceptual metaphor theory (see Chapter 3) and the other supporting theories discussed in Chapter 4.
In Lakoff (1993), it is shown that metaphor is a systematic cross-domain mapping and that through this mapping a cluster of metaphors can be grouped as a metaphor set under a single conceptual metaphor linking two domains. This conceptual metaphor could exist at a higher level of abstraction in a hierarchical structure (section 3.6). It has now been experimentally shown that this higher-level metaphor can facilitate the learning of the lexical items when they are used metaphorically as part of a metaphor set. This conclusion in fact gives much credit to conceptual metaphor theory.

If we explore further the reason why a conceptual metaphor (e.g. ANGER IS HEAT) leads to superior recall, I would suggest that the following conditions may have jointly contributed to the superior retention result.

(1) If we examine the relation between the metaphorical items and their organizing conceptual metaphor, we find there exists a “reason-result” relation. That is, conceptual metaphor explains the meaning of the linguistic metaphors. It is because “ANGER IS HEAT” that “He boiled over” means “he got very angry”. There is no such relation between the metaphorical items and their organizing semantic topics.

(2) A conceptual metaphor is in a typical hierarchical structure of four levels.

Thus conceptual metaphors enjoy more advantages that a hierarchical
structure can offer (Section 4.4).

(3) A conceptual metaphor makes the reader aware of the concrete domain. Meanings in the concrete domain can help to form images easily, thus enhancing retention, according to the dual coding theory (Section 4.2).

(4) Most concrete words normally have higher frequencies than abstract words. It is likely that learners are more familiar with the concrete meanings. Therefore to learn their metaphorical senses is to add new meanings to the already known spelling forms. Lexical items organized by a semantic topic do not possess this advantage since the semantic topic cannot remind learners of the concrete meanings.

(5) The result gives more credit to the conceptual metaphor theory that conceptual metaphors are indeed in people's minds (Section 3.3). They are preexisting and are part of the subjects' world knowledge in long-term memory. When learners study conceptual metaphors, they should have a feeling of "being already familiar with them", at least subconsciously.

(6) The activity itself in the experimental group of H1 was interesting. This may also contribute to the superior result (see. 2.7.3).
Therefore, we can see that the superior results of the learning material organized by conceptual metaphors is due to a combination of several factors jointly working together. But most of the factors are directly or indirectly related to the conceptual metaphors, which enjoy special functions that semantic topics do not.

Given the informed discussion of the special role of conceptual metaphors, it is little wonder that *Conceptual metaphors are organizers of metaphorical expressions as well as facilitators in learning these expressions*. Next, we move on to discuss the result of Hypothesis 2.

### 7.3 Conceptual Metaphors in English and Chinese

Related to H2, it has been established that conceptual metaphors introduced via Chinese can be as effective as conceptual metaphors introduced via English in enhancing the learning of the metaphorical senses of the English words (Section 6.3.3). In fact, the results show that conceptual metaphors introduced via Chinese (Chinese conceptual metaphors) worked better than English conceptual metaphors in enhancing the learning of the metaphorical senses of English words (i.e. the English linguistics metaphors). What may have lain behind the superior learning and recall rate when using the conceptual metaphor from the students' mother tongue, Chinese? I suggest the following conditions could have contributed to the superior results.
(1) Since these equivalent conceptual metaphors are found in Chinese as well as in English, they should be in the Chinese subjects’ knowledge system as English conceptual metaphors in English people’s minds. Accessing them in the learners’ mother tongue is easier than accessing them in a foreign language. This again gives credit to conceptual metaphor theory.

(2) Only when conceptual metaphors are fully understood can they start to function properly as conceptual metaphors. Since Chinese conceptual metaphors are more accessible and more easily understood and processed, they operate more effectively in enhancing the learning of the metaphorical senses of English metaphors.

(3) In addition to the above, the subjects have not yet formed a habit of thinking metaphorically in the target language, as they do not have a wide access to the target language.

Data collected from the questionnaires (see 6.3.2) show that the means for all 6 items in both Group1 (English conceptual metaphor) and Group 2 (Chinese conceptual metaphor) are quite close, all differences are within 0.42 (Item 5). This result contrasts sharply with the great differences between G1 (semantic group) and G2 (conceptual metaphor group) in H1. This cross hypothesis comparison suggests
while G2 in H2 exhibited a superior result, the subjects did not favor Chinese conceptual metaphors much over English conceptual metaphors. To put in another way, while the subjects 'embraced' the Chinese conceptual metaphors, they did not 'abandon' English conceptual metaphors. Both are effective ways to learn vocabulary. Further research is required on the issue that to what extent both languages share conceptual metaphors.

Now we move on to discuss the results of H4 and H5 concerning the conceptual metaphors in motivating the understanding of proverbs and idioms first, returning to discuss image (schemas) (the whole of H3 and part of H4 and H5) to 7.5.

7.4 Conceptual Metaphors as Motivators in Understanding Idioms and Proverbs

H4 and H5 are concerned with the role of conceptual metaphors and images in learning idioms and proverbs. In Section 7.4, I focus exclusively on the role played by conceptual metaphors. The fact that conceptual metaphors can function as organizers and motivators of idioms and proverbs has radical implications for learning idioms and proverbs. One no longer has to rely on the traditional single channel of learning idioms and proverbs, that is, through context. Various learning activities could be designed around conceptual metaphors, and idioms and proverbs
could be learned in groups organized by conceptual metaphors, rather than picked up one by one in context.

Since I only focus on "conceptual metaphor method" in this section, I will leave Group 3 (image Group) to a later section. Reviewing the result, it is shown (Section 6.5.1) that in H4 there is no significance across the three groups (G1: semantic group, G2: conceptual metaphor group, G3: image group) in the posttest, and the one week delayed test on the form of idioms. Significant mean differences are, however, shown in the one week delayed test on meaning. G2 outscores G1. I suggest the following explanations to the results:

(1) Due to the low testing load (only 16 idioms), and easier requirements to complete the test (only filling one missing word), it is not easy to show a difference, especially as the subjects were English Major sophomores. This does not at all mean that conceptual metaphors do not work.

(2) The significance is indeed shown in the test on meaning. This is what we are most interested in; obviously we do not hope the subjects only learn the spelling forms of idioms without in anyhow knowing their meanings. This can also completely confirm the function of conceptual metaphors. G2 is superior to G1, because material for G2 is organized by conceptual metaphors.
Data from the subjects' questionnaires (see Section 6.5.2) are in agreement with the above two explanations. There exists a great difference in the means between G2 and G1 in the means of the 6 items of the questionnaires. The difference shown in the questionnaires between G2 and G1 in H4 is as great as the difference shown between G2 (semantic group) and G1 (conceptual metaphor group) in H1. In other words, although there is no clear difference shown in the testing results, subjects do think the conceptual metaphor method is better than the semantic method in learning idioms.

The situation with H5 is different from that of H4. H4 deals with 16 idioms; H5 deals with 16 proverbs. The subjects of H5 were from a local university and their English proficiency was rather low, the mean in the pre-test was around 2.0.

In the results of H5, significance was shown between Group 1 and Group 2 (G1: semantic, G2: conceptual metaphor) in the post-test, one-week delayed test on form, and one week delayed test on meaning (see Section 6.6.2). It can be concluded that conceptual metaphors (G2) facilitate the learning of proverbs better than the semantic method (G1). The superior result is due to the role of conceptual metaphors.

We now turn to a general discussion on the role of images concerning the whole of H3 and Group 3 in both H4 and H5.
7.5 Image Schemas in Organizing Metaphorical Expressions and in Motivating Idioms and Proverbs

Of the Hypotheses, only H3 concentrated solely on the role of image schemas. In H3, the experimental group (G2) was asked to draw a diagram of CONTAINER (see Section 5.4). Group 3 in both H4 and H5 is, however, concerned with the role of rich images, which are related to image schemas. In H4 and H5, G3 discussed and explored the mental images behind the idioms and proverbs using an image as an initiator for discussion. Though an image is not itself an image schema, it is of course intimately related to an image schema. An image has a detailed and vivid specification of a more abstract and general image schematic structure.

As indicated in Sections 6.4 – 6.6, H3 was empirically rejected, and all the data in Group 3 in both H4 and H5 turned out as explainable. To consider all the image (schemas) related experiments as a whole, I would like to offer the following general explanations for the superior results.

(1) Both the activity of drawing diagrams of a container and a human body in Group 2 in H3 and the discussion of images in Group 3 in H4 and H5 may contribute to the superior results, according to the Involvement Load Hypothesis (see Section 2.7).

(2) The nature of image schemas: image schemas are already in people’s minds, they
are embodied (Section 4.3), they (at least some) are preexisting even before language is acquired (Section 4.3.2), and they have psychological reality. The tasks of drawing image schematic diagrams made this preexisting knowledge explicit and conscious for the subjects.

(3) Once the image schema (the CONTAINER SCHEMA in H3) is activated, it will start to function as image schema. All the superior functions of image schemas in memory and learning will start to work.

(4) In H3, the abstract diagram of a circle representing “CONTAINER” appeared in the learning material for Group 2. This diagram can also be seen as having a facilitating function according to Dual Coding Theory. It can be a reminder of the image schemas used.

(5) Activities in Group 3 of both H4 and of H5 are not directly about image schemas, but, as the discussion of image schemas has shown (Section 3.4.1), images may contribute to forming an image schema. Quite apart from the relation between images and image schemas, realizing the real rich images in relation to conceptual metaphors facilitates learning and does so perhaps even better than the more abstract structure of an image schema.

I have, so far, provided a general discussion concerning the testing results of and
across the 5 Hs. Section 7.6 is a general summary of the students’ opinions as reflected in the questionnaires related to the 5 Hypotheses.

7.6 General Discussion on Subjects’ Opinions Reflected from Questionnaires

There were 385 questionnaire responses collected in total from the 5 studies. Specific opinions concerning each Hypothesis as reflected in the questionnaires were presented in Chapter 6 (see Sections 6.2.2, 6.3.2, 6.4.2, 6.5.2, 6.6.2). Table 7.1 is a summary across the 5 studies from 385 questionnaires. In the questionnaire a 6-point scale measurement was used, that is, from value 1.0 (strongly disagree) to 6.0 (strongly agree). Generally speaking, values above 4.0 should be considered as “positive”, or “agree”.

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Table 7.1: Comparison of means for each item across 5 Hypotheses

<table>
<thead>
<tr>
<th>Items</th>
<th>Groups</th>
<th>strongly agree</th>
<th>agree</th>
<th>slightly agree</th>
<th>slightly disagree</th>
<th>Disagree</th>
<th>strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) The learning material is Informative</td>
<td>semantic metaphor image</td>
<td>6.00</td>
<td>5.78</td>
<td>5.06</td>
<td>4.95</td>
<td>4.78</td>
<td>4.51</td>
</tr>
<tr>
<td>(2) The learning material is New</td>
<td>semantic metaphor image</td>
<td>6.00</td>
<td>5.07</td>
<td>4.41</td>
<td>5.01</td>
<td>5.01</td>
<td>4.41</td>
</tr>
<tr>
<td>(3) The learning material is Interesting</td>
<td>semantic metaphor image</td>
<td>6.00</td>
<td>4.13</td>
<td>5.15</td>
<td>5.01</td>
<td>5.01</td>
<td>4.21</td>
</tr>
<tr>
<td>(4) The teaching method is New</td>
<td>semantic metaphor image</td>
<td>6.00</td>
<td>5.11</td>
<td>5.11</td>
<td>5.01</td>
<td>5.01</td>
<td>5.15</td>
</tr>
<tr>
<td>(5) The teaching method makes things easier to memorize</td>
<td>semantic metaphor image</td>
<td>6.00</td>
<td>4.07</td>
<td>5.45</td>
<td>4.77</td>
<td>4.77</td>
<td>5.45</td>
</tr>
<tr>
<td>(6) This method can be a good method to increase vocabulary/idioms/verbs</td>
<td>semantic metaphor image</td>
<td>6.00</td>
<td>4.26</td>
<td>5.24</td>
<td>4.93</td>
<td>4.93</td>
<td>5.24</td>
</tr>
</tbody>
</table>

Table 7.1 shows the subjects’ opinions on specific items. In fact there is another way to display the means results. We can leave out all 6 specific items, and only look at the three approaches: Semantic Approach, Conceptual Metaphor Approach, and Image (Schema) Approach. We get Table 7.2.

There is one more explanation as how to see Table 7.2. Among all the 5 Hypotheses, there was a semantic group in H1, H4 and H5. There was no semantic group in H2, which is about Chinese and English conceptual metaphors, nor was
there a semantic group in H3, which is about conceptual metaphors and image schemas. This explains why there is no value under H2 and H3 for the semantic group in Table 7.2. Similarly, there is no value under H1 and H2 for image (schema) group.

<table>
<thead>
<tr>
<th></th>
<th>H1</th>
<th>H2</th>
<th>H3</th>
<th>H4</th>
<th>H5</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semantic groups</td>
<td>4.28</td>
<td></td>
<td>4.28</td>
<td>4.38</td>
<td></td>
<td>4.31</td>
</tr>
<tr>
<td>Conceptual</td>
<td>5.08</td>
<td>English: 5.0</td>
<td></td>
<td>4.59</td>
<td>5.26</td>
<td>4.53</td>
</tr>
<tr>
<td>metaphor groups</td>
<td></td>
<td>Chinese: 4.93</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image (schema)</td>
<td></td>
<td></td>
<td>5.06</td>
<td>5.28</td>
<td>5.25</td>
<td>5.20</td>
</tr>
<tr>
<td>groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I provide the following discussion on what Table 7.1 and 7.2 show:

1. The top four means of specific item (Item 3, 4, 5, and 6) belong to image (schema) groups (Table 7.1). To explain this, I would think the exploration of images in H4 and H5, and the activity of drawing diagrams in H3 played an essential role. These two activities made the learning material vivid, and classroom learning more interesting.

2. None of the specific means from the semantic groups (see H1, H4 and H5 in Table 7.2) in any Hypotheses outscore the means in the conceptual metaphor groups. This may be caused by the fact that the learning material was organized only in one way.
(3) The mean for all the semantic groups is 4.31, for all conceptual metaphor groups is 4.90, and image group is 5.20 (Table 7.2). This can be explained by the cognitive value of conceptual metaphors and image schemas.

There is not much difference across the five Hs in each category, that is, the semantic group category, the conceptual metaphor group category, and the image (schema) group category, suggesting a great consistency across 5 studies.

Based on the above discussion, we can have the following conclusions about the three approaches reflected from the subjects' opinions, Semantic Approach, Conceptual Metaphor Approach, and Image Schema Approach, which are in great consistency with testing results.

Conclusions:

Semantic Approach is the least favored method by the subjects; as activities using this way of organizing target words are less interesting for the subjects, the topics have less potential to be associated with other interesting links, thus provide less possibilities for imagination. The subjects favored The Conceptual Metaphor Approach better than the semantic method, as this method made it possible for the subjects to associate the learning material with a wider context that lies behind conceptual metaphors. Furthermore, conceptual metaphors themselves are part of
learners' long-term memory. The subjects favored The Image (Schema) Approach best among the three, because this method provides still wider cognitive context than conceptual metaphors, and this wider context is associated with the psychological reality of image schemas. This method also leaves enough room for imagination.

7.7 Conclusions

Summarizing the discussions in the previous sections in Chapter 7, I present the following major reasons for the results.

1) Due to the special features of conceptual metaphors (e.g. linking abstract to concrete domain; related to long term memory; existing in conceptual system; in a hierarchical structure) and image schemas (e.g. represented in diagrams; related to images; pre-existing in knowledge; psychologically real), as well as the fact that the learning activities were designed based on those special features, both conceptual metaphors and image schemas have been shown to facilitate the learning of metaphorical expressions; conceptual metaphors can also facilitate the learning of idioms and proverbs; images can facilitate the learning of idioms and proverbs. The subjects' opinions reflected from the questionnaires are in agreement with this conclusion.
(2) Due to the unique features (e.g. represented in diagrams, related to rich images) of image schemas, the learning material and classroom activities for image schema related groups became even more interesting than those for conceptual metaphor groups; the subjects favored the image schema method better than the conceptual metaphor in learning metaphorical senses.

(3) Because of the above two major reasons, the subjects further agreed that the conceptual metaphor and the image schema approach can be a good method to enhance the learning of metaphorical senses, idioms and proverbs.

In the light of the conclusions in Chapter 6 and the discussions above, in Chapter 8 I will focus on some pedagogical implications and some sample designs of classroom activities.
CHAPTER 8

PEDAGOGICAL IMPLICATIONS AND APPLICATIONS

8.1 Introduction

From the conclusions in Chapter 6 and discussions in Chapter 7, it is clear that: the learning of a wide range of metaphorical expressions, a certain amount of idioms and proverbs can be facilitated by conceptual metaphors; the learning of metaphorical expressions can also be facilitated by image schemas; and finally images can facilitate the learning of idioms and proverbs. What implications can we draw? How can we use them in pedagogical activities?

These encouraging results appear to have strong implications for foreign language learning in general, and vocabulary teaching, learning and reading comprehension in particular. An attempt will, therefore, be made in this Chapter to explore the possible applications of this conceptual metaphor cum image schema based approach (CM & IS Approach). I will first discuss some pedagogical implications of the “CM & IS Approach” and then provide some sample activities incorporating the approach. Many of the techniques in developing the experimental teaching and materials can be recycled independently or can be incorporated into other learning activities.
One very important point must be made clear at the outset: that this “CM & IS Approach” is not intended to be a substitute for the established vocabulary learning method/s (e.g. Carter and McCarthy 1988; McCarthy 1990; Hatch & Brown 1995; Huckin and Coady 1993; Schmidt and McCarthy 1997); rather it serves as a complementary technique. Nor is it conceived to be a separate learning program; rather, it should be conceived of as being integrated with other approaches to language learning and teaching. Although the “CM & IS Approach” was systematically compared and contrasted with other methods in the experiments for studying the experimental effects, it can actually be used in conjunction with, or in addition to, any existing methods and approaches.

Most of the teaching methods and ways of organizing materials used among the 5 Hypotheses can be directly incorporated into teaching activities, with only one exception in Hypothesis 2. Relating to H2, further research is suggested on two issues in this area: first, the extent to which Chinese and English share the same conceptual metaphors; second, the applicability conditions for different subjects, that is, the suitability of the method for specific subject group and at certain level.
8.2 Using Conceptual Metaphors and Image Schemas in Extending Lexicon

The first area of using or applying conceptual metaphor is obviously vocabulary learning in general. As we observed in Chapter 3, conceptual metaphors provide us with the possibility of seeing one thing in terms of another. This feature enables us to link the senses of a lexical item in one domain to its related metaphorical senses in another domain, thus extending the senses of the same word forms. For example, the word 'shaky' in the BUILDING domain can be used in the THEORIES domain with the linking conceptual metaphor THEORIES ARE BUILDINGS. And most importantly, a large number of words can be learned systematically in this way.

In pedagogical practice, the activity of extending the meanings of lexical items can be incorporated into many courses for either English Majors or non-English Majors, such as the Intensive English Reading Courses, and Extensive English Reading Courses offered in most English Departments in universities in China. Because reading materials are about certain topics, vocabulary tends to appear in domains according to the general principle of textual collocation. Therefore, vocabulary items like 'professor', 'student', 'library', and so on tend to appear together; while 'skirmish', 'conflict', and 'arsenal' also tend to collocate with one another. This text feature makes it easier to classify vocabulary in reading materials
into different domains. It does not matter if the lexical meanings in the existing domain are metaphorical or concrete. If the lexical meaning in the existing domain in the text is concrete, then it should be explored that if there is any possibility to extend it into other domain(s), in which these lexical items could be used metaphorically, or vice versa. The remaining task is to set up the systematic mapping relation between the two domains.

In discussing the characterization of conceptual metaphors (cf. Chapter 3), Lakoff and Johnson (1980) proposed that conceptual metaphors are part of the world knowledge in people's minds. This assumption reflects a view of conceptual metaphors that motivates the present research. This view has been supported by psychological research on idiom and proverb comprehension (Gibbs & O'Brien 1990; Gibbs and Strom, et al 1997; Gibbs and Bogdanovich, et al 1997). There is, however, an alternative view of conceptual metaphor. Glucksberg, Keysar, and McGlone (1992) have argued that conceptual metaphors do not reflect preexisting mappings between two domains that are part of long-term memory. Rather, these mappings are created only during the process of metaphor comprehension, through the formation of an ad hoc category to which the topic of the metaphor can be assigned. It is not necessary here, however, to argue which is the case: conceptual metaphors are "pre-existing" or set up on-line. Whether or not conceptual metaphors are preexisting in reading is not the bone of contention, from an applied point of view. As long as we can establish a mapping relation between two domains, we can make use of it as a
systematic tool to extend the senses of the same words. The following set of activities exemplifies a way to extend the semantic range of some lexical items.

Sample Activity Set 1: Searching for the Senses of the Lexical Items in the Other Domain

Reading Material:

Shari and her roommate Kim had always gotten along quite well, until today. They had lived together for eight months without any serious problems. In fact, they had become very close friends during that time. As a result, Shari felt especially wounded by Kim’s betrayal. Kim had snatched up the job that she knew Shari was applying for. Shari could not believe Kim would do such a thing to her. She never would have tried to steal an opportunity from Kim like that. Shari had never been stabbed in the back like that before. She was very badly hurt. (from Allbritton 1995:625).

In teaching this short passage in reading comprehension, the teacher can simply introduce the concept of conceptual metaphor, and guide the students to search for the two domains. For example, the teacher can guide the students to find the two domains by asking questions like “can ‘wounded’ be used on other occasions?”, and “what’s the normal use of the word ‘hurt’?”. Gradually, the students would be guided to the physical domain of using the words “wounded” and “hurt”. The expected
conceptual metaphor to be established is "NEGATIVE EMOTIONS ARE PHYSICAL PAINS". Therefore, a mapping relation like the following (Figure 8.1) can be established.

![Diagram showing the mapping between negative emotions and physical pains]

*Figure 8.1: Mapping between physical pains and negative emotions*

In this activity, students are guided to search for the different senses of the same word forms, to link one domain to another domain, and eventually to find the potential *conceptual metaphors* linking these two topic domains. In fact, this is not the end of this classroom activity; the lexical items in the two domains can be extended beyond this reading passage to include more items not used in this reading
material, but related to these two domains. As is always the case, the existing reading material cannot exhaustively use all the potential lexical items in two domains. In fact, the ‘author’ of that reading material may not even know there exists a ‘conceptual metaphor’.

The next related activity is to search for lexical items used in the domain of “PHYSICAL PAINS” as well as in the domain of “NEGATIVE EMOTIONS”. We might identify examples used both literally and metaphorically. In each example below, sentence a is physical pain, sentence b is metaphorical use.

Example 1

a. The symptoms of the disease include abdominal pain and vomiting.

b. That child is a pain in the neck. (Note: If you describe a person or a situation as a pain in the neck or a pain, you think that it is very annoying).

Example 2

a. I’ve got a splitting (= severe)/slight headache.

b. Finding a babysitter for Saturday evening will be a major headache.

Example 3

a. I’ve got one or two aching muscles after yesterday’s run.

b. Her heart ached (= She felt very sad) as she watched the children dying.
This part of the activity can go on and on if the teacher is well prepared and students co-operative. It is very easy to return to the original passage by the linking conceptual metaphor NEGATIVE EMOTIONS ARE PHYSICAL PAINS.

A third activity could be, I would suggest, to explore the image schemas behind this conceptual metaphor to deepen students’ understanding of these lexical items plus the reading material. The teacher may prepare the following questions to help the students explore what image lies behind NEGATIVE EMOTIONS ARE PHYSICAL PAINS.

*Questions 1: Can you describe what a person looks like when he is in great pain?  
(Students may answer: twisted face, wide-opened eyes, ...)*

*Question 2: Can you describe what a person looks like when he is in deep sorrow?  
(Students may answer: solemn face, tears in eyes, twisted face...)*

*Question 3: ...*

A discussion of those images can help to explain why NEGATIVE EMOTIONS ARE PHYSICAL PAINS, and help the students better understand the passage, and thus facilitate their memory of those lexical items.
To sum up, I have exemplified how to use a reading text to explore existing domains, and to find the potential conceptual metaphors. Once some conceptual metaphors are identified, we can explore more lexical items in the related domains, and eventually discuss the image schemas lying behind the conceptual metaphors.

In the next Section, we will explore the function of conceptual metaphor in learning idioms and proverbs.

8.3 Using Conceptual Metaphors and Images in the Acquisition of Idioms and Proverbs

The positive role of conceptual metaphors and images in organizing idioms and proverbs and facilitating the learning of them has been empirically verified (see Section 6.5, 6.6). The advantages that conceptual metaphors and images bring to idiom and proverb learning are as follows. 1) Idioms and proverbs are usually picked up individually in reading but conceptual metaphors provide an opportunity of grouping many idioms or proverbs together. 2) Conceptual metaphors make it possible to explore the source-to-target domain information, which motivates the understanding of the idioms or proverbs. 3) With conceptual metaphors, we can explore images schemas lying behind the conceptual metaphors. In this section, I will discuss some ways to use conceptual metaphors in idiom learning. We can regard
Sample Activity Set 2 as a continuity of Sample Activity Set 1 discussed in Section 8.2. In Activity Set 1 we set out to identify a conceptual metaphor. In Activity Set 2, we will see what we can do with conceptual metaphors in learning idioms. The hypothetical learners are at the upper intermediate level. The hypothetical situation is in reading activities similar to the one discussed in Section 8.2. The conceptual metaphor identified is “LIFE IS A JOURNEY”.

The following 4 exercises are designed to show how the conceptual metaphor “LIFE IS A JOURNEY” can be used to organize a group of lexical items first in relation to their concrete meanings (about real JOURNEY), and then in relation to their metaphorical meanings (LIFE AS A JOURNEY), and how the idiomatic forms are related to LIFE IS A JOURNEY. Below are the 4 steps.

Step 1: learn the literal usage in JOURNEY (Exercise 1)
Step 2: learn the metaphorical usage in LIFE (Exercise 2)
Step 3: learn the idioms organized under LIFE IS A JOURNEY (Exercises 3-4)
Step 4: Discuss the images (or image schemas).
Sample Activity Set 2: Conceptual Metaphor and Idiom Learning

Topic: Life is a Journey

Exercise 1: Starting from Concrete/Literal Meanings about Journey

Many of the words we normally use to talk about going to places are used to talk about life—as a journey. Complete each of the following sentences with one of these words:

Short-cut    take off    rails    dead-end    crossroads
Tunnel       ruts       track     footsteps    steam

1. At Heathrow planes......and land every minute.

2. Do you think there will ever be a ......between southern Spain and North Africa?

3. The road up to her house has no surface and in the middle of winter it gets full of......

4. It’s really difficult finding the way to her house. She lives in the country, five miles from the nearest town, down a lane off the main road, and then up a little ......past an old ruined church.

5. When you get to the ......take the road to the left, heading for Oxford.

6. Before the days of diesel and electric trains, there was only......

7. A train came off the ......just outside York station and 3 people were killed.

8. Sh! Listen! Can’t you hear the sound of ......outside?

9. The police caught the 15-year-old boy who stole my car when he drove up a street which turned out to be......

10. When we were small, we used to take a ......over the fields to school, but now they’ve build a housing estate on the farm.
(Answer: 1: take off, 2 tunnel, 3 ruts, 4 track, 5 crossroads, 6 steam, 7 rails, 8 footsteps, 9 dead-end, 10 short-cut).

Exercise 2: Metaphorical Use of Journey Words to Describe Life (LIFE IS A JOURNEY).

Use the following expressions to complete the sentences below:

a. in a rut     b. coming or going     c. short-cut to success

d. side-tracked  e. light at the end of the tunnel  f. go our separate ways

g. take off     h. on the road to recovery

1. I've been doing the same job for 15 years. I think I'm...... I need a change.

2. I've got so much work on my desk. I'm really confused. I don't know whether I'm......

3. It's been a very difficult year, but I'm happy to say there now seems to be some......

4. Our partnership didn't last. In the end we agreed to.......

5. Hard work, long hours, and lots of worry. When you are trying to build up a business, I'm afraid there's no......

6. I'm feeling much better now, thanks. I'm well......

7. Sorry it took so long. I got ......

8. She's getting frustrated. Her career hasn't really......yet.

(Answer: 1a, 2b, 3e, 4f, 5c, 6b, 7d, 8g)
Exercise 3: Pair the following idiomatic expressions with the appropriate situations below:

a. at a crossroads,  b. off the rails,  c. no turning back,
d. follow in his father’s footsteps,  e. a dead-end job,
f. going nowhere fast,  g. running out of steam,  h. arrived

1. Once you’ve made your decision, you realize there’s…… , don’t you?

2. I can’t make up my mind whether to stay where I am or to apply for a job abroad. I am ……. 

3. His father’s doctor and it’s obvious Harry’s going to…….

4. I’m doing my best, but everything I do seems to involve ringing someone who’s either on holiday this week or out of the office. I feel as if I’m…….

5. Bill’s wife died last year. I’m afraid he just hasn’t come to terms with it yet. And now he’s started drinking. I’m afraid he’s just gone…….

6. There is no prospect of promotion. I’m in ……..

7. Now that he’s been given a company car, he thinks he’s really…… !

8. I just don’t have the enthusiasm I used to have. I’m ………

(answer: 1c, 2a, 3d, 4f, 5b, 6e, 7h, 8g)
Exercise 4: Using idioms to complete the following dialogues.

1. How are you getting on with your assignment?
   - Terrible. I’m (going nowhere fast).

2. What’s Mark going to do after his college course?
   - No doubt (he’ll follow in his father’s footsteps).

3. It’s a huge decision, you know.
   - I know. And (there is no turning back).

4. Are you and Delia still together?
   - No, we’ve (gone our separate ways).

5. How is your dad?
   - Much better, (he is well on the road to recovery).

6. I’m sorry to hear Katy’s still in hospital.
   - Yes, it’s been a long time, but there’s (light at the end of the tunnel).

7. The full course takes 5 years, I’m afraid.
   - Oh, I realize that. I know there’s (no short-cut to success).

8. Are you making much progress?
   - Yes, we’re getting there slowly, but we’re (running out of steam).

9. So, you’re now European Sales Manageress- and not yet 30!
   - Yes, I suppose my career really has (taken off).

10. You look a bit harassed. Is everything all right?
    - To tell you the truth, I don’t know whether (I’m coming or going).

(Materials used in Exercises 1-4 is adapted from Wright 1999:18-19)
In the end, to help the learners to digest what they have learned, we explore the images behind “LIFE IS A JOURNEY”. Questions for discussion may be designed as follows.

Question 1: What procedures do you go through to complete a JOURNEY?

(clues: to book tickets, to book hotel, packaging, to live in hotel, …)

Question 2: What procedures do you go through to complete a LIFE?

(Clues: birth, starting school, college, starting work, … death)

Question 3: What kind of things do you normally experience in a JOURNEY?

(Clues: flat tire, driving wrong way, …)

Question 4: What kind of things do you normally experience in your LIFE?

(Clues: depression, no choices, losing jobs, high spirit, …)

Eventually, with discussion, students can explore more behind “LIFE IS A JOURNEY”, and might relate this to their own life experiences which may help them memorize those idiomatic expressions.

The purposes of both Activity Set 1 and Activity Set 2 are to identify a conceptual metaphor in a reading passage, and to use the identified conceptual metaphors to extend lexical items.

A conceptual metaphor can also provide us an opportunity to deal with reading comprehension. Section 8.4 discusses an attempt of this kind.
8.4 Using Conceptual Metaphors and Image Schemas in Reading

Comprehension

The following is a discussion of how conceptual metaphor can be used in reading comprehension. The materials used in the sample are taken from “ESL 21A Home page” (http://homepage.smc.edu/sucher_kathryn/21a/index.htm). These passages are about people’s opinion on “the California Ballot Measure "Proposition 36": Drugs, Probation, and Treatment Program”. If people vote YES to “Proposition 36”, it means they agree that adult offenders convicted of being under the influence of illegal drugs or using, transporting, or possessing illegal drugs for personal use will generally be sentenced to probation and drug treatment. If people vote No, it means that Adult offenders convicted of being under the influence of illegal drugs or using, transporting, or possessing illegal drugs will generally continue to be sentenced to prison, jail, or probation. There will be no requirement that they be sentenced to drug treatment.

The following two messages taken from the discussion on the NET (the web site was given above) are designed for sample classroom activities in reading comprehension. Again the hypothetical learners are above intermediate level.
Sample Activity 3: Searching for the Other Domain in Reading

Passage one:

If I could vote on proposition 36, my vote would be yes because I do believe that people that are only addicted to drugs need to be in hospitals looking for some way to cure them. I have to agree with the proponents, when they say that the actual system is not working the way it should, instead of making people stop using drugs, the actual system just puts addicts away, the system isolates the addicted from society which makes a future adaptation harder, and what is worse the crime of addiction (possession) can turn into child abuse, crime, rape and even murder. I also believe that you have to give a chance for a different solution if the actual one does not work at all.

Passage two:

If I was able to vote, I would definitely vote "yes" to proposition 36. First, in differentiating between drug-users and drug-dealers and secondly approaching drug addiction as an illness and not as a crime, proposition 36 resolves the two major problems in the actual drug law.

I think drug-dealers have to still be sentenced to jail but consumers should be treated as sick persons who need help to end their addiction. Proposition 36 replaces jail sanctions by health treatment. Like the methadone clinic, prop 36 will treat the problem at its origin, the addiction.

And two other very good reasons convince me that keeping drug-users out of jail is the right choice: the cost and the mistake of putting simple users in contact with violent criminals. The initiative statute shows that keeping users out of jail will save the government an incredible amount of money. Plus, I
think in jail, drug-users are put in real danger and that's not acceptable... The jail sanction is not a bad sanction by itself; it's simply the wrong sanction for drug-users. Even if the proposition doesn't pass, I am very happy to see that authorities realize that we can improve our drug-laws have and make some positive change in the drug-war.

**Guided discussion:**

(Teacher): *conceptual metaphors enable us to discuss or see one thing in terms of another, to describe matters in one domain using terms from other domains. The target domain in the above two messages is the topic "DRUGS" or "ADDICTION". What terms in other domains are used to discuss the target domains? Give some lexical items found in this reading as supporting evidence. (It is assumed that students are familiar with the notion of "conceptual metaphor" and relevant technical terms)*

Students are expected to list terms like *hospitals, cure, clinic,* and so on, as evidence for "ADDICTION IS A DISEASE", and *murder, rape, criminal,* as evidence for "ADDICTION IS A CRIME".

This kind of activity has been experimentally proved to facilitate the understanding of new information (Allbrittoon, et al 1995). In this activity, two conceptual metaphors can be identified. They are "ADDICTION IS A DISEASE", and "ADDICTION IS A CRIME". They are used as principles to organize the text.
In searching for these principles, students may gain a better understanding of the text.

To help the learners deepen the understanding, some questions could be asked to explore the image schemas behind these two identified conceptual metaphors. Take ADDICTION IS A DISEASE as an example. The following questions could be asked.

Question 1: What does a person normally do when s/he is addicted to heroin?
(clues: dependent on drugs; can not control himself/herself, must be cured).

Question 2: What does a person look like if he is in drug addiction?
(clues: painful twisted faces, etc...).

Question 3: What does a person normally do when s/he is sick?
(clues: take medicines, the body can not function well, must be cured, etc).

Question 4: What does a person look like if s/he is in serious illness?
(clues: painful expressions, etc.).

To summarize at this juncture, I mainly focused in Section 8.2, on the use of conceptual metaphors and image schemas in extending metaphorical senses, and then through the exploration of image schemas to deepen the understanding. In Section 8.3, I designed a series of exercises starting from concrete meanings, then to metaphorical meanings and finally to idiomatic expressions. In Section 8.4, I designed an activity, which exploits conceptual metaphors in reading comprehension, and uses image schemas to deepen the understanding. Thus, from Section 8.2 to
Section 8.4, our focus has gradually moved from learning lexical items to understanding text. The important point in doing so is that we have brought the application of conceptual metaphor to an even wider context. Obviously, this is not the end. Since we have come to the text comprehension, there are a lot of things we can do. A short text can lead on to a longer paragraph, and this can in turn lead on to novels and stories, autobiographies, and so on. All of these can be organized by conceptual metaphors. The image schemas behind these conceptual metaphors can now be explored. An attempt at applying image schemas to literary analysis will be explored in Section 8.5 below.

8.5 Using Conceptual Metaphors and Image Schemas in Literary Analysis

Robert Frost and Emily Dickinson. In the following, I will take Frost’s poem “The Road Not Taken” below as an example.

The Road Not Taken

Two roads diverged in a yellow wood
And sorry I could not travel both
And be one traveler, long I stood
And looked down one as far as I could
To where it bent in the undergrowth;

Then took the other, as just as fair,
And having perhaps the better claim,
Because it was grassy and wanted wear;
Though as for that, the passing there
Had worn them really about the same,

And both that morning equally lay
In leaves no step had trodden black.
Oh! I kept the first for another day!
Yet knowing how way leads on to way,
I doubted if I should ever come back.
I shall be telling this with a sigh

Somewhere ages and ages hence;

Two roads diverged in a wood, and I—

I took the one less traveled by,

And that has made all the difference.

This poem touches many of us. It serves almost like a guiding star, inspiring us to seek out our own personal paths in this wonderful journey called life. An analysis of the poem may show the following points. Firstly, the conceptual metaphors “LIFE IS A JOURNEY” can best reflect the theme of this poem. In this poem we can find the following systematic mapping from “JOURNEY” to “LIFE”.

Table 8.1: Mapping from journey to life

<table>
<thead>
<tr>
<th>JOURNEY</th>
<th>LIFE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two roads</td>
<td>Facing choices in life</td>
</tr>
<tr>
<td>Could not travel both roads</td>
<td>Could only choose one choice</td>
</tr>
<tr>
<td>Looked down as far as I could</td>
<td>Imagine the result of decision</td>
</tr>
<tr>
<td>Took the other... better claim</td>
<td>Made the decision with some excuses</td>
</tr>
<tr>
<td>Way leads on to way</td>
<td>After decision is made, one will face new choices</td>
</tr>
<tr>
<td>In leaves no step had trodden black</td>
<td>A choice never been chosen</td>
</tr>
</tbody>
</table>

......
Secondly, a closer look at this poem helps us see Frost’s use of the PATH and BALANCE image schemas. This “journey’ poem comprises four stanzas, Freeman (2002) commented:

*Each containing five lines, the poem has a stanzacic abaab full rhyme pattern that serves to stabilize a meter that hovers between lines of eight and ten syllables, dominated by an iambic rhythm with anapaestic overtones. These characteristics iconically echo the schemas of PATH and BALANCE* (Freeman 2002:75).

We can also find other image schemas in other poems by Frost. The following is the opening line of “Desert Places”:

“Snow falling and night falling fast, oh fast
In a field I looked into going past,
And the ground almost covered smooth in snow,
But a few weeds and stubble showing last.”

In the second line, the preposition “in” indicates the CONTAINER schema, the container of the field in which the snow is falling. The CONTAINER of the field itself is contained by a bigger container — the surrounding woods that ‘have’ or surround it. The speaker is now outside the container looking into ‘it’. Then the
speaker's vision is another "CONTAINER" which now contains all things he observes.

We can explore image schemas behind a poem, in order to have a better understanding of the poem. It is also possible to find some dominant image schemas for several poems by the same poet. An analysis by Freeman (2002) shows that the dominant cognitive image schema of Frost's poetics is the linear PATH schema with the internal structure of a starting point and an end and a series of points along the way, and the schema of BALANCE. Frost's poetry is dynamic in movement and normally ends in some form of control. For example, in the poem "The Road Not Taken", the poem moves the grounding of the speakers' perspective from a past mental space (in the first three stanzas) to a future mental spaces (at the beginning of last stanzas), but ends in the speaker's reality space right at the moment of the present. Freeman (2002) observed that this present space pivots on the balance between the past space, which projects the future uncertainty about the path to choose, and the future space, which involves the recalling of the past decision. The poem ends at the "momentary stay" in which the speaker asserts the control: "And that has made all the differences."

From the discussion above we see that Frost not only uses certain image schemas in one poem, he also uses several dominant images schemas in several poems. In analyzing these image schemas, we can better understand the organizing
lines of Frosts poems, and gain some understanding of Frost's intention behind the poems. In summary, poets use conceptual metaphors and image schemas as organizing images behind literary works. By analyzing conceptual metaphors and image schemas, readers can have a better understanding of poets' poetics.

8.6 Conclusion: Bridging the Gulf between Cognitive Linguistics and Applied Linguistics

To summarize this Chapter and the whole thesis, I will provide Table 8.2 below linking what has been done in this thesis concerning two areas: cognitive linguistics and applied linguistics.

Based on the current theories of cognitive linguistics, I have set up a hierarchical structure which links human experiences, through image schemas and conceptual metaphors, to linguistic expressions: metaphorical expressions, idioms, and proverbs. Three theoretical strands (The Dual Coding Theory, the Psychological Reality of Hierarchical Structure and the Psychological Reality of Image Schemas) were brought to support the idea that this organization of structure can facilitate the learning of metaphorical expressions, idioms and proverbs. 5 specific hypotheses were formulated, and eventually the first three hypotheses were completely verified, while H4 and H5 were partly verified. Finally, I built a bridge between cognitive linguistics and applied linguistics when I discussed the pedagogical implications and applications at different linguistic levels: lexical level, phrasal and idiomatic level,
and the level of longer texts. Figure 8.2 indicates the correspondences I have established in bridging cognitive linguistics and applied linguistics.

Table 8.2: Bridging cognitive linguistics and applied linguistics

<table>
<thead>
<tr>
<th>Cognitive Linguistics</th>
<th>Applied Linguistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The hierarchical structure (Section 3.6)</strong></td>
<td><strong>Applications</strong></td>
</tr>
<tr>
<td>(Column 1)</td>
<td>Linguistic levels (Column 2)</td>
</tr>
<tr>
<td><strong>Level 1: Experiential</strong></td>
<td>Textual level</td>
</tr>
<tr>
<td><strong>Level 2: Image Schematic (IS)</strong></td>
<td>Sentential level</td>
</tr>
<tr>
<td><strong>Level 3: Conceptual mapping (CM)</strong></td>
<td>Phrasal level</td>
</tr>
<tr>
<td><strong>Level 4: Linguistic level (metaphorical expressions, idioms, and proverbs)</strong></td>
<td>Word level</td>
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(Note: CM = Conceptual Metaphor; IS = Image Schema)
The cognitive linguistics column (column 1) shows a hierarchical structure established in Section 3.6. This structure describes how IMs (abstracted from experiences) and CMs are related to linguistic forms. Column 1 provides the organizing devices of ISs and CMs. We use these organizing devices (column 3) to organize linguistic forms at different levels (column 2). These organizing devices in column 3 can be used in different learning tasks (column 4). At the top level in column 2, we use text (or sentences) to describe human experiences (level 1 in column1). Thus we come back to human experiences.

For example, at the “Text Level” in column 2, two kinds of learning tasks can be designed using ISs and CMs. They are: “a. reading comprehension; b. literary analysis” in column 4. At the “Sentential Level”, tasks can be designed to learn metaphors and learners can be trained for metaphor awareness (task c), and the corresponding organizing devices are ISs and CMs. At the “Phrasal Level”, tasks for leaning idioms and proverbs (task d) can be designed using ISs and CMs. And finally, at the “Word Level”, we can use ISs and CMs for lexical extension (task f), as done in the sample Activity 1. In Activity Set 1, we only discussed how to extend the concrete senses to the metaphorical senses. In fact this can be done in both ways in pedagogical practice. That is, if the reading material contains metaphorical usage, we can explore their concrete senses and find the source DOMAIN. Again, at the “Word Level”, ISs can be used in lexical semantic analysis (task g), as discussed in Section 3.5.
Table 8.2 may well serve as a general conclusion of this dissertation as well as a framework for further research. It shows what has been established in cognitive linguistics as well as what can be done in applied linguistics at different linguistic levels with different types of pedagogical tasks. Thus Table 8.2 is a bridge we have built between cognitive linguistics and applied linguistics.

From Table 8.2, we can also find some gaps awaiting further experimental studies and fillings. For example, studies on Tasks a, b, and g can be designed with and without CMs and ISs being introduced. A whole teaching term follow-up observation may be conducted, with the control group using traditional method, and the experimental group using CM – IS approach.

The present research is broadly within Applied Cognitive Linguistics. More links should be established between cognitive linguistics and its applications, and more experimental studies should be designed. The present research has focused on vocabulary acquisition. It would be a challenging task to apply cognitive theories to grammar teaching and it would be more challenging to prove their effectiveness.

Finally, we can see some limitations in the present research. I will discuss from different perspectives below.
Firstly, there are theoretical issues to be settled. For example, there does not exist widely accepted criteria as how to determine a conceptual metaphor. Though H4 and H5 are firmly based on Gibbs et al’s research, it still remains an unsettled issue as how many idioms and proverbs in the English language can be organized in the way they do. Again in the H4 and H5, exploring mental images can facilitate learning, but to what extent this can reflect that image schemas can function the same. And to discuss the relation between rich images and image schemas may need a whole book.

Secondly, there are some insurmountable difficulties in design. For example, it can be agreed upon that the nature of image schemas is dynamic rather than static. What could be a better way to activate image schemas in people’s mind? Obviously, using diagrams is one way, images can also be regarded as a way to approach image schemas. But simple diagrams and images can and should not fully represent the image schema in people’s mind.

Thirdly, there are some uncertain elements concerning learning and learners. A huge amount of attempt was given to balance the control group and experimental group, but their involvements were different due to the nature of the activities. Another fact was that the experimental teachings related to the five Hypotheses were separated from normal teaching: the subjects were brought to the classroom to learn 40 linguistic metaphors organized in different ways. The subjects might or might not have motivation to learn. If they felt interested in the material, they might be
motivated to learn. If they did not feel interested, they might not be co-operative, and might just write something on the paper and hand it in. The results would have been accurate and reliable if the experiments were incorporated into their normal teaching and were conducted on the base of a whole teaching term. The English proficiency of the subjects is another element that might have influenced the results. As was shown, for the low proficiency subjects learning proverbs (Hypothesis 5), a significant difference was shown in both the posttest and the one-week delayed test, while for the high proficiency subjects learning idioms (Hypothesis 4), a significant difference was shown only in the one-week delayed test on meaning, no significant differences were shown in the post test and the one-week delayed test on form (see Section 6.6).

In the end, it is the author's hope that ESL/EFL teachers should closely follow the theoretical development in linguistics; meanwhile they should pay close attention to the possibility of exploiting the theories in ESL/EFL teaching and learning. I hope this thesis could set an example of this kind.
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Appendix 1: Test for Hypothesis 1

Test For Both Groups in Hypothesis 1

Name ________, gender____, major____, Year/grade ____,
group/class____,
Test type ________

Instruction: There are 40 sentences below. Each sentence contains an italicised word that is used metaphorically. Please try to explain the metaphorical meaning of each of the italicised words. E.g. The incident occurred during the heat of the argument. the heat means "the most active period of"

1. She’s a real hothead.
2. The disquieting expression was lifted from her face.
3. He’s just blowing off steam.
4. He erupted.
5. He boiled over.
6. She felt her gorge rising.
7. He blew his top.
8. He exploded.
9. He espoused that belief publicly.
10. I can’t keep my anger bottled up anymore.
11. His temper flared up.
12. He dived right into the problem.
13. We are at an impasse in this project.
14. She has an insatiable curiosity.
15. The problem itself is murky.
16. When I’m around her I feel like I am walking on eggshells.
17. He is treading on thin ice.
18. Let’s forge ahead—we’re already half-way through the analysis.
19. He hadn’t made much headway in writing the term paper.
20. I'd hate to see us back where we were thirty years ago, before civil rights had made the strides forward that we have seen.
21. It's all downhill for the rest of the course.
22. He has gotten sidetracked on that problem.
23. She got all steamed up.
24. She made a beeline for the presidency.
25. We are going upstream—the administration is opposed to our actions.
26. We are fighting an uphill battle—we'll never get this proposal approved.
27. We faced many hurdles in taking on this problem.
28. She is just going through the motions of applying for a loan.
29. He flirted with a belief in utter hedonism in his youth.
30. Let her stew.
31. She is moving ahead by leaps and bounds on that project.
32. He repudiated his earlier belief.
33. I've been ruminating on that topic for a while.
34. We have to regurgitate everything we learned on the final.
35. That's a very meaty book.
36. We slogged through the application process.
37. The crisis stripped away our veneer of sophistication.
38. We donned an appearance of nonchalance.
39. A grimace materialized for no apparent reason, but it melted away before she arrived.
40. He is wedded to a belief in his own infallibility.
Appendix 2: Learning Material For Group 1 in Hypothesis 1

Learning Material For Group 1

Instructions: There are 40 sentences below organised under six topics. Each sentence contains an *italicised* word that is used metaphorically. Its meaning is given in the brackets. Learn and memorize the meaning of the *italicised* word.

(1) Topic: Anger

1. She’s a real *hothead*.
   
   (*hothead*: someone who does things or reacts to things quickly and without thinking carefully first)

2. Let her *stew*.
   
   (*stew*: If a person stews, they are angry)

3. She got all *steamed up*.
   
   (*steamed up*: If a person is steamed up, they show their anger, esp. about something that other people do not think is important.)

4. He’s just *blowing off steam*.
   
   (*blow off steam*: to become free from worry or anger).

5. He *erupted*.
   
   (*erupt*: to burst out into anger suddenly)

6. He *boiled over*.
   
   (*boiled over*: When a person or situation boils over, they suddenly become out of control or violent)

7. She felt her *gorge rising*.
   
   (*gorge*: the contents of the stomach; *gorge rises*: if something makes someone’s gorge rise, it makes him feel disgusted and angry).

8. He *blow his top*.
   
   (*To blow one’s top*: to become extremely angry.)

9. He *exploded*.
   
   (*explode*: suddenly become angry)

10. I can’t keep my anger *bottled up* anymore.
(bottled up: When a person bottles things up, they refuse to talk about things that make them angry or worried.)

11. His temper flared up. (flare up: become stronger or increase)

(2) Topic: Problem

12. He dived right into the problem. (dive into: become completely involved in)

13. The problem itself is murky.

(murky: of water-dark and dirty; of things-complicated.)

(3) Topic: Action, acting

14. We slogged through the application process.

(slog: to work hard, physically or mentally, over a long period, esp. doing work that is not interesting)

15. When I'm around her I feel like I am walking on eggshells. (eggshells: If you are walking on eggs/eggshells, you are being very careful not to offend someone or do anything wrong).

16. He is treading on thin ice.

(tread on thin ice: To be in a dangerous situation)

17. Let's forge ahead—we're already half-way through the analysis.

(forge: to suddenly and quickly move forward)

18. He hadn't made much headway in writing the term paper.

(make headway: to advance or get closer to achieving something)

19. She is moving ahead by leaps and bounds on that project.

(by/in leaps and bounds: improve very quickly).

20. I'd hate to see us back where we were thirty years ago, before civil rights had made the strides forward that we have seen.

(make strides forward: make an important positive development)

21. It's all downhill for the rest of the course.

(Downhill: easier)

22. He has gotten sidetracked on that problem.
(sidetrack: to direct (a person's) attention away from an activity or subject towards another one which is often less important)

23. She made a beeline for the presidency.
    (make a beeline for: to go directly and quickly towards)

24. We are at an impasse in this project.
    (impasse: a point at which further development is impossible because something is preventing it)

25. We are going upstream—the administration is opposed to our actions.
    (going upstream: going against sth)

26. We are fighting an uphill battle—we'll never get this proposal approved.
    (uphill: needing a large amount of effort)

27. We faced many hurdles in taking on this problem.
    (hurdles: a frame or fence for jumping over in a race; difficulties)

28. She is just going through the motions of applying for a loan.
    (going through the motions: To go through the motions is to do something without caring very much about it or having much interest in it.)

(4) Topic: Beliefs

29. He flirted with a belief in utter hedonism in his youth.
    (flirt: considering, although not seriously)

30. He is wedded to a belief in his own infallibility.
    (Wedded: believing firmly in (an idea or theory) and unwilling to change that belief)

31. He espoused that belief publically.
    (espoused: to become involved with or support (an activity or opinion))

32. He repudiated his earlier belief. (repudiate: to refuse to accept as true)

(5) Topic: Ideas

33. I've been ruminating on that topic for a while.
    (ruminant: to think slowly and deeply about something)

34. We have to regurgitate everything we learned on the final.
(regurgitate: review and repeat)

35. She has an insatiable curiosity.

(insatiable: (esp. of a desire or need) too great to be satisfied

36. That's a very meaty book.

(meaty: full of or tasting of a lot of meat; exciting and interesting).

(6) Topic: Appearance, looks

37. The crisis stripped away our veneer of sophistication.

(stripped away: to remove, pull or tear (the covering or outer layer) from something. Veneer: a thin layer of decorative wood or plastic used to cover a cheaper material)

38. We donned an appearance of nonchalance.

(don: to put on (a piece of clothing)

39. A grimace materialized for no apparent reason, but it melted away before she arrived.

(grimace: (to make) an expression of pain, strong dislike, etc. in which the face twists in an ugly way)

40. The disquieting expression was lifted from her face.

(disquieting: causing anxiety; worrying)
Appendix 3: Discussion Material For Group 2 in Hypothesis 1

Discussion Material For Group 2 in Hypothesis 1

Explanatory Notes: The sentence “John is a fox” is a metaphor (隐喻), which means “John is cunning, like a fox”. We can also have a group of related metaphors, such as the following:

I’ve **invested** a lot of time in her. (cf: I have invested 1000 Yuan in stock market)
That flat tire **cost** me an hour. (cf: That dictionary **cost** me 50 Yuan)
You’re **wasting** my time. (cf: You can also waste your money)
How do you **spend** your time? (cf: How do you spend your money?)

Each of the four metaphors links the concept “MONEY” to the concept “TIME”. This group of metaphors can be organised under metaphor “TIME IS MONEY”, which we call “conceptual metaphor”.

Class Discussion: There are six conceptual metaphors below:

1. **ANGER IS HEAT**
2. **A PROBLEM IS A BODY OF WATER**
3. **ACTION IS SELF-PROPELLED MOTION**
4. **BELIEFS ARE LOVE OBJECTS**
5. **IDEAS ARE FOOD**
6. **EXTERNAL APPEARANCE IS A COVER**

Try to produce some metaphors related to each of the six conceptual metaphors.
Appendix 4: Learning Material For Group 2 in Hypothesis 1

Learning Material For Group 2 in H 1

**Instruction:** Here we have 40 metaphors below organised under 6 conceptual
metaphors. Learn and memorize the metaphorical meaning of the *italicised*
word in each sentence, its meaning is given in the brackets.

(1) Conceptual metaphors: ANGER IS HEAT

1. She's a real *hothead*.
   
   (*hothead*: someone who does things or reacts to things quickly and
   without thinking carefully first)

2. Let her *stew*.
   
   (*stew*: If a person stews, they are angry)

3. She got all *steamed up*.
   
   (*steamed up*: If a person is steamed up, they show their anger, esp. about
   something that other people do not think is important.)

4. He's just *blowing off steam*.
   
   (*blow off steam*: to become free from worry or anger).

5. He *erupted*.
   
   (*erupt*: to burst out into anger suddenly)

6. He *boiled over*.
   
   (*boiled over*: When a person or situation boils over, they suddenly become
   out of control or violent)

7. She felt her *gorge rising*.
   
   (*gorge*: the contents of the stomach; *gorge rises*: if something makes
   someone’s gorge rise, it makes him feel disgusted and angry).

8. He *blew his top*.
   
   (*To blow one’s top*: to become extremely angry.)

9. He *exploded*.
   
   (*explode*: suddenly become angry)

10. I can’t keep my anger *bottled up* anymore.
(bottled up: When a person bottles things up, they refuse to talk about things that make them angry or worried.)

11. His temper flared up.
   (flare up: become stronger or increase)

(2) Conceptual metaphor: A PROBLEM IS A BODY OF WATER

--- Investigating Problem Is Exploring Water

12. He dived right into the problem.
   (dive into: become completely involved in)

--- Difficulty In Solving Is Difficulty In Exploring Water

13. The problem itself is murky.
   (murky: of water-dark and dirty; of things-complicated. )

(3) Conceptual metaphor: ACTION IS SELF-PROPELLED MOTION

--- Manner Of Action Is Manner Of Motion

14. We slogged through the application process.
   (slog: to work hard, physically or mentally, over a long period, esp. doing work that is not interesting)

15. When I'm around her I feel like I am walking on eggshells. (eggshells: If you are walking on eggs/eggshells, you are being very careful not to offend someone or do anything wrong.

16. He is treading on thin ice.
   (tread on thin ice: To be in a dangerous situation)

--- Progress Is Forward Movement

17. Let's forge ahead--we're already half-way through the analysis.
   (forge: to suddenly and quickly move forward)

18. He hadn't made much headway in writing the term paper.
   (make headway: to advance or get closer to achieving something)

--- Speed Of Progress Is Speed Of Motion To A Destination

19. She is moving ahead by leaps and bounds on that project.
   (by/in leaps and bounds: improve very quickly).
— Negative Progress Is Backward Movement

20. I'd hate to see us back where we were thirty years ago, before civil rights had made the strides forward that we have seen.

(make strides forward: make an important positive development)

— Easy Action Is Easy Motion

21. It's all downhill for the rest of the course.

(Downhill: easier)

— Efficient, Purposeful Action Is Direct Motion To A Destination

22. He has gotten sidetracked on that problem.

(sidetrack: to direct (a person's) attention away from an activity or subject towards another one which is often less important)

23. She made a beeline for the presidency.

(make a beeline for: to go directly and quickly towards)

— Obstacles To Action Are Obstacles To Motion

24. We are at an impasse in this project.

(impasse: a point at which further development is impossible because something is preventing it)

25. We are going upstream—the administration is opposed to our actions.

(going upstream: going against sth)

26. We are fighting an uphill battle—we'll never get this proposal approved.

(uphill: needing a large amount of effort)

27. We faced many hurdles in taking on this problem.

(hurdles: a frame or fence for jumping over in a race; difficulties)

28. She is just going through the motions of applying for a loan.

(going through the motions: To go through the motions is to do something without caring very much about it or having much interest in it.)

(4) Conceptual metaphor: BELIEFS ARE LOVE OBJECTS

— Considering Believing Is Considering Entering A Relationship

29. He flirted with a belief in utter hedonism in his youth.

(flirt: considering, although not seriously)
— Accepting A Belief Is Entering A Relationship
30. He is wedded to a belief in his own infallibility.
   (Wedded: believing firmly in (an idea or theory) and unwilling to change that belief)
31. He espoused that belief publicly.
   (espoused: to become involved with or support (an activity or opinion)

— Giving Up A Belief Is Ending The Relationship
32. He repudiated his earlier belief.
   (repudiate: to refuse to accept as true)

(5) Conceptual metaphor: IDEAS ARE FOOD
— Thinking Is Preparing Food
33. I've been ruminating on that topic for a while.
   (ruminating: to think slowly and deeply about something)
— Understanding Is Digestion
   Remembering Is Regurgitating (Regurgitate: to bring back (swallowed food) into the mouth)
34. We have to regurgitate everything we learned on the final.
   (regurgitate: review and repeat)
— Learning Is Eating
35. She has an insatiable curiosity.
   (insatiable: (esp. of a desire or need) too great to be satisfied
36. That's a very meaty book.
   (meaty: full of or tasting of a lot of meat; exciting and interesting)

(6) Conceptual metaphor: EXTERNAL APPEARANCE IS A COVER
37. The crisis stripped away our veneer of sophistication.
   (stripped away: to remove, pull or tear (the covering or outer layer) from something. Veneer: a thin layer of decorative wood or plastic used to cover a cheaper material)
38. We donned an appearance of nonchalance.
---Facial Expressions Are Covers

39. A grimace materialized for no apparent reason, but it melted away before she arrived.
   (grimace: (to make) an expression of pain, strong dislike, etc. in which the face twists in an ugly way)

40. The disquieting expression was lifted from her face.
   (disquieting: causing anxiety; worrying)
Appendix 5: Test For Hypothesis 2

Test For Both Groups in Hypothesis 2

Name ______, gender____, major____, Year/grade ____
group/class____.
Test type ______

Instruction: There are 40 sentences below. Each sentence contains an italicised word which is used metaphorically. Explain the metaphorical meaning of the italicised word. E.g. The incident occurred during the heat of the argument.

the heat means “the most active period of”.

1. She's a real hothead.
2. Let her stew.
3. She got all steamed up.
4. He's just blowing off steam.
5. He erupted.
6. He boiled over.
7. We need to construct a strong argument for that.
8. She felt her gorge rising.
9. He blew his top.
10. He exploded.
11. I can't keep my anger bottled up anymore.
12. His temper flared up.
13. He dived right into the problem.
14. The problem itself is murky.
15. We slogged through the application process.
16. When I'm around her I feel like I am walking on eggshells.
17. He is treading on thin ice.
18. Let's forge ahead—we're already half-way through the analysis.
19. He hadn't made much headway in writing the term paper.
20. She is moving ahead by leaps and bounds on that project.
21. I'd hate to see us back where we were thirty years ago, before civil rights had made the strides forward that we have seen.

22. It's all downhill for the rest of the course.

23. He has gotten sidetracked on that problem.

24. She made a beeline for the presidency.

25. We are at an impasse in this project.

26. We are going upstream—the administration is opposed to our actions.

27. We are fighting an uphill battle—we'll never get this proposal approved.

28. We faced many hurdles in taking on this problem.

29. She is just going through the motions of applying for a loan.

30. I've been ruminating on that topic for a while.

31. We have to regurgitate everything we learned on the final.

32. She has an insatiable curiosity.

33. That's a very meaty book.

34. The crisis stripped away our veneer of sophistication.

35. We donned an appearance of nonchalance.

36. A grimace materialized for no apparent reason, but it melted away before she arrived.

37. The disquieting expression was lifted from her face.

38. We need to buttress the theory with solid argument.

39. The argument collapsed.

40. The argument is shaky.
Appendix 6: Discussion Material For Group 1 (English conceptual metaphors) in H2

Discussion Material For Group 1 (English conceptual metaphor) in H2

Explanatory Notes: Sentence “John is a fox” is a metaphor (隐喻), which means “John is cunning, like a fox”. We can also have a group of related metaphors, such as the following:

I've invested a lot of time in her. (cf. I have invested 1000 Yuan in stock market)

That flat tire cost me an hour. (cf. That dictionary cost me 50 Yuan)

You're wasting my time. (cf. You can also waste your money)

How do you spend your time? (cf. How do you spend your money?)

Each of the four metaphors links the concept “MONEY” to the concept “TIME”. This group of metaphors can be organised under the metaphor “TIME IS MONEY”, which we call “conceptual metaphor”.

Class Discussion: There are six conceptual metaphors below:

1. ANGER IS HEAT
2. A PROBLEM IS A BODY OF WATER
3. ACTION IS SELF-PROPELLED MOTION
4. IDEAS ARE FOOD
5. EXTERNAL APPEARANCE IS A COVER
6. THEORIES ARE BUILDINGS

Try to produce some metaphors related to each of the six conceptual metaphors.
Appendix 7: Learning Material For Group 1 in Hypothesis 2

Learning Material For Group 1 (English metaphors) in H 2

Instruction: Here we have 40 metaphors below organised under 6 Conceptual metaphors. Learn and memorize the metaphorical meaning of the italicised word in each sentence, its meaning is given in the brackets.

(1) Conceptual metaphors: ANGER IS HEAT

1. She's a real hothead.
   (hothead: someone who does things or reacts to things quickly and without thinking carefully first)

2. Let her stew.
   (stew: If a person stews, they are angry)

3. She got all steamed up.
   (steamed up: If a person is steamed up, they show their anger, esp. about something that other people do not think is important.)

4. He's just blowing off steam.
   (blow off steam: to become free from worry or anger).

5. He erupted.
   (erupt: to burst out into anger suddenly)

6. He boiled over.
   (boiled over: When a person or situation boils over, they suddenly become out of control or violent)

7. She felt her gorge rising.
   (gorge: the contents of the stomach; gorge rises: if something makes someone's gorge rise, it makes him feel disgusted and angry).

8. He blew his top.
   (To blow one's top: to become extremely angry.)

9. He exploded.
   (explode: suddenly become angry)

10. I can't keep my anger bottled up anymore.
(bottled up: When a person bottles things up, they refuse to talk about things that make them angry or worried.)

11. His temper flared up.

(flare up: become stronger or increase)

(2) Conceptual metaphor: A PROBLEM IS A BODY OF WATER

--- Investigating Problem Is Exploring Water

12. He dived right into the problem.

(dive into: become completely involved in)

--- Difficulty In Solving Is Difficulty In Exploring Water

13. The problem itself is murky.

(murky: of water-dark and dirty; of things-complicated.)

(3) Conceptual metaphor: ACTION IS SELF-PROPELLED MOTION

--- Manner Of Action Is Manner Of Motion

14. We slugged through the application process.

(slog: to work hard, physically or mentally, over a long period, esp. doing work that is not interesting)

15. When I'm around her I feel like I am walking on eggshells.

(eggshells: If you are walking on eggs/eggshells, you are being very careful not to offend someone or do anything wrong).

16. He is treading on thin ice.

( tread on thin ice : To be in a dangerous situation)

--- Progress Is Forward Movement

17. Let's forge ahead—we're already half-way through the analysis.

(forge: to suddenly and quickly move forward)

18. He hadn't made much headway in writing the term paper.

(make headway: to advance or get closer to achieving something)

--- Speed Of Progress Is Speed Of Motion To A Destination

19. She is moving ahead by leaps and bounds on that project.

(by/in leaps and bounds: improve very quickly).

--- Negative Progress Is Backward Movement

20. I'd hate to see us back where we were thirty years ago, before civil rights had made the strides forward that we have seen.
(make strides forward: make an important positive development)

—Easy Action Is Easy Motion
21. It's all downhill for the rest of the course.
(Downhill: easier)

—Efficient Purposeful Action Is Direct Motion To A Destination
22. He has gotten sidetracked on that problem.
(sidetrack: to direct (a person's) attention away from an activity or subject towards another one which is often less important)

23. She made a beeline for the presidency.
(make a beeline for: to go directly and quickly towards)

—Obstacles To Action Are Obstacles To Motion
24. We are at an impasse in this project.
(impasse: a point at which further development is impossible because something is preventing it)

25. We are going upstream—the administration is opposed to our actions.
(going upstream: going against sth)

26. We are fighting an uphill battle—we'll never get this proposal approved.
(uphill: needing a large amount of effort)

27. We faced many hurdles in taking on this problem.
(hurdles: a frame or fence for jumping over in a race; difficulties)

28. She is just going through the motions of applying for a loan.
(going through the motions: To go through the motions is to do something without caring very much about it or having much interest in it.)

(4) Conceptual metaphor: IDEAS ARE FOOD
—Thinking Is Preparing Food
29. I've been ruminating on that topic for a while.
(ruminate: to think slowly and deeply about something)

—Understanding Is Digestion
—Remembering Is Regurgitating (Regurgitate: to bring back (swallowed food) into the mouth)

30. We have to regurgitate everything we learned on the final.
(regurgitate: review and repeat)

— Learning Is Eating

31. She has an insatiable curiosity. (insatiable: (esp. of a desire or need) too great to be satisfied)

32. That's a very meaty book. (meaty: full of or tasting of a lot of meat; exciting and interesting).

(5) Conceptual metaphor: EXTERNAL APPEARANCE IS A COVER

33. The crisis stripped away our veneer of sophistication.

(stripped away: to remove, pull or tear (the covering or outer layer) from something. Veneer: a thin layer of decorative wood or plastic used to cover a cheaper material)

34. We donned an appearance of nonchalance.

(don: to put on (a piece of clothing)

—Facial Expressions Are Covers

35. A grimace materialized for no apparent reason, but it melted away before she arrived. (grimace: (to make) an expression of pain, strong dislike, etc. in which the face twists in an ugly way)

36. The disquieting expression was lifted from her face.

(disquieting: causing anxiety; worrying)

(6) Conceptual metaphor: THEORIES ARE BUILDINGS.

37. We need to construct a strong argument for that. (construct: to build; to put together different parts to form (a whole)

38. We need to buttress the theory with solid argument. (to buttress: to build buttresses to support; buttress: a structure made of stone or brick which sticks out from and supports a wall of a building)

39. The argument collapsed. (collapse: to fall down suddenly because of pressure or lack of strength or support)

40. The argument is shaky.

(shaky: moving with quick, short movements from side to side, not in a controlled way)
Appendix 8: Discussion Material For Group 2 (Chinese Conceptual Metaphors) in H2

Discussion Material For Group 2 (Chinese conceptual metaphors) in Hypothesis 2

Explanatory Notes: Sentence “John is a fox” is a metaphor (隐喻), which means “John is cunning, like a fox”. We can also have a group of related metaphors, such as the following:

I’ve invested a lot of time in her. (cf. I have invested 1000 Yuan in stock market)

That flat tire cost me an hour. (cf. That dictionary cost me 50 Yuan)

You’re wasting my time. (cf. You can also waste your money)

How do you spend your time? (cf. How do you spend your money?)

Each of the four metaphors links the concept “MONEY” to the concept “TIME”.

This group of metaphors can be organised under the metaphor “TIME IS MONEY”, which we call “conceptual metaphor” (概念隐喻):

Class Discussion: There are six Chinese conceptual metaphors below:

1. “愤怒是火” (如，“别让我发火”)
   “愤怒是气”，(如，“我受不了这窝囊气”)

2. “问题是一汪水” (如，“混水摸鱼”，“一坛死水”)

3. “行为是自我推动的运动”

4. “思维是食物”

5. “外表是罩子”

6. “理论是建筑物” (如，“理论基础”，“理论框架”)

Try to produce some English metaphors related to each of the six Chinese conceptual metaphors.
Appendix 9: Learning Material For Group 2 in Hypothesis 2

Learning Material For Group 2 (Chinese conceptual metaphors) in H 2

Instruction: Here we have 40 metaphors below organised under (related to) six Chinese conceptual metaphors. Learn and memorize the metaphorical meaning of the italicised word in each sentence, its meaning is given in the brackets.

(1) 概念隐喻：“愤怒是火”（如，“别让我发火”）
“愤怒是气”，（如，“我可受不了这窝囊气”）
以下是一些类似表达:

1. She's a real hothead.
   (hothead: someone who does things or reacts to things quickly and without thinking carefully first)

2. Let her stew.
   (stew: If a person stewed, they are angry)

3. She got all steamed up.
   (steamed up: If a person is steamed up, they show their anger, esp. about something that other people do not think is important)

4. He's just blowing off steam.
   (blow off steam: to become free from worry or anger).

5. He erupted.
   (erupt: to burst out into anger suddenly)

6. He boiled over.
   (boiled over: When a person or situation boils over, they suddenly become out of control or violent)

7. She felt her gorge rising.
   (gorge: the contents of the stomach; gorge rises: if something makes someone’s gorge rise, it makes him feel disgusted and angry).

8. He blew his top.
   (To blow one’s top: to become extremely angry.)

9. He exploded.
(explode: suddenly become angry)

10. I can't keep my anger bottled up anymore.

(bottled up: When a person bottles things up, they refuse to talk about things that make them angry or worried.)

11. His temper flared up.

(flare up: become stronger or increase)

(2) 概念隐喻：“问题是一汪水”（如，“混水摸鱼”，“一坛死水”）

--- “探索问题就是勘查水”

12. He dived right into the problem.

(dive into: become completely involved in)

--- “要解决的问题就是要勘查的水”

13. The problem itself is murky.

(murky: of water-dark and dirty; of things-complicated.)

(3) 概念隐喻：“行为是自我推动的运动”

--- “行为方式是运动方式”

14. We slog through the application process.

(slog: to work hard, physically or mentally, over a long period, esp. doing work that is not interesting)

15. When I'm around her I feel like I am walking on eggshells. (eggshells: If you are walking on eggs/eggshells, you are being very careful not to offend someone or do anything wrong).

16. He is treading on thin ice.

(tread on thin ice: To be in a dangerous situation)

--- “进展是向前的运动”

17. Let's forge ahead—we're already half-way through the analysis.

(forge ahead: to suddenly and quickly move forward)

18. He hadn't made much headway in writing the term paper.

(make headway: to advance or get closer to achieving something)

--- “进展的速度是向前的速度”

19. She is moving ahead by leaps and bounds on that project.
(by/in leaps and bounds: improve very quickly).

20. "退步是向后的运动"
I'd hate to see us back where we were thirty years ago, before civil rights had made the strides forward that we have seen.
(make strides forward: make an important positive development)

21. It's all downhill for the rest of the course. (Downhill: easier)

22. He has gotten sidetracked on that problem.
(sidetrack: to direct (a person's) attention away from an activity or subject towards another one which is often less important)

23. She made a beeline for the presidency.
(make a beeline for: to go directly and quickly towards)

24. We are at an impasse in this project.
(impasse: a point at which further development is impossible because something is preventing it)

25. We are going upstream—the administration is opposed to our actions.
(going upstream: going against sth)

26. We are fighting an uphill battle—we'll never get this proposal approved.
(uphill: needing a large amount of effort)

27. We faced many hurdles in taking on this problem.
(hurdles: a frame or fence for jumping over in a race; difficulties)

28. She is just going through the motions of applying for a loan.
(going through the motions: To go through the motions is to do something without caring very much about it or having much interest in it.)

(4) 概念隐喻："思想是食物"

29. I've been ruminating on that topic for a while.
(ruminate: to think slowly and deeply about something)

30. We have to regurgitate everything we learned on the final.
(regurgitate: review and repeat)

“学习是吃饭”

31. She has an insatiable curiosity.
   (insatiable: (esp. of a desire or need) too great to be satisfied)

32. That's a very meaty book.
   (meaty: full of or tasting of a lot of meat; exciting and interesting).

(5) 概念隐喻:“外表是罩子”

33. The crisis stripped away our veneer of sophistication.
   (stripped away: to remove, pull or tear (the covering or outer layer) from something. Veneer: a thin layer of decorative wood or plastic used to cover a cheaper material)

34. We donned an appearance of nonchalance.
   (don: to put on (a piece of clothing))

“面部的表情是罩子”

35. A grimace materialized for no apparent reason, but it melted away before she arrived.
   (grimace: (to make) an expression of pain, strong dislike, etc. in which the face twists in an ugly way)

36. The disquieting expression was lifted from her face.
   (disquieting: causing anxiety; worrying)

(6) 概念隐喻:“理论是建筑物”
   (如:“理论基础”,”理论框架”)

37. We need to construct a strong argument for that. (construct: to build; to put together different parts to form (a whole)

38. We need to buttress the theory with solid argument. (to buttress: to build buttresses to support; buttress: a structure made of stone or brick which sticks out from and supports a wall of a building)

39. The argument collapsed. (collapse: to fall down suddenly because of pressure or lack of strength or support)

40. The argument is shaky. (shaky: moving with quick, short movements from side to side, not in a controlled way)
Appendix 10: Test For Hypothesis 3

Test For All Groups in Hypothesis 3

Name ______, gender____, major____, Year/grade ____
group/class____
Test type ______

Instruction: There are 25 sentences below. Each sentence contains an italicised
word which is used metaphorically. Explain the metaphorical meaning of the
italicised word.

E.g. The incident occurred during the heat of the argument.

*the heat means" "the most active period of"

1. She's a real hothead.
2. Let her stew.
3. She got all steamed up.
4. He's just blowing off steam.
5. He erupted.
6. He boiled over.
7. She felt her gorge rising.
8. He blew his top.
9. He exploded.
10. I can't keep my anger bottled up anymore.
11. His temper flared up.
12. We're in hot water.
13. He's in it up to his neck in debt
14. I can't get out of it, I'm locked into it.
15. Try to get out of those commitments; don't let your boss box you in.
16. He trapped her into going with him.
17. We pooled our funds for the venture.
18. We have poured our money into bonds.
19. I was \textit{filled} with rage.
20. She was \textit{overflowing} with joy.
21. She could hardly \textit{contain} her anger.
22. I \textit{poured} my heart out to him and then he told all his friends what I'd said.
23. I'm \textit{drowning} in sorrow.
24. He's \textit{stirred up}.
25. She's \textit{bubbling} with excitement.
Appendix 11: Learning Material for Group 1 in Hypothesis 3

Learning Material for Group 1 in H 3

Instruction: There are 25 sentences below organised under 5 major metaphors. Try to learn the metaphorical meaning of the italicised word in each sentence.

(1) Metaphors: Anger Is Heat

1. She's a real hothead.
   (hothead: someone who does things or reacts to things quickly and without thinking carefully first)

2. Let her stew.
   (stew: If a person stews, they are angry)

3. She got all steamed up.
   (steamed up: If a person is steamed up, they show their anger, esp. about something that other people do not think is important.)

4. He's just blowing off steam.
   (blow off steam: to become free from worry or anger).

5. He erupted.
   (erupt: to burst out into anger suddenly)

6. He boiled over.
   (boiled over: When a person or situation boils over, they suddenly become out of control or violent)

7. She felt her gorge rising.
   (gorge: throat; gorge rises: if something makes someone's gorge rise, it makes him feel disgusted and angry).

8. He blew his top.
   (To blow one's top: to become extremely angry.)

9. He exploded.
   (explode: suddenly become angry)

10. I can't keep my anger bottled up anymore.
    (bottled up: When a person bottles things up, they refuse to talk about things that make them angry or worried.)
11. His temper flared up. (flare up: become stronger or increase)

(2) Metaphor: Difficulties Are Containers

12. We're in hot water. (hot water: If you are in hot water or you get into hot water, you are in or get into a difficult situation and are in danger of being punished.)

13. He's in it up to his neck in debt. (If you are up to your neck in a situation you are very involved in it.)

(3) Metaphor: Obligations Are Containers

14. I can't get out of it, I'm locked into it. (lock into; get involved into difficulties, etc.)

15. Try to get out of those commitments; don't let your boss box you in. (box: to put somebody in more responsibilities and less freedom)

16. He trapped her into going with him. (trap: to make unable to escape from)

(4) Metaphor: Investments Are Containers For Liquids

17. We pooled our funds for the venture. (pool: intentionally collecting and amassing)

18. We have poured our money into bonds. (pour: to invest greatly)

(5) Metaphor: Emotions Are Entities Within A Person

19. I was filled with rage. (Fill: become full)

20. She was overflowing with joy. (Overflowing: so full that joy is almost coming out of it.)

21. She could hardly contain her anger. (contain: to keep within limits; not to allow to spread)

22. I poured my heart out to him and then he told all his friends what I'd said. (pour: tell somebody about all one's feelings)

23. I'm drowning in sorrow. (drowning: got too many/much of something)

24. He's stirred up. (stir up: If a person or thing stirs up an unpleasant emotion, they cause it to begin or become stronger).

25. She's bubbling with excitement. (bubbling: full of it and expressing it to everyone).
Appendix 12: Discussion Material For Group 2 in Hypothesis 3

Discussion Material For Group 2 in Hypothesis 3

Discussion: we are going to learn 25 words in 25 sentences. These sentences are directly or indirectly (that is, metaphorically) related to “Human Body”, let’s discuss about human body first.

Q: What’s in your mind about your own body? (Shape, function…)
Q: what does your body contain? (clues: head, stomach, legs…else?)
Q: What does your head contain? (clues: brain, different organs…else?)
Q: Besides different organs, what else (s'th abstract) can you head contain?
Q: In what way your body (head) is similar to a container like a cup, or a bottle?
Q: Please draw two diagrams; one is your body, the other, a container.

Draw them below.
Appendix 13: Learning Material for Group 2 in Hypothesis 3

Learning Material For Group 2 in Hypothesis 3

Instruction: Here we have 25 sentences below organised under 5 major metaphors. These 5 metaphors are all related to the abstract structure of CONTAINER directly or indirectly. Try to learn the metaphorical meaning of the italicised word in each sentence. While learning, please always refer to the diagram provided for the abstract structure of a CONTAINER.

(1) Metaphors: Anger Is Heat

The Body Is Container For Anger

1. She's a real hothead.
   (hothead: someone who does things or reacts to things quickly and without thinking carefully first)
2. Let her stew.
   (stew: If a person stews, they are angry)
3. She got all steamed up.
   (steamed up: If a person is steamed up, they show their anger, esp. about something that other people do not think is important.)
4. He's just blowing off steam.
   (blow off steam: to become free from worry or anger).
5. He erupted.
   (erupt: to burst out into anger suddenly)
6. He boiled over.
   (boiled over: When a person or situation boils over, they suddenly become out of control or violent)
7. She felt her gorge rising.
   (gorge: the contents of the stomach; gorge rises: if something makes someone's gorge rise, it makes him feel disgusted and angry.)

8. He blew his top.
   (To blow one's top: to become extremely angry.)

9. He exploded.
   (explode: suddenly become angry)

10. I can't keep my anger bottled up anymore.
    (bottled up: When a person bottles things up, they refuse to talk about things that make them angry or worried.)

11. His temper flared up.
    (flare up: become stronger or increase)

(2) Metaphor: Difficulties Are Containers

12. We're in hot water. (hot water: If you are in hot water or you get into hot water, you are in or get into a difficult situation and are in danger of being punished.)

13. He's in it up to his neck in debt. (If you are up to your neck in a situation you are very involved in it.)

(3) Metaphor: Obligations Are Containers
14. I can't get out of it, I'm *locked* into it. (*lock into; get involved into difficulties, etc.*)

15. Try to get out of those commitments; don't let your boss *box* you in. (*box:* to put somebody in more responsibilities and less freedom)

16. He *trapped* her into going with him. (*trap:* to make unable to escape from)

(4) Metaphor: Investments Are Containers For Liquids

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Investment As Container
X
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17. We *pooled* our funds for the venture. (*pool:* intentionally collecting and amassing)

18. We have *poured* our money into bonds. (*pour:* to invest greatly)

(5) Metaphor: Emotions Are Entities Within A Person

```
Body As Container
X
```

19. I was *filled* with rage. (*Fill:* become full)

20. She was *overflowing* with joy. (*Overflowing:* so full that joy is almost coming out of it.)

21. She could hardly *contain* her anger. (*contain:* to keep within limits; not to allow to spread)

22. I *poured* my heart out to him and then he told all his friends what I'd said. (*pour:* tell somebody about all one's feelings)

23. I'm *drowning* in sorrow. (*drowning:* got too many/much of something)
24. He’s *stirred up*. (*stir up*: If a person or thing stirs up an unpleasant emotion, they cause it to begin or become stronger).

25. She’s *bubbling* with excitement. (*bubbling*: full of it and expressing it to everyone).
Appendix 14: Test for Hypothesis 4

Idiom Test For All Groups in Hypothesis 4

Name _______ gender____ major____ Year/grade ____
group/class_____
Test type _______

Students’ Instruction: Complete the following 16 idioms by filling in one word/expression on each blank.

For example: “to _______ more than you can chew”; you fill in “bite off” on the blank. “to bite off more than you can chew”

1. crack the _______ .
2. go off your _______ .
3. _______ the beans.
4. hit the _______ .
5. lay down the _______ .
6. button your _______ .
7. _______ your cool .
8. _______ the shots.
9. _______ your tongue.
10. _______ pieces.
11. _______ the whistle.
12. foam at the _______ .
13. _______ your grip.
14. blow the _______ off.
15. keep in the _______ .
16. loose _______ .
Appendix 15: One-week Delay Test For Hypothesis 4

Idiom One Week Delay Test For All Groups in Hypothesis 4

Name _____, gender___, major___, Year/grade ____,
group/class___.

Instruction: Complete the following 16 idioms by filling in one word/expression on the blank and write the figurative meanings of the idioms.

For example: “to ______ more than you can chew”; you fill in “bite off” on the blank. “to bite off more than you can chew”, then write “to try to do something which is too difficult for you” after this idiom.

1. crack the ____________________.
2. go off your ____________________.
3. ____________________ the beans.
4. hit the ____________________.
5. lay down the ____________________.
6. button your ____________________.
7. ____________________ your cool.
8. ____________________ the shots.
9. ____________________ your tongue.
10. ____________________ pieces.
11. ____________________ the whistle.
12. foam at the ____________________.
13. ____________________ your grip.
14. blow the ____________________ off.
15. keep in the ____________________.
16. loose ____________________.
Appendix 16: Learning Material For Group 1 in Hypothesis 4

Idiom Learning Material For Group 1 in Hypothesis 4

Instructions: There are 16 idioms below organised under 5 topics. The figurative meaning of the idiom is given below each idiom. Learn and memorise the figurative meaning of the 16 idioms.

Group One: Anger
1. Idiom: hit the ceiling
   Figurative meaning: to become very angry.
2. Idiom: lose your cool
   Figurative meaning: lose one’s calmness and self-control.
3. Idiom: foam at the mouth
   Figurative meaning: to become extremely angry.

Group Two: Exerting control/authority
4. Idiom: crack the whip
   Figurative meaning: to act with authority, esp. to make someone else behave better or work hard.
5. Idiom: lay down the law
   Figurative meaning: When someone lays down the law they forcefully make known what they think should happen.
6. Idiom: call the shots
   Figurative meaning: Someone who calls the shots is in the position of being able to make the decisions which will influence a situation.

Group Three: Secretiveness
7. Idiom: button your lips
   Figurative meaning: keep it secret.
8. Idiom: hold your tongue
   Figurative meaning: If you hold your tongue, you do not speak.
9. Idiom: keep in the dark
   Figurative meaning: keep something unknown to the public.
Group Four: Insanity

10. Idiom: go off your rocker
    Figurative meaning: If you say that someone is/goes off their rocker, you mean that they are behaving in a very strange or foolish way.

11. Idiom: go to pieces
    Figurative meaning: to lose the ability to think or act clearly because of fear, sorrow, etc.

12. Idiom: lose your grip
    Figurative meaning: lose your control or skill in an activity.

Group Five: Revelation

13. Idiom: spill the beans
    Figurative meaning: tell the secret

14. Idiom: blow the whistle
    Figurative meaning: To blow the whistle on someone or something is to cause something bad to stop, esp. by bringing it to the attention of other people.

15. Idiom: blow the lid off
    Figurative meaning: make known to the public

16. Idiom: loose lips
    Figurative meaning: talkative; easily release secret.
Appendix 17: Learning Material For Group 2 in Hypothesis 4

Idiom Learning Material For Group 2 in Hypothesis 4

Explanatory Notes: Metaphors can help you to understand idioms. For example, the idiom “to bite off more than you can chew” means to try to do something that is too difficult for someone. In this idiom “Things” are metaphorically regarded as “Food”, therefore we say that the metaphor “Things Are Food” motivates the understanding of the idiom “to bite off more than you can chew”.

Instruction: There are 16 idioms below, which are organised under five topics; their figurative meanings are given below each idiom. For each group of idioms, two metaphors are provided which are believed to motivate the understanding of the idioms. Learn and memorize the idioms. Try to refer to the metaphors when you comprehend each idiom.

Group One: Anger
Metaphors: Mind Is a Container

Anger Is Heat

1. Idiom: hit the ceiling
   Figurative meaning: to become very angry.

2. Idiom: lose your cool
   Figurative meaning: lose one’s calmness and self-control.

3. Idiom: foam at the mouth
   Figurative meaning: to become extremely angry.

Group Two: Exerting control/authority
Metaphors: Control Is A Possession

Control IS An Invisible Force

4. Idiom: crack the whip
   Figurative meaning: to act with authority, esp. to make someone else behave better or work hard.

5. Idiom: lay down the law
Figurative meaning: When someone lays down the law they forcefully make known what they think should happen.

6. Idiom: call the shots
   Figurative meaning: someone who calls the shots is in the position of being able to make the decisions which will influence a situation.

Group Three: Secretiveness
Metaphors: Mind Is A Container
   Ideas Are Entities
7. Idiom: button your lips
   Figurative meaning: keep it secret
8. Idiom: hold your tongue
   Figurative meaning: If you hold your tongue, you do not speak.
9. Idiom: keep in the dark
   Figurative meaning: keep something unknown to the public.

Group Four: Insanity
Metaphors: Mind Is A Container
   Mind Is A Brittle Object
10. Idiom: go off your rocker
    Figurative meaning: If you say that someone is/goes off their rocker, you mean that they are behaving in a very strange or foolish way.
11. Idiom: go to pieces
    Figurative meaning: to lose the ability to think or act clearly because of fear, sorrow, etc.
12. Idiom: lose your grip
    Figurative meaning: lose your control or skill in an activity.

Group Five: Revelation
Metaphors: Mind Is A Container
   Ideas Are Entities
13. Idiom: spill the beans
Figurative meaning: tell the secret

14. Idiom: blow the whistle

Figurative meaning: To blow the whistle on someone or something is to cause something bad to stop, esp. by bringing it to the attention of other people.

15. Idiom: blow the lid off

Figurative meaning: make known to the public

16. Idiom: loose lips

Figurative meaning: talkative; easily release secret.
Appendix 18: Discussion and Learning Material For Group 3 in Hypothesis 4

Idiom Discussion And Learning Material For Group 3 in Hypotheses 4

Explanatory Notes: Metaphors can help you to understand idioms. For example, the idiom “to bite off more than you can chew” means to try to do something that is too difficult for someone. In this idiom “Things” are metaphorically regarded as “Food”, therefore we say that the metaphor “Things Are Food” motivate the understanding of the idiom “to bite off more than you one chew”.

Instruction: There are 16 idioms below, which are organised under five topics; the figurative meanings of those idioms are given in the brackets. For each group of idioms, two metaphors are provided which are believed to motivate the understanding of the idioms. Discuss and explore the links between each idiom and the two metaphors. Learn and memorize the meaning of each idiom. Try to refer to the metaphors when you comprehend each idiom.

Group One: Anger

Metaphors: Mind Is a Container; Anger Is Heat

Q: How do you behave when you become angry?
Q: what idioms can express anger?

1. Idiom: hit the ceiling (to become very angry).
   Q: what image do you have in your mind when you read “hit the ceiling”?
   Q: where does this force come from?
   Q: What’s the result after the ceiling was hit?
   Q: who hits the ceiling?

2. Idiom: lose your cool (lose one’s calmness and self-control)
   Q: when do you lose your cool?
   Q: what image do you have in your mind when you read “lose your cool”?
Q: What will you become after you lose your cool?
Q: What's the result after you lose your cool?

3. **Idiom: foam at the mouth** (to become extremely angry)
   Q: what image do you have in your mind when you read “foam at the mouth”?
   Q: where does this force come from?
   Q: What's the result after you foam at the mouth?
   Q: when do you foam at the mouth?

**Group Two: Exerting control/authority**

**Metaphors:** Control Is A Possession; Control IS An Invisible Force

Q: How do you behave when you want to exert/authority?
Q: what idioms can express this meaning?

4. **Idiom: crack the whip** (to act with authority, esp. to make someone else behave better or work hard)
   Q: what image do you have in your mind when you read “crack the whip”?
   Q: who holds the whip?
   Q: At whom he “crack the whip”?
   Q: Why does he crack the whip?

5. **Idiom: lay down the law** (When someone lays down the law they forcefully make known what they think should happen)
   Q: what image do you have in your mind when you read “lay down the law”?
   Q: who lays down the law?
   Q: why does he lay down the law”?
   Q: He lays down the law for whom?

6. **Idiom: call the shots** (someone who calls the shots is in the position of being able to make the decisions which will influence a situation.)
Q: what image do you have in your mind when you read “call the shots”?
Q: who can call the shots?
Q: why does he call the shots?
Q: what will happen after he calls the shots?

Group Three: Secretiveness

Metaphors: Mind Is A Container; Ideas Are Entities
Q: How do you behave when you want to keep a secret?
Q: what idioms can express this meaning?

7. Idiom: button your lips (keep it secret)
Q: what image do you have in your mind when you read “button your lips”?
Q: what would happen if you button your lips?
Q: what would happen if you don’t button your lips?
Q: How do you button your lips?

8. Idiom: hold your tongue (If you hold your tongue, you do not speak).
Q: what image do you have in your mind when you read “hold your tongue”?
Q: what would happen if you hold your tongue?
Q: what would happen if you don’t hold your tongue?
Q: How do you hold your tongue?

9. Idiom: keep in the dark (keep something unknown to the public).
Q: what image do you have in your mind when you read “keep in the dark”?
Q: If something is in the dark, can people see it?
Q: why is it kept in the dark?
Q: who put it in the dark?
Group Four: Insanity

**Metaphors:** Mind Is A Container; Mind Is A Brittle Object

Q: How does a person behave when he becomes insane?
Q: what idioms can express this meaning?

10. Idiom: go off your rocker (If you say that someone is/goes off their rocker, you mean that they are behaving in a very strange or foolish way.)
   Figurative meaning:
   Q: what image do you have in your mind when you read “go off your rocker”?
   Q: In what case would a person suddenly get off his rocker?
   Q: If nothing happens, a person suddenly gets off his comfortable rocker, what do you think of this person?

11. Idiom: go to pieces (to lose the ability to think or act clearly because of fear, sorrow, etc.)
   Q: what image do you have in your mind when you read “go to pieces”?
   Q: what goes to pieces?
   Q: what makes it go to pieces?
   Q: What happens to you if you go to pieces?

12. Idiom: lose your grip (lose your control or skill in an activity.)
   Q: what image do you have in your mind when you read “lose your grip”?
   Q: what causes you lose your grip?
   Q: what happens after you lose your grip?
   Q: How do you feel if you lose your grip?

Group Five: Revelation

**Metaphors:** Mind Is A Container; Ideas Are Entities

Q: What would you do if you want to reveal a secret?
Q: what idioms can express this meaning?
13. Idiom: spill the beans (tell the secret)
   Q: what image do you have in your mind when you read “spill the beans”?
   Q: what are the beans?
   Q: Where are the beans before they are spilt?
   Q: Can you see them after they are spilt?

14. Idiom: blow the whistle (To blow the whistle on someone or something is
to cause something bad to stop, esp. by bringing it to the attention of other
people)
   Q: what image do you have in your mind when you read “blow the
   whistle”?
   Q: who blows the whistle?
   Q: Why does he blow the whistle?
   Q: How do you feel if you blow the whistle?

15. Idiom: blow the lid off (make known to the public)
   Q: what image do you have in your mind when you read “blow the lid off”?
   Q: Where was the lid before it was blown off?
   Q: what can be seen after the lid was blown off?
   Q: why do you blow the lid off?

16. Idiom: loose lips (talkative; easily release secret)
   Q: what image do you have in your mind when you read “loose lips”?
   Q: What would happen if a person has loose lips?
   Q: Does he intentionally to have loose lips?
   Q: How do you feel if your classmates have loose lips?
Appendix 19: Test For Hypothesis 5

Proverb Test For All Groups in Hypothesis 5

Name _______, gender___, major___, Year/grade __, group/class____.
Test type ______

Instruction: Complete the following 16 proverbs by filling in one word/expression on the blank.

For example: "let the______ out of the bag"; You fill in "cat" on the blank.

"let the cat out of the bag"

1. A ___________________ stone gathers no moss.
2. Too many ________________ spoil the broth.
3. Don't ________________ the baby out with the bathwater.
4. The early bird ________________ the worm.
5. One rotten apple ________________ the whole barrel.
6. We'll ________________ that bridge when we come to it.
7. Those who live in glass houses shouldn't ________________ stones.
8. Don't put all your ________________ in one basket.
9. Let sleeping dogs ________________.
10. You can lead a horse to water, but you can't make him ________________.
11. Don't count your ________________ before they are hatched.
12. Look before you ________________.
13. The bigger they are, the harder they ________________.
14. Scratch my ________________ and I'll scratch yours.
15. He would ________________ you the shirt off his back.
16. Lightning never ________________ twice in the same place.
Appendix 20: One week Delay Test For Hypothesis 5

Proverb One-week Delay Test For All Groups in Hypothesis 5

Name __________, gender __________, major __________, Year/grade __________, group/class __________

Instruction: Complete the following 16 proverbs by filling in one word/expression on the blank and write the figurative meaning of the proverbs.

For example: “let the _______ out of the bag”; You fill in “cat” on the blank.

“let the cat out of the bag” means “to reveal a secret”.

1. A __________________ stone gathers no moss.
2. Too many __________________ spoil the broth.
3. Don’t __________________ the baby out with the bathwater.
4. The early bird __________________ the worm.
5. One rotten apple __________________ the whole barrel.
6. We’ll __________________ that bridge when we come to it.
7. Those who live in glass houses shouldn’t __________________ stones.
8. Don’t put all your __________________ in one basket.
9. Let sleeping dogs __________________.
10. You can lead a horse to water, but you can’t make him ________.
11. Don’t count your __________________ before they are hatched.
12. Look before you __________________.
13. The bigger they are, the harder they __________________.
14. Scratch my __________________ and I’ll scratch yours.
15. He would __________________ you the shirt off his back.
16. Lightning never __________________ twice in the same place.
Appendix 21: Learning Material For Group 1 in Hypothesis 5

Proverb Learning Material For Group 1 In Hypothesis 5

Instruction: Learn and memorize the figurative meanings of the following 16 proverbs.

1. A rolling stone gathers no moss.
   Figurative meaning: a person who never settles down in life and collects few amenities (things needed to make life comfortable).

2. Too many cooks spoil the broth.
   Figurative meaning: when too many people oversee a project, its quality may suffer.

3. Don’t throw the baby out with the bathwater.
   Figurative meaning: in getting rid of unwanted or wasteful things make sure that you do not also get rid of what is greatly valuable.

4. The early bird catches the worm.
   Figurative meaning: the person who begins a task first is the most likely to succeed.

5. One rotten apple spoils the whole barrel.
   Figurative meaning: one bad thing may cause harm to all the things around it.

6. We’ll cross that bridge when we come to it.
   Figurative meaning: Do not concern yourself with obstacles that are not yet apparent.

7. Those who live in glass houses shouldn’t throw stones.
   Figurative meaning: one should not exploit weaknesses in others that are also apparent in oneself.

8. Don’t put all your eggs in one basket.
   Figurative meaning: don’t invest all your resources in a single objective.

9. Let sleeping dogs lie.
   Figurative meaning: do not call attention to or activate potential problems or threats.

10. You can lead a horse to water, but you can’t make him drink.
Figurative meaning: offering someone something does not mean they’ll accept it.

11. **Don’t count your chickens before they are hatched.**
    Figurative meaning: Don’t treat possibilities as realities until they are in fact realities.

12. **Look before you leap.**
    Figurative meaning: evaluate the consequences of your actions before taking them.

13. **The bigger they are, the harder they fall.**
    Figurative meaning: The greater influence sth has, the greater the impact when it collapses.

14. **Scratch my back and I’ll scratch yours.**
    Figurative meaning: do me a favour and I’ll return it.

15. **He would give you the shirt off his back.**
    Figurative meaning: The person would assist someone in need even if it caused him/her great loss.

16. **Lighting never strikes twice in the same place.**
    Figurative meaning: Rare occurrences never happen twice in the same place or to the same person.
Appendix 22: Learning Material For Group 2 in Hypothesis 5

Proverb Learning Material For Group 2 in Hypothesis 5

Explanatory Notes: Metaphors can help you to understand proverbs. For example, the proverb “A rolling stone gathers no moss” means “a person who never settles down in life collects few amenities/properties”. In this proverb, “person” is metaphorically regarded as a “stone”, “moving around” is regarded as “rolling”. “Moss” on the stone is regarded as “amenities/properties” collected in a person’s life. Therefore we say that the metaphor “Life Is a Journey” can motivate the understanding of the proverb “A rolling stone gathers no moss”.

Instruction: There are 16 proverbs below, their figurative meanings are given in the brackets. For each proverb, two metaphors are provided which are believed to motivate the understanding of the proverb. Learn and memorize the proverbs. Try to refer to the metaphors when you comprehend each proverb.

1. A rolling stone gathers no moss.
   (Metaphors: Life Is A Journey; Experiencing Something Is Possessing It)
   Figurative meaning: a person who never settles down in life collects few amenities (amenities : things needed to make life comfortable).

2. Too many cooks spoil the broth.
   (Metaphor: Too Much Of Something Is Disorder; Ideas Are Foods)
   Figurative meaning: when too many people oversee a project, its quality may suffer.

3. Don’t throw the baby out with the bathwater.
   (Metaphor: Beliefs Are Children; Ideas Are Objects)
   Figurative meaning: in getting rid of unwanted or wasteful things make sure that you do not also get rid of what is greatly valuable.

4. The early bird catches the worm.
(Metaphor: Life Is A Struggle Against An Opponent; Achieved Purposes Are Attained Possessions)

Figurative meaning: the person who begins a task first is the most likely to succeed.

5. One rotten apple spoils the whole barrel.
(Metaphor: Disease Is An Enemy; Mental Harm Is Physical Harm)
Figurative meaning: one bad thing may cause harm to all the things around it.

6. We’ll cross that bridge when we come to it.
(Metaphor: Purposes Are Destinations; Life Is A Journey)
Figurative meaning: Do not concern yourself with obstacles that are not yet apparent.

7. Those who live in glass houses shouldn’t throw stones.
(Metaphor: Mental Harm Is Physical Harm; Mind Is A Brittle Object) Figurative meaning: one should not exploit weaknesses in others that are also apparent in oneself.

8. Don’t put all your eggs in one basket.
(Metaphor: Life Is A Container; Beliefs Are Possessions)
Figurative meaning: don’t invest all your resources into a single objective.

9. Let sleeping dogs lie.
(Metaphor: Causing Trouble Is Making Something Active; To Be Alive And Sane Is To Be Physically Present)
Figurative meaning: do not call attention to or activate potential problems or threats.

10. You can lead a horse to water, but you can’t make him drink.
(Metaphor: Drinking Water Is Making Progress; Knowledge Is Water) Figurative meaning: offering someone something does not mean they’ll accept it.
11. Don’t count your chickens before they are hatched.
   (Metaphor: Beliefs Are Possessions; Control Is Visual Monitoring)
   Figurative meaning: Don’t treat possibilities as realities until they are in
   fact realities.

12. Look before you leap.
   (Metaphor: Knowing Is Seeing; Life Is A Journey)
   Figurative meaning: evaluate the consequences of your actions before taking
   them.

13. The bigger they are, the harder they fall.
   (Metaphor: Significant Is Big; Life Is A Struggle Against An Opponnet )
   Figurative meaning: The greater influence sth has, the greater the impact when
   it collapses.

14. Scratch my back and I’ll scratch yours.
   (Metaphor: Evenness Is Fairness; Tasks Are Burdens)
   Figurative meaning: do me a favour and I’ll return

15. He would give you the shirt off his back.
   (Metaphor: Helping Someone Is Giving Him or Her Some Object)
   Figurative meaning: The person would assist someone in need even if it
   caused him/her great loss.

16. Lighting never strikes twice in the same place.
   (Metaphor: Life Is A Meteorological Force; Attack Is Contact )
   (Meteorology: the scientific study of the processes that cause particular
   weather conditions)
   Figurative meaning: Rare occurrences never happen twice in the same place or
   to the same person.
Appendix 23: Discussion and Learning Material for Group 3 in Hypothesis 5

Proverb Discussion and Learning Material For Group 3 in Hypothesis 5

Explanatory Notes: Metaphors can help you to understand proverbs. For example, the proverb “A rolling stone gathers no moss” means “a person who never settles down in life collects few amenities/properties”. In this proverb, “person” is metaphorically regarded as a “stone”, “moving around” is regarded as “rolling”. “Moss” on the stone is regarded as “amenities/properties” collected in a person’s life. Therefore we say that the metaphor “Life Is a Journey” can motivate the understanding of the proverb “A rolling stone gathers no moss”.

Instruction: There are 16 proverbs below; their figurative meanings are given in the brackets. For each proverb, two metaphors are provided which are believed to motivate the understanding of the proverb. Discuss and explore the links between each proverb and two metaphors. Learn and memorize the meaning of each proverb.

1. Proverb: A rolling stone gathers no moss (a person who never settles down in life collects few amenities. amenities: things needed to make life comfortable.)
Metaphors: Life Is A Journey; Experiencing Something Is Possessing It
Q: what image is in your mind when you read “A rolling stone gathers no moss”
   Q: who is the stone?
   Q: what is the moss?
   Q: why is it rolling? Where does it start? Where does it end?

2. Proverb: Too many cooks spoil the broth (when too many people oversee a project, its quality may suffer. broth: a thin soup, usually with vegetables or rice in it,)
Metaphors: Too Much Of Something Is Disorder; Ideas Are Foods

Q: what may happen to the food if many cooks cook the same food.
Q: can you think of a proverb expressing that many cooks cook one food?
Q: what image is in your mind when you read “Too many cooks spoil the broth”.
Q: what is the broth here?
Q: who are the cooks?

3. Proverb: Don’t throw the baby out with the bathwater. (In getting rid of unwanted or wasteful things make sure that you do not also get rid of what is greatly valuable)

Metaphors: Beliefs Are Children; Ideas Are Objects

Q: what image do you have in your mind when you read “Don’t throw the baby out with the bathwater”?
Q: why is it necessary to throw the bathwater?
Q: who /what is the baby here?
Q: What’s your image gain?

4. Proverb: The early bird catches the worm(The person who begins a task first is the most likely to succeed)

Metaphors: Life Is A Struggle Against An Opponent

Achieved Purposes Are Attained Possessions.

Q: what image is in your mind when you read “The early bird catches the worm”
Q: who is the bird?
Q: why is it necessary for him to get up early?
Q: what is the worm, are there enough worms for the birds?

5. Proverb: One rotten apple spoils the whole barrel( one bad thing may cause harm to all the things around it)

Metaphor: Disease Is An Enemy; Mental Harm Is Physical Harm
Q: what image is in your mind when you read “One rotten apple spoils the whole barrel”
Q: why is that apple rotten? What would happen to the other apples normally?
Q: who is the rotten apple? Who are the other apples?
Q: what do you normally do to the rotten apple?

6. **Proverb:** We'll cross that bridge when we come to it (Do not concern yourself with obstacles that are not yet apparent.)

**Metaphor:** Purposes Are Destinations; Life Is A Journey
Q: what image is in your mind when you read “We’ll cross that bridge when we come to it”.
Q: what have been doing before you cross the bridge?
Q: where is the bridge?
Q: why do you have to cross it?

7. **Proverb:** Those who live in glass houses shouldn’t throw stones (one should not exploit weaknesses in others that are also apparent in oneself)

**Metaphor:** Mental Harm Is Physical Harm; Mind Is A Brittle Object
Q: what image is in your mind when you read “Those who live in glass houses shouldn’t throw stones”?
Q: why do they have live in the glass houses?
Q: why do they want to throw stones?
Q: Can these people hit others outside by throwing stones?

8. **Proverb:** Don’t put all your eggs in one basket: don’t invest all your resources into a single objective

**Metaphors:** Life Is A Container; Beliefs Are Possessions
Q: what image do you have in your mind when your read “Don’t put all your eggs in one basket”
Q: what are the eggs?
Q: why does he put all his eggs in one basket?
Q: what might happen to those eggs in that basket?
9. Proverb: Let sleeping dogs lie (do not call attention to or activate potential problems or threats.)

Metaphors: Causing Trouble Is Making Something Active; To Be Alive And Sane Is To Be Physically Present
Q: what image do you have in your mind when your read “Let sleeping dogs lie”
Q: who are those sleeping dogs?
Q: What would happen if they are interrupted and wake up?
Q: what’s the best idea to treat those dogs?

10. Proverb: You can lead a horse to water, but you can’t make him drink (offering someone something does not mean they’ll accept it)
Metaphors: Drinking Water Is Making Progress; Knowledge Is Water
Q: what image do you have in your mind when your read “You can lead a horse to water, but you can’t make him drink”
Q: who is the horse?
Q: what is the water?
Q: why do you have to lead a horse to the water?

11. Proverb: Don’t count your chickens before they are hatched (Don’t treat possibilities as realities until they are in fact realities)
Metaphors: Beliefs Are Possessions; Control Is Visual Monitoring.
Q: what image do you have in your mind when your read “Don’t count your chickens before they are hatched”
Q: what are the chickens?
Q: why can’t you count them before they are hatched?
Q: what are they after they are hatched?

12. Proverb: Look before you leap (evaluate the consequences of your actions before taking them.)
Metaphor: Knowing Is Seeing; Life Is A Journey
Q: what image do you have in your mind when your read “Look before you leap”
Q: why do you want to leap?
Q: why do you need to look before leaping?
Q: what may happen if you don’t look?

13. Proverb: The bigger they are, the harder they fall (The greater influence sth has, the greater the impact when it collapses)
Metaphors: Significant Is Big; Life Is A Struggle Against An Opponnet
Q: what image do you have in your mind when your read “The bigger they are, the harder they fall”
Q: how can they become bigger?
Q: what’s the difference when they become bigger?
Q: Why could they fall?

14. Proverb: Scratch my back and I’ll scratch your (do me a favour and I’ll return it)
Metaphors: Evenness Is Fairness; Tasks Are Burdens.
Q: what image do you have in your mind when your read “Scratch my back and I’ll scratch yours”
Q: why does your back need scratching?
Q: Why should you scratch mine after I scratch yours?
Q: How do you feel after your back is scratched?

15. Proverb: He would give you the shirt off his back (The person would assist someone in need even if it caused him/her great loss.)
Metaphor: Helping Someone Is Giving Him or Her Some Object
Q: what image do you have in your mind when your read “He would give you the shirt off his back”?  

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Q: what is this shirt?
Q: why does he give you his shirt?
Q: What do you think of this person?

16. Proverb: Lighting never strikes twice in the same place (Rare occurrences never happen twice in the same place or to the same person.)

Metaphor: Life Is A Meteorological Force; Attack Is Contact.
Meteorology: the scientific study of the processes that cause particular weather conditions

Q: what image do you have in your mind when your read “Lighting never strikes twice in the same place”?
Q: what is lightening?
Q: why does it not strike the same place twice?
Q: what would you say if it really strikes twice in the same place?
Appendix 24: 100-word list organised by conceptual metaphors

100-word list organised by conceptual metaphors

The following are metaphor sets organised by 12 target/source domains, which are from Berkeley metaphor index. The target words/expressions are italicised and put in numerical order, altogether 100 words. Take “Theories Are Buildings” for example.

Source domain: Building
Target domain: Theory
Conceptual metaphor: Theories Are Buildings
A. We need to construct a strong argument for that.
B. We need to buttress the theory with solid argument.
C. The argument collapsed.

(1) Source Domain: heat
Target Domain: anger
Conceptual metaphor: Anger Is Heat

<\> ANGER IS HEAT and BODY IS CONTAINER FOR EMOTIONS
--1 She's a real hothead.
- 2 Let her stew.
- 3 She got all steamed up.
- 4 He's just blowing off steam.
- 5 He erupted.
- 6 He boiled over.
- 7 She felt her gorge rising.
- 8 He blew his top.
- 9 He exploded.
- 10 I can't keep my anger bottled up anymore.
- 11 His temper flared up.
(2) Source Domain: body of water

Target Domain: problem

Conceptual metaphor: A Problem Is A Body Of Water

<i> Investigating Problem Is Exploring Water

--12 He dived right into the problem.
--13 He really immersed himself in the problem.

<i> Difficulty In Solving Is Difficulty In Exploring Water

--14 The problem itself is murky.
-- The murky waters of the investigation frustrated him.

<i> Trying To Solve Is Looking For Object In Water

-- 15 He'd been fishing for the answer for weeks.
-- He kept coming up empty.

(2) Source Domain: motion, moving, path

Target Domain: action, acting

Conceptual metaphor: Action Is Self-propelled Motion

<i> Action Is Self-propelled Motion

- 16 She squeezed her way to thinner thighs.
- 17 He drank himself out of the promotion.
- 18 She successfully navigated her way through the contract negotiations.

<i> Manner Of Action Is Manner Of Motion

-- 19 We slogged through the application process.
-- 20 When I'm around her I feel like I am walking on eggshells.
-- 21 He is treading on thin ice.
-- 22 She slowly ate her way to obesity.

<i> Final States Are Final Locations

-- 23 His reckless investments are taking him into bankruptcy.
<iv> Lack Of Change Resulting From Action Is Lack Of Motion
-- 24 He ate and ate but he didn't go tubby on us.

<v> Progress Is Forward Movement
-- 25 Let's forge ahead—we're already half-way through the analysis.
-- 26 He hadn't made much headway in writing the term paper.

<vi> Speed Of Progress Is Speed Of Motion To A Destination
-- 27 She is moving ahead by leaps and bounds on that project.

<vii> Negative Progress Is Backward Movement
-- 28 I'd hate to see us back where we were thirty years ago, before civil rights had made the strides forward that we have seen.
-- 29 We need to backtrack on this problem—we took a wrong turn.

<viii> Lack Of Purpose Is Lack Of Direction
-- He is drifting aimlessly.
-- 30 He is a drifter with no direction.

<viv> Easy Action Is Easy Motion
-- It is smooth sailing from here on in the application process.
-- 31 It's all downhill for the rest of the course.

<x> Efficient Purposeful Action Is Direct Motion To A Destination
-- 32 He has gotten sidetracked on that problem.
-- 33 She made a beeline for the presidency.

<xi> Obstacles To Action Are Obstacles To Motion
-- 34 We hit a roadblock when we tried to repeat the experiment.
-- 35 We are at an impasse in this project.
-- 36 We are going upstream—the administration is opposed to our actions.
-- 37 We are fighting an uphill battle—we'll never get this proposal approved.
-- 38 We faced many hurdles in taking on this problem.
-- 39 When the going gets tough, the tough get going.
-- 40 She is just going through the motions of applying for a loan.

<xii> Caused Inability To Act Is Prevention Of Motion
-- 41 He's really gotten hung up at that step in the process.
-- 42 He is so caught up in his work he can't do anything else.
-- 43 He was held up in the meeting.

(3) Source Domain: warmth, heat
    Target Domain: affection
    Conceptual metaphor: Affection Is Warmth
    - She's a warm person.
    - They gave me a warm welcome.
    - 44 He took a while to warm up to me.
    - 45 My love for her still smolders (she's an old flame)

(4) Source Domain: beings, life cycle
    Target Domain: beliefs
    Conceptual metaphor: Beliefs Are Beings With A Life Cycle
    - The belief lives on.
    - That belief died out years ago.
    - That belief was born of the early philosophers.
<xii> Development Of A Belief Is Growth Of A Plant
-- 46 This belief stems from my basic morality.
-- 47 This belief is an offshoot of my faith.
-- This belief has been growing in me for years.
-- This belief has taken root in my mind.
-- 48 This is a flourishing belief in this culture.

<xii> Encouraging A Beliefs Is Cultivating A Plant
-- 49 I cultivated a belief in my infallability among my subordinates.
(5) Source domain: physical distance
   Target domain: Emotional Intimacy
   Conceptual metaphor: Emotional Intimacy Is Physical Closeness
   -- She can't get close to him.
   -- He keeps everyone at arms length.
   -- He distances himself.

<i> Change Toward Emotional Intimacy Is Movement Toward Physical Closeness
   -- We're moving closer.
   -- We're coming together.
   -- We're closer than we were before.
   -- 50 Babies bond to their mothers.
   -- 51 from marriage ceremony, "...these two are joined as one... they are joined in matrimony"
   -- 52 He tickles her pink with his remarks.
   -- 53 He makes my skin crawl.

<i>Avoiding Emotional Effect Is Avoiding Contact
   -- 54 He wraps himself in armor.
   -- 55 He shields himself from any experiences.

(5) Source Domain: war
   Target Domain: illness, treatment, medicine
   Conceptual metaphor: Treating Illness Is Fighting A War
<i> The Disease Is An Enemy ; The Body Is A Battleground
   - 56 The body is not immune to invasion.
   - 57 The disease infiltrates your body and takes over.

<i> Infection Is An Attack By The Disease
   - 58 His body was under seige by AIDS.
- The virus began an attack on the organ systems.

<i>Winning The War Is Being Cured Of The Disease</i>
- 59 <i>Beating measles</i> takes patience.

(6) <i>Source Domain: lovers, spouses, partners, people</i>
<i>Target Domain: beliefs</i>
<i>Conceptual metaphor: Beliefs Are Love Objects</i>
<i>&lt;i&gt;Considering Believing Is Considering Entering A Relationship</i>
-- 60 He <i>flirted</i> with a belief in utter hedonism in his youth.
<i>&lt;ii&gt; Accepting A Belief Is Entering A Relationship</i>
-- 61 He is <i>wedded</i> to a belief in his own infallibility.
-- 62 He <i>espoused</i> that belief publically.

<i>&lt;iii&gt; A Tempting Belief Is A Tempting Possible Partner</i>
-- 63 That's a <i>seductive</i> belief.
-- 64 That's an <i>enticing</i> belief.

<i>&lt;iv&gt; Giving Up A Belief Is Ending The Relationship</i>
-- 65 He <i>repudiated</i> his earlier belief.
-- 66 He has totally <i>divorced</i> himself from that belief.

(7) <i>Source Domain: reception, getting, possession</i>
<i>Target Domain: perception, perceiving, seeing, smelling, hearing</i>
<i>Conceptual metaphor: Perception Is Reception</i>
- 67 <i>Feast your eyes on this beauty!</i>
- 68 He devoured her with his eyes.
- 69 He used some pretty <i>salty</i> language.
- 70 She tossed off a few <i>acerbic</i> remarks.
- 71 I <i>relish</i> every word he says.
- 72 He didn't <i>mince</i> words.
(8) Source Domain: possessions, burdens
   Target Domain: obligations, duties, responsibilities
   Conceptual metaphor: Obligations Are Possessions

<i>Obligations Are Burdens (on Shoulder Or Back)
-- 73 He's weighed down with obligations.
-- He's carrying a heavy load at work.

<i>i> Obligations Are Burdens (on Lap)
-- 74 I dumped that project in his lap.

<i>iii> Assigning Obligation Is Giving Possessions
-- 75 He doled out the unpleasant duties freely.

<i>iv> Being Assigned Obligation Is Receiving Burdens
-- 76 It fell to me to inform her of the tragedy.
-- 77 Don't fob that job off on me.

(9) Source Domain: food
   Target Domain: ideas
   Conceptual metaphor: Ideas Are Food
<i>Thinking Is Preparing Food
- 78 Let me chew on that for a while.
- 79 I've been ruminating on that topic for a while.

<i>Understanding Is Digestion
- 80 It'll take some time to digest that information.
Remembering Is Regurgitating
- 81 We have to regurgitate everything we learned on the final.
- 82 Can you spit back what I told you? it is in form similar to that in which it was ingested in the same form they were memorized.

<i>iii> Learning Is Eating
- They ate the lesson up.
- 83 They gobbled up the ideas.
- 84 He has an appetite for learning.
- 85 She has an insatiable curiosity.
- 86 That's a very meaty book.

(10) Source Domain: cover, clothes
    Target Domain: external appearance, appearance, looks
    Conceptual metaphor: External Appearance Is A Cover
- 87 The crisis stripped away our veneer of sophistication.
- 88 We donned an appearance of nonchalance.
    <i>Facial Expressions Are Covers
    — 89 A grimace materialized for no apparent reason, but it melted away before she arrived.
    — 90 The disquieting expression was lifted from her face.

(11) Source domain: war
    Target domain: argument
    Conceptual metaphor: Argument Is War

— 91 Your claims are indefensible.
— 92 I demolished his argument.
— 93 She won't retreat from her position.
— 94 They bombarded me with objection.
— 95 My defences in the argument were down.
(12) Source domain: building

Target domain: theory

Conceptual metaphor: *Theories Are Buildings.*

--96 We need to *construct* a strong argument for that.
--97 We need to *buttress* the theory with solid argument.
--98 The argument *collapsed.*
--99 The argument is *shaky.*
--100 They *exploded* his latest theory.
Appendix 25: 100-Word List With Frequency From Thorndike (1972)

100-Word List With Frequency From Thorndike (1972)

The number in the bracket after each sentence is the general frequency from Thorndike (1972), if the word is not in Thorndike's 30,000 words list, a question mark is put in the bracket. If the target word-expression is a phrase, then frequency for each word is given. All the target words or expressions are below frequency 29, which means, these words are beyond 3000 basic vocabulary, only a few words whose frequency are above 30, considering their figurative meaning might be new to the students, are also included for further selection through test.

General frequency

1. She tossed off a few acerbic remarks. (?

2. He has an appetite for learning. (24)

3. She slowly ate her way to obesity. (ate: 50, obesity: 1)

4. We need to backtrack on this problem—we took a wrong turn. (?

5. Beating measles takes patience. (3)

6. She made a beeline for the presidency. (?

7. His reckless investments are taking him into bankruptcy. (5)

8. He's just blowing off steam. (?

9. He boiled over. (A)

10. He blew his top. (39)

11. I can't keep my anger bottled up anymore. (?

12. Babies bond to their mothers. (bond: 50)

13. We need to buttress the theory with solid argument. (1)

14. They bombarded me with objection. (2)

15. He is so caught up in his work he can't do anything else. (caught 100)

16. Let me chew on that for a while. (14)

17. The argument collapsed. (16)

18. We need to construct a strong argument for that. (31)

19. He makes my skin crawl. (31)
20. I cultivated a belief in my infallibility among my subordinates. (4)
21. My defences in the argument were down. (50)
22. We donned an appearance of nonchalance. (18)
23. The disquieting expression was lifted from her face. (3)
24. He has totally divorced himself from that belief. (29)
25. He devoured her with his eyes. (17)
26. I demolished his argument. (3)
27. It'll take some time to digest that information. (25)
28. He dived right into the problem. (21)
29. He drank himself out of the promotion. (23)
30. He is a drifter with no direction. (?
31. He doled out the unpleasant duties freely. (9)
32. It's all downhill for the rest of the course. (2)
33. I dumped that project in his lap. (10)
34. When I'm around her I feel like I am walking on eggshells. (1)
35. He embraced that belief wholeheartedly. (34)
36. He erupted. (5)
37. He espoused that belief publicly. (3)
38. That's an enticing belief. (?
39. They exploded his latest theory. (9)
40. He exploded. (9)
41. He flirted with a belief in utter hedonism in his youth. (7)
42. His temper flared up. (10)
43. Feast your eyes on this beauty! (45)
44. This is a flourishing belief in this culture. (25)
45. They gobbled up the ideas. (5)
46. She felt her gorge rising. (9)
47. A grimace materialized for no apparent reason, but it melted away before she arrived. (9)
48. She's a real hothead. (?
49. She has an insatiable curiosity. (2)
50. The body is not immune to invasion. (1)
51. The disease *infiltrates* your body and takes over. (9)
52. Can you spit back what I told you? it is in form similar to that in which it was *ingested* in the same form they were memorized. (9)
53. Don't *fob* that job off on me. (9)
54. Our claims are *indefensible*. (9)
55. It *fell to* me to inform her of the tragedy. (fall:100)
56. He'd been *fishing for* the answer for weeks. (9)
57. Let's *forge ahead*--we're already half-way through the analysis. (17)
58. He ate and ate but he didn't *go tubby* on us. (9)
59. He hadn't made much *headway* in writing the term paper. (3)
60. He really *immersed* himself in the problem. (3)
61. We are at an *impasse* in this project. (9)
62. The problem itself is *murky*. (1)
63. I'd hate to see us back where we were thirty years ago, before civil rights had *made the strides forward* that we have seen. (stride; 18)
64. That's a very *meaty* book. (9)
65. He didn't *mince* words. (9)
66. She sucessfully *navigated* her way through the contract negotiations. (2)
67. This belief is an *offshoot* of my faith. (1)
68. He has gotten *sidetracked* on that problem. (1)
69. She *squeezed* her way to thinner thighs. (18)
70. We *slogged* through the application process.
71. We hit a *roadblock* when we tried to repeat the experiment.
72. We faced many *hurdles* in taking on this problem. (2)
73. He was *held up* in the meeting. (held, AA)
74. When the going gets *tough*, the *tough* get going. (18)
75. She is just *going through the motions* of applying for a loan. (A)
76. He's really gotten *hung up* at that step in the process. (hung, A)
77. We are going *upstream*--the administration is opposed to our actions. (3)
78. We are fighting an *uphill* battle--we'll never get this proposal approved. (3)
79. He took a while to *warm up* to me. (warm, General Frequency :AA; warmth, 23)
80. My love for her still smolders (she's an old flame) (3)
81. Let her stew. (11)
82. She got all steamed up. (steam, A)
83. This belief stems from my basic morality. (39)
84. From marriage ceremony, "...these two are joined as one... they are joined in matrimony" (3)
85. He tickles her pink with his remarks. (10)
86. He repudiated his earlier belief. (3)
87. I've been ruminating on that topic for a while. (2)
88. We have to regurgitate everything we learned on the final.
89. I relish every word he says. (10)
90. She won't retreat from her position. (37)
91. He shields himself from any experiences. (47)
92. His body was under siege by AIDS.
93. He used some pretty salty language. (1)
94. That's a seductive belief. (1)
95. The argument is shaky. (3)
96. The crisis stripped away our veneer of sophistication. (trip :A)
97. He is treading on thin ice. (26)
98. He is wedded to a belief in his own infallibility. (5)
99. He's weighed down with obligations. (weigh, A)
100. He wraps himself in armor. (wrap:45, armot:37)
Appendix 26: 100-Word List With Degree Of Difficulties

100-Word List With Degree Of Difficulties

28 subjects (2yr English majoring undergraduates in CUHK) attended the pilot test. The number after each word in <> is the correct frequency of that word.

1. acerbic <0>
2. appetite <23>
3. ate her way to obesity <7>
4. backtrack <16>
5. Beating measles <4>
6. beeline <0>
7. bankruptcy <25>
8. blowing off steam
9. erupted <8>
10. boiled <6>
11. gorge
12. blew his top <1>
13. bottled up <9>
14. bond to <18>
15. buttress <8>
16. bombarded <15>
17. caught up <16>
18. chew <14>
19. collapsed
20. construct <21>
21. cultivated <13>
22. defences <17>
23. donned <1>
24. disquieting <8>
25. divorced <4>
26. devoured
27. demolished
28. digest
29. dived
30. drank
31. drifter
32. doled
33. downhill
34. dumped
35. exploded
36. espoused
37. enticing
38. exploded
39. embraced
40. flirted
41. flared up
42. Feast
43. flourishing
44. gobbled
45. grimace
46. hothead
47. insatiable
48. immune
49. infiltrates
50. ingested
51. fob
52. eggshells
53. indefensible
54. fell to
55. fishing for
56. forge ahead
57. go tubby
58. headway <4>
59. immersed <16>
60. impasse <1>
61. murky <0>
62. made the strides forward <2>
63. meaty <3>
64. mince <3>
65. side-tracked <9>
66. squeezed <6>
67. navigated <12>
68. slogged
69. roadblock <19>
70. hurdles <9>
71. held up <6>
72. tough <13>
73. going through the motions <6>
74. hung up <12>
75. upstream <5>
76. uphill <9>
77. warm up <5>
78. smolders
79. stew <1>
80. steamed up <2>
81. stems <12>
82. offshoot <1>
83. matrimony <4>
84. tickles <2>
85. crawl <1>
86. repudiated <2>
87. ruminating <2>
88. regurgitate <4>
89. relish <4>
90. retreat <19>
91. shields <10>
92. siege <13>
93. salty <4>
94. seductive <11>
95. shaky <10>
96. stripped away
97. treading <5>
98. wedded <8>
99. weighed down <3>
100. wraps ...armor <11>
Appendix 27: Questionnaire

Questionnaire

Name ______, gender____, major____, Year/grade __, group/Class____.
Learning material used_______

Instruction: Please circle the number you think appropriate for each item

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<th></th>
<th>strongly agree</th>
<th>agree</th>
<th>slightly agree</th>
<th>slightly disagree</th>
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<td>5</td>
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</table>
Discussion: we are going to learn 25 words in 25 sentences. These sentences are
directly or indirectly (that is, metaphorically) related to "Human Body",
let's discuss about human body first.

Q: What's in your mind about your own body? (shape, function...)
Q: what does your body contain? (clues: head, stomach, legs...else?)
Q: What does your head contain? (clues: brain, different organs...else?)
Q: Besides different organs, what else (5th abstract) can you head contain?
Q: In what way your body (head) is similar to a container like a cup, or a bottle?
Q: please draw two diagrams; one is your body, the other, a container.
Draw them below.
Discussion: we are going to learn 25 words in 25 sentences. These sentences are directly or indirectly (that is, metaphorically) related to "Human Body"; let's discuss about human body first.

Q: What's in your mind about your own body? (shape, function...)
Q: What does your body contain? (clues: head, stomach, legs...else?)
Q: What does your head contain? (clues: brain, different organs...else?)
Q: Besides different organs, what else (sth abstract) can you head contain?
Q: In what way your body (head) is similar to a container like a cup, or a bottle?
Q: Please draw two diagrams; one is your body, the other, a container.

Draw them below.
Discussion: we are going to learn 25 words in 25 sentences. These sentences are directly or indirectly (that is, metaphorically) related to "Human Body", let's discuss about human body first.

Q: What's in your mind about your own body? (shape, function...)
Q: what does your body contain? (clues: head, stomach, legs...else?)
Q: What does your head contain? (clues: brain, different organs...else?)
Q: Besides different organs, what else (sth abstract) can you head contain?
Q: In what way your body (head) is similar to a container like a cup, or a bottle?
Q: please draw two diagrams; one is your body, the other, a container.
Draw them below.

---

Song Hailei
Appendix 31: Image 1 Used in Group 3 of Hypothesis 4 and Hypothesis 5
Appendix 32: Image 2 used in Group 3 of Hypothesis 4 and Hypothesis 5
Appendix 33: SPSS outcome for H1 (Group 1 and 2)

T-Test

### Group Statistics

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### Independent Samples Test

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Appendix 34: SPSS outcome for H2 (Group 1 and 2)

T-Test

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### Independent Samples Test

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359
Appendix 35: SPSS outcome for H3 (group 1 and 2)

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**Independent Samples Test**

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Appendix 36: SPSS outcome for H4 (Group 1 and 2)

**T-Test**

**Group Statistics**

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</tr>
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**Independent Samples Test**

<table>
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<th>t-Test for Equality of Means</th>
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Appendix 37: SPSS outcome for HP4 (group 1 and 3)

T-Test

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<th>N</th>
<th>Mean</th>
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<th>Std. Error Mean</th>
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<tbody>
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<tr>
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<td>12.8847</td>
</tr>
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<td>9.8027</td>
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<td>25</td>
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<td>13.5641</td>
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<td>3</td>
<td>25</td>
<td>92.2500</td>
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Independent Samples Test

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<th>Upper 95% Confidence Interval</th>
<th>Mean Difference</th>
<th>Std. Error Difference</th>
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<td>0.070</td>
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<td>0.200</td>
<td>0.070</td>
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Appendix 38: SPSS outcome for H4 (Group 2 and 3)

T-Test

**Group Statistics**

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<th>Std. Error Mean</th>
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<td>12.2208</td>
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<td>32.5000</td>
<td>12.8847</td>
<td>2.5769</td>
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<td>2.5073</td>
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**Independent Samples Test**

<table>
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<th>Tukey’s Test for Equality of Means</th>
<th>95% Confidence Interval of the Difference</th>
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<td>t</td>
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Appendix 39: SPSS outcome for H5 (Group 1 and 2)

T-Test

Group Statistics

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<th>Std. Error Mean</th>
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</thead>
<tbody>
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<td>Pre-test</td>
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<td>4.3847</td>
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<td>38</td>
<td>2.3025</td>
<td>3.6821</td>
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<td>38</td>
<td>78.7829</td>
<td>22.3011</td>
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<td>2</td>
<td>38</td>
<td>95.5592</td>
<td>7.2521</td>
</tr>
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<td>40.4605</td>
<td>25.5322</td>
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<td>2</td>
<td>38</td>
<td>70.7237</td>
<td>20.6066</td>
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Independent Samples Test

<table>
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<th>Levene's Test for Equality of Variances</th>
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<th>95% Confidence Interval of the Difference</th>
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<tr>
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<td>df</td>
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Appendix 40: SPSS outcome for H 5 (Group 1 and 3)

T-Test

### Group Statistics

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<th>N</th>
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### Independent Samples Test

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</tr>
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Appendix 41: SPSS outcome for H5 (Group 2 and 3)

T-Test

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<td>1.1764</td>
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<td>1.0236</td>
</tr>
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<td>20.6066</td>
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<table>
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<th>Std. Deviation</th>
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<td>6.3097</td>
<td>1.0236</td>
</tr>
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<td>70.7237</td>
<td>20.6066</td>
<td>3.3428</td>
</tr>
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<td>69.7368</td>
<td>20.2667</td>
<td>3.2877</td>
</tr>
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<tr>
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Independent Samples Test

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<th>Std. Error Difference</th>
<th>95% Confidence Interval of the Difference</th>
<th>Lower</th>
<th>Upper</th>
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<td>0.9822</td>
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<td>74</td>
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