

A Componential Analysis of Reading Comprehension in Chinese EFL Learners

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List of Abbreviations

ACT	Adaptive Control of Thought
ANOVA	Analysis of Variance
CET	College English Test
CLT	Communicative Language Teaching
EFL	English as a Foreign Language
ESL	English as a Second Language
FL	Foreign Language
GLOB	Global Reading Strategies
L1	First Language
L1GK.....	First Language Grammar Knowledge
L1LK.....	First Language Linguistic Knowledge
L1R	First Language Reading
L1S.....	First Language Sensitivity
L1SD.....	First Language Sentence Decision
L1VK	First Language Vocabulary Knowledge
L1WR	First Language Word Recognition
L2	Second Language
L2GK.....	Second Language Grammar Knowledge
L2LK.....	Second Language Linguistic Knowledge
L2R	Second Language Reading
L2S.....	Second Language Sensitivity
L2SD.....	Second Language Sentence Decision
L2VK	Second Language Vocabulary Knowledge
L2WR	Second Language Word Recognition
MARSI.....	Metacognitive Awareness of Reading Strategies Inventory
McA.....	Metacognitive Awareness
MoE	Ministry of Education
NMT	National Matriculation Test
PhD	Doctor of Philosophy
PROB.....	Problem Solving Strategies
SD	Standard Deviation
SLA.....	Second Language Acquisition
SORS	Survey of Reading Strategies
SUP	Support Strategies
VIS	Visual Information Store

1 Introduction

I used to believe that I have to know all the words in the English readings in order to understand the readings. Therefore, I read in English with the dictionary beside me all the time. I read English readings only for homework before I came to this reading class. I never read any English readings because I wanted to read them. I read them because they were my homework. I like to read in my first language, but I just could not read in English with the same feeling as I read in Chinese. The belief that I have to know all the words in order to understand the reading made me lose interest in reading -Li.

(Auerbach & Paxton, 1997:237)

The above illustration comes from a Chinese person, and her description mirrors the beliefs of many EFL/ESL learners while reading in a foreign language: how they read, what strategy they take, under what kind of situation they would like to read, and with what kind of assistance. These are also topics of interest in second language (L2) reading research.

In many countries, English as a foreign/second language in school education is provided and required. The ability to read is fundamental and necessary in a civilized society, and it is generally regarded as one of four important skills (reading, writing, speaking and listening) in any language learning. The importance of reading is not only limited to the mother tongue/L1, but also extends to foreign language learning/L2. Nowadays, in an international setting, the ability to read in a foreign language is more urgently required of people, and the opportunity to read surpasses the opportunity to speak. However, how do people differ in their ability to read? What factor influences comprehension the most? What characterizes the interaction between first language and second language/foreign language reading? Is it true that reading difficulties can be attributed to a lack of foreign language/L2 proficiency? These are still popular research topics, and many studies have been conducted in the fields of linguistics, cognition, pedagogy, psychology, and neuroscience. Explanations from different fields give rise to various discussions, and further levels of analysis take place. Cross-writing (alphabetic and non-alphabetic) system comparisons offer an additional chance to better understand those perspectives and the components of reading ability.

This chapter opens with a statement by a Chinese EFL learner. Following this, opinions from different disciplines are reviewed in section 1.1. In section 1.2, an outline of the dissertation is provided.

1.1 Opinions from different disciplines

Educators have tried to identify obstacles in foreign language reading and to develop a series of strategies or methodologies which apply to classroom teaching in order to improve students' reading proficiency (Carrell, 1984; Chen & Graves, 1995; Auerbach & Paxton, 1997; Arden-Close, 1999; Zhang & Wu, 2009). Cognitive researchers, however, have attempted to illustrate the inner-thought process, and how the reader deals with a text to give a sort of pedagogical implication for the development of strategic readers (Myers II & Paris, 1978; Paris, Lipson & Wixson, 1983; Schmitt, 1990; Sheorey & Mokhtari, 2001; Mokhtari & Sheorey, 2002; Mokhtari & Reichard, 2004). Psycholinguists assume that reading is an information process, in which higher order and lower order abilities are involved (Goodman, 1967, 1973; Anderson, 1983, 1985; Nassaji, 2003) and linguists break down reading into linguistic components, and presume that there is a threshold of linguistic knowledge in foreign language reading (Clarke, 1979; Cummins, 1979; Alderson, 1984; Ridgway, 1997; Hsueh-chao & Nation, 2000). Additionally, clinical- and neuro-linguists study reading from the perspective of the functional neural system and the organization of the human brain (Ingram, 2007; Cummings, 2008).

Linguistics and cognitive psychology use separate paradigms in their respective fields, and researchers of each discipline view reading comprehension in terms of their own principles. The assumption of linguistics is represented in the analysis of unique language properties, such as grammar, vocabulary, language structure, morphology, syntax, semantics, context, and so on. The premise of cognitive psychology, on the other hand, is to distinguish internal changes from outward manifestation. There is a tendency to integrate linguistic knowledge with cognitive psychology to guide reading research. Wong Fillmore and Swain have played a great role in integrating linguistic and cognitive components of learning into learning strategy (Wong Fillmore, 1985; Wong Fillmore, & Swain, 1984). The strategies in language learning described by Wong Fillmore (1985) seem more global, because linguistic knowledge and mental skills are included as well as strategic processes. This approach encompasses "associative skills, memory, social knowledge, inferential skills....analytical skills.... pattern recognition, induction, categorization, generalization, inference, and the like" (Wong Fillmore, 1985:37).

Recently, componential analysis has been emphasized by many researchers in the study of reading comprehension, and they consider it helpful for a better understanding of the complex processes involved in reading comprehension (Carr & Levy, 1990; Just & Carpenter, 1992; Perfetti, 1999; Stanovich, 1991; Von Gelderen, et al. 2003; 2004; & 2007). In a componential analysis, all the constituent components are measured and assumed to be able to explain reading comprehension performance, such as the components of lower order ability (word recognition, syntactic analysis, letter identification, etc.) and the components of higher order ability (text type, text structure, reading purpose, etc.). In this dissertation, a componential study of reading comprehension in Chinese EFL learners has been conducted from the perspective of language sensitivity, linguistic knowledge and metacognitive awareness.

In contrast with an alphabetic writing system such as English, the characteristics of the Chinese writing system have been attracting more and more attention from researchers. Chinese and English belong to two different language systems, and linguistic knowledge is affected by the culture that a language belongs to. People in every society or culture have a certain linguistic schema related to current knowledge of an object or an event. An example is extracted from Steffensen and Joag-Dev (1984:53-54): “Most adult Americans possess well-developed schemata relating to the wedding ceremony. Given a message about a wedding, an American reader would anticipate references to, and specific information about, an engagement ring, a stag party, the wedding cake, etc.” Indian readers in their article, however, interpreted the message in a radically different way. Hence, they argued that “reading comprehension is a function of cultural background knowledge. If readers possess the schemata assumed by the writer, they understand what is stated and effortlessly make the inferences intended. If they do not, they distort the meaning as they attempt to accommodate even explicitly stated propositions to their own preexisting knowledge structures” (Steffensen & Joag-Dev, 1984:60-61). Each country has its particular culture that consists of historical, political, traditional relations. Language, as a component of the culture, has its own particularity in each culture. At present, most research on L2 reading has been conducted in English or in other Indo-European languages. Considering Chinese language’s popularity and uniqueness, its processing might be independent of other languages. Taking into account the distance between languages, research on Chinese EFL readers might bring us an interesting but distinct finding.

1.1.1 Language background and reading comprehension

Cultural background has a broad scope that includes language and guides its development. Palij and Aaronson (1992) conducted an experiment to investigate the role of language back-

ground in cognitive processing, in which language-specific effects on sentence processing in Chinese-English and Spanish-English groups were measured. In this study, they insisted that the language background of experimental subjects should not be ignored and, on the contrary, should be evaluated systematically. Consequently, they discovered that Chinese is a more context-dependent and less word-dependent language than English, and Chinese speakers have different perceptions of the various English lexical categories, which may influence bilingual performance in other cognitive tasks, such as reading. Contrastive culture might be a good starting point to explore more in foreign language reading research. Arden-Close (1999) examined the difficulties that Taiwanese university freshmen had with reading, by the means of essays. His study was carried out from two perspectives: the contrast between Taiwanese and English cultures, and the contrast between teaching and learning of reading as the subjects had experienced it earlier at school, and their present exposure at university. He attributed difficulties in reading to a certain function that knowledge of the world (within a particular culture) has for the reader; the attitude of the reader towards the target culture; and the role of teaching methods. He concluded that EFL reading involves too many extra-linguistic factors beyond the scope of the classroom, and he suggested that a wider framework should be considered in future studies. In fact, his results did not bring forth a convincing answer to the questions he had posed by means of the essays.

Taillefer (2005) conducted a study that concerned, in particular, foreign language reading with different sociolinguistic backgrounds (English and Irish, French, Spanish, German, Dutch and Flemish Belgian) and academic literacies. A clear hierarchy of both FL reading comprehension and reading strategy use was revealed among nationalities at a given level of foreign language competency. Although it could not give a definitive answer to the research question about whether FL reading comprehension and strategic approach within specific disciplines differ significantly between students of different nationalities, obvious distinctions among national groups could still be observed. The effect of the cultural origin of prose on reading comprehension was reported in a study by Johnson (1982), which found that the cultural origins of stories had a stronger effect on comprehension than the syntactic or semantic complexity of the text.

Background knowledge in reading comprehension has been formalized as schema theory (Anderson, 1977; Carrell & Eisterhold, 1983; Carrell, 1981; 1983; & 1987). In terms of schema theory, “comprehending a text is an interactive process between the reader’s background knowledge and the text” (Carrell & Eisterhold, 1983: 556). “Any text, either spoken or written, does not carry meaning by itself; rather, a text only provides directions for listeners

or readers as to how they should retrieve or construct meaning from their own, previously acquired knowledge. Such knowledge is called the reader's background knowledge; the previously acquired knowledge structures are called schemata" (Carrell, 1984:332). It is often differentiated into various types, depending on the readers' engagement with the text, among which formal and content schemata are frequently discussed. Formal schemata refer to "knowledge relative to the formal, rhetorical organizational structures of different types of texts"; content schemata refer to "knowledge relative to the content domain of the text" (Carrell, 1987: 461).

Carrell (1981) conducted a contrastive study on university-bound, intermediate-level ESL subjects with different types of stories. Results indicate that reading comprehension is affected by the formal schema when the content schema remains constant. In 1983, she raised two unresolved issues in both L1 and L2-ESL research: how previous research has either maintained or has confounded the theoretical distinction between "content" and "formal" schemata, and how the effects measured by cross-cultural research apply to more general situations of the presence or absence of appropriate background knowledge (not culturally specific). Moreover, Carrell (1987) reported an experimental result from investigating the simultaneous effects of culture-specific content schemata and formal schemata on ESL reading comprehension. Interestingly, the results show that both content and form play significant roles in reading comprehension, but when neither the content nor the form is familiar to ESL learners, the content schema is generally more important than the formal schema in reading comprehension. This is also indicated in a study by Keshavarz, Atai and Ahmadi (2007), in which they found that content familiarity and EFL proficiency had a significant effect on the reading comprehension of Iranian EFL students, but linguistic simplification did not.

Chen and Graves (1995) conducted a study among Taiwanese college students to explore the effects of previewing and providing background knowledge on the comprehension of American short stories. The college freshmen were randomly assigned to four groups, each of which read two short stories, but with different treatments before reading: one with a preview, one with the presentation of background knowledge; one with both preview and presentation combined, and one as a control group with neither treatment. Scores were collected on short-answer questions and multiple-choice tests. The results show a strong positive effect for students from the group with the preview treatment, and from the combined group, but a weak positive effect for the group with the background knowledge treatment. Ridgway (1997), furthermore, insists that there is a threshold effect of background knowledge in foreign language reading. His findings concern familiarity with the topic, which is a part of background

knowledge, and the results indicate that a lower threshold exists in FL reading, but the upper threshold is still undetermined. If linguistic knowledge is not sufficient enough to allow the inferential process to operate, background knowledge is of little help; otherwise, background knowledge is at work.

Schema theory has offered opportunities toward the understanding of many intricacies of reading comprehension, and has given many valuable implications for ESL classroom teaching, like bringing about reader-centered EFL/ESL reading (Carrell & Eisterhold, 1983). On the other hand, schema theory has been criticized for its static nature, loose concept, lack of details and clarification of where and how it is acquired (Urquhart & Weir, 1998:70-71). Schema contains a huge scope, and to some extent any ability that a reader has could be categorized into background knowledge. Thus, researchers now tend to adopt a concrete component to name the variable instead of using a global concept such as schema or background knowledge. Schema is never neutral, and it involves factors beyond what is perceived, whereas linguistic knowledge can be tested and controlled in a certain way.

1.1.2 Linguistic knowledge and reading comprehension

Chen (1998), in his article *Constraints of English proficiency on understanding English ambiguous sentences in Chinese EFL learners*, stated that there is little difference in processing simple ambiguous sentences among Chinese college EFL students, but they differ in processing more complex ambiguous sentences. Poor L2 readers have particular difficulties in processing more complex ambiguous sentences, which is attributed to their weakness in syntactic knowledge in the target language, and which constrained their reading comprehension. The role of syntactic analysis in reading comprehension has also been proven by Liu and Bever (2002). Due to their quick ability and subconscious manner of processing sentences, good readers expended little effort to use syntactic analysis in reading comprehension because of their higher L2 proficiency. In contrast, poor proficiency in L2 severely constrains the reader's ability to use cognitive and metacognitive strategy in reading comprehension (Liu & Bever, 2002).

The level of general language proficiency is of greatest concern in L2 reading studies, but reading proficiency appears to be a better indication of reading skills (Chitir, Sun, Willows & Taylor, 1992). L2 word recognition in relation to the writing scripts' characteristics and the learners' reading proficiency are addressed in their study. The results indicate that the ability of word recognition, based on the reading of English-Greek bilinguals, differs with languages (language and writing system characteristics); but based on Chinese as a second language, the

ability of word recognition depends on the level of reading proficiency. Thus, they conclude that the learners' reading experience and reading proficiency in the L2 determine the nature of L2 word recognition. In addition, they suggest that future research must explore the relationship between reading and language proficiency to provide a better understanding of L2 reading processes (Chitir, Sun, Willows & Taylor, 1992:293). The relationship between words and reading comprehension is always dynamic and varies with individuals. Hsueh-chao and Nation (2000) made an attempt to study the connection between the density of unknown vocabulary and reading comprehension. A simple regression analysis of the data indicates that 98% coverage of vocabulary is required for most learners to gain adequate comprehension. Also, they argued that there might be a vocabulary threshold. Kieffer and Lesaux (2008) examined the role of derivational morphology in the reading comprehension of Spanish-speaking English language learners, and found that morphological awareness is a predictor of reading comprehension. Moreover, a link between spelling knowledge and reading comprehension is found in Arab ESL learners (Fender, 2008). Apparently, vocabulary knowledge is an indispensable ingredient in reading comprehension, and misunderstanding a single word might dramatically affect the reader's understanding, but reading comprehension involves more than vocabulary knowledge.

Barnett (1986) examined the role of syntactic and lexical/semantic skill in foreign language reading of French EFL learners, and the results showed that syntactic and vocabulary analysis skills were related to comprehension, and the interaction of syntax and vocabulary was proven to have a significant effect on comprehension, but comprehension differs in vocabulary and syntax at specific proficiency levels. The experiment also implies a relationship between text difficulty and reading comprehension as well. Besides the linguistic factors, L1 reading ability was found to be a significant predictor, and contributed more to L2 performance than L2 proficiency did (Fecteau, 1999).

Besides background knowledge and linguistic knowledge mentioned above, reading comprehension, a complex process in which various factors interact, also varies with the text type, reading strategies and learners' motivation to read.

1.1.3 Text type and readers' variables and reading comprehension

"The term text type often surfaces in discussions about structure or organization, both of which can be recognized directly" (Brantmeier, 2005:38). The comprehension and processing of expository and narrative texts are the categories most frequently distinguished in research on text type. Denis (1982) states that an L2 narrative text can easily present readers a vivid

visual scene, or offer readers a mental representation of what they read. Brantmeier (2005) examined the text type and test type on L1 and L2 reading comprehension in Spanish. This study revealed an apparently negative effect of analogous texts on comprehension, which was measured by means of recall, sentence completion and multiple-choice comprehension.

Schmitt and Sha (2009) conducted a study on the developmental nature of metacognition in Chinese EFL students ranging from third to seventh grade, measured with CLOZE and error detection tasks (control variables). Knowledge of strategies and metacognitive awareness develop over time, and a similarity in the students' knowledge of useful strategies was observed. At the same time, Zhang and Wu (2009) made an assessment of Chinese senior high school EFL students. The study was set up to investigate the extent to which metacognitive strategies are used in EFL reading. They collected 270 surveys with a list of 28 reading strategies that were classified into three categories: global, problem-solving and support strategies. The results showed that the Chinese students were active strategic readers, and were able to apply a wide array of EFL reading strategies to achieve comprehension, while differing in their choice of strategy according to their overall EFL proficiency. Hence, it is assumed that the students, having learned their L1, might transfer an awareness of Chinese reading strategies to EFL reading. The correlation between metacognition and EFL reading comprehension of Chinese college students has also been proven in a study by Yang and Zhang (2002) that showed a significant correlation between general EFL proficiency and reading proficiency, and also between metacognitive knowledge and reading proficiency. The most interesting findings are that the readers with higher proficiency showed stronger monitoring ability and were more sensitive to inconsistencies in the text than those with lower proficiency during on-going reading processes.

Metacognitive awareness enhances reading comprehension, and Taboada, Tonks, Wigfield and Guthrie (2009) predicted the effects of motivational and cognitive variables on reading comprehension. Each predictor variable was measured while the others were statistically controlled, and the results showed that motivation, background knowledge and cognitive strategy-use contribute independently to reading comprehension when the other variables are controlled. Each predictor variable affected reading comprehension, but interactions among those variables were not observed. Whereas, Law (2009) reported that intrinsic motivation to read and metacognitive awareness of using reading strategies are the most significant means by which readers deal with the problem of extracting meaning from the text and organizing their opinions. Also, Takase (2007) found that students' intrinsic motivation is influential both in L1 reading and L2 reading, but there is no positive correlation found between L1 reading mo-

tivation and L2 reading motivation. The follow-up interviews showed that gaps between the ability to read in Janpanese (L1) and in English (L2) result in a limited motivation to read in L1; in contrast, those readers limited in L2 reading are not willing to extend the intrinsic motivation to L1 reading habits.

Reading is assisted by many variables, and dictionary use is a shared, frequently used strategy while reading. It is reported that high-level L2 learners are often selective in using a dictionary; a third of the subjects overuse the dictionary; and a quarter of words looked up in the dictionary are useless and unnecessary for comprehending a text (Prichard, 2008).

In China, English is an official subject in school education. Teaching and learning English is obligatory from the third grade of primary education and always a complementary subject at different levels of entrance exams, in which reading is given significant weight. However, reading ability in EFL is not so prospective yet. In addition, comparative reading research in an internal model of Chinese EFL learners is still scarce. In the past 20 years, reading research has focused on three dimensions: language knowledge, processing ability, and cognitive ability and metacognitive strategic competence. A journal devoted exclusively to reading research in China is still unavailable; the total number of L2 reading studies is relatively small in a span of 10 years (173 in five journals), and the research topic is unbalanced and even missing in certain areas (Pang, 2008). Meanwhile, he advocated four general areas, which seem particularly worth exploring in the present L2 research in China: word level issues in L2 reading development, exposure to print in L2 reading development, training of a strategic reader, and the relationship between instruction and testing. The purpose of this dissertation is to conduct a contrastive reading analysis of Chinese EFL learners, by which a model with interactive variables is to be developed. Wu (2006) made an attempt to study language transfer in Chinese EFL writing, based on three levels: lexical, sentential and discourse levels. She argued that most Chinese EFL learners prefer stressing the meaning of words, especially those words that have an equivalent in Chinese, in their writing. That would result in word-to-word translations of some words and phrases from Chinese to English. Moreover, Chinese EFL learners like to present their ideas in a circumlocutory way. Unfortunately, her study is a descriptive opinion instead of experimental research, in which she did not explain why and to what extent the transfer happened at those levels. Whatever the case may be, I believe that those transfers not only exist in writing production, but also influence the reading process.

It is increasingly acknowledged that students who have different backgrounds might have different reading habits in regard to language, reading skills and strategies. With this in mind, an overall outline of the dissertation is presented below.

1.2 Outline of the dissertation

Reading is not as simple as getting information from written words. Otherwise, there would not be so much ongoing research on this topic. The debates on reading, reading ability and reading strategies, are still in progress, and the arguments focusing on how individual reading is processed, how written words are recognized, what kind of cognition is involved, what strategies are used by readers, and to what extent linguistic knowledge plays a role in reading, have never stopped. To resolve these disputes, a huge amount of research has been conducted. However, because of the individuality and variability within a person and among people, reading is still a sort of puzzle faced by researchers of different disciplines. Opinions from different fields are reviewed in the first part of this chapter. Chapter one ends with an overall outline of the dissertation.

To have a better understanding of the social background of the study, it is necessary and useful to get acquainted with the education system and current situation of English teaching and learning in China. A brief description of EFL teaching and learning in China is presented from five aspects: English curriculum in the education system of China, English teaching approaches in China, the quantity and quality of English teachers, the English test system in China, and problems in English reading instruction. Progress and problems of English teaching and learning co-exist, which pushes the amendment of policies and their implementation, and these revised policies guide English teaching and learning. In the national unified English teaching syllabus that has been revised several times over the years, reading ability is stressed again and again, and reading is given a big weight on every test, but English reading instruction in classroom teaching is implicitly given through reading exercises. The present teaching of reading is described in a single section. At the end of chapter two, the significance of the study and the expected implications of reading research on Chinese EFL learners are stated.

Besides the social background, chapter three discusses the theoretical background for the study of EFL reading research. Regardless of the arguments, there is a shared contention in reading research that two levels of reading ability do exist in reading comprehension. Most research has paid attention to the role of lower level processes in higher level processes in L1 reading, whereas in L2 research it is still under discussion whether lower level ability or higher level ability contributes more to comprehension. As for the relation between them, a number of theories have come into being, and different components of L2 reading are stressed. For example, Goodman's (1971) transfer hypothesis states that L2 reading comprehension is globally guided by the higher order ability of L1 reading; Alderson's (1984) threshold hy-

pothesis emphasizes the function of L2 linguistic knowledge on reading comprehension; and similarly, the processing efficiency hypothesis states that efficiency of lower order processes such as word identification and syntactic parsing is considered an important condition not only for the development of L1 reading comprehension but also for L2 reading comprehension (Segalowitz, 2000; Koda, 1996). Besides the debates on linguistic knowledge, a controversial issue in those theories also focuses on the transfer of higher level ability (e.g. reading strategy) from L1 reading to L2/foreign language reading, in which metacognitive awareness or skills play an important role. This is generally believed to be the ability to regulate the reading process (Schoonen, Hulstijn & Bossers, 1998; Baker & Brown, 1984). It would be hard to deny the function of metacognitive awareness in reading research, but considering the subjectivity of metacognitive awareness, how to measure it in experimental research is also a key issue. Different assessments have been developed, and the relationship between metacognitive awareness and reading comprehension is being widely studied (Schmitt, 1990; Paris, Lipson & Wixon, 1983; MyerII & Paris, 1978; Mokhtari & Richard, 2002; 2004; Sheorey & Mokhtari, 2001; 2002; Zhang and Wu, 2009; Taboada, Tonks, Wigfield & Guthrie, 2009; Yang & Zhang, 2002). The theory of metacognition is reviewed in chapter three as well, from its development, assessment and its application among bilingual students.

Chapter four outlines the design of the experimental study that basically integrates linguistic knowledge, language sensitivity, and metacognitive awareness of reading with the study of reading proficiency, both in L1 and in L2 (EFL). This chapter starts with research questions and, subsequently, the background of the participants in the study is briefly stated. A pilot study was conducted to check the reliability and validity of the instruments used in this study. The instruments were measured not only in English, but also in Chinese, which makes it possible to make a comparison between alphabetic and non-alphabetic reading processing. The data-collection procedure is presented at the end of this chapter.

Chapters five and six present the descriptive results of English and Chinese reading, respectively. Experimental results offer answers to the research questions separately. Chapter seven focuses on a hypothesized model of Chinese EFL learners. The intention of this analysis is to achieve a regression model of reading proficiency that is decomposed into three kinds of componential items: linguistic knowledge (vocabulary and grammar), language sensitivity (word recognition and sentence decision), and metacognitive awareness (global strategies, problem-solving strategies, and support strategies).

The final chapter of the dissertation, chapter eight, draws a conclusion through a critical analysis of the findings in chapter five, six, and seven, and makes a comparison to previous re-

search. The implications of this study are discussed and the direction of future research in L2 reading research and in Chinese EFL learners is pointed out.

1.3 Summary

The chapter reviewed the opinions from different disciplines, which were presented from three aspects: language background, linguistic knowledge, text type and readers' variables with reading comprehension. Subsequently, a brief outline of the dissertation was introduced chapter by chapter, which is also depicted in figure 1. The study aims at expanding insight into Chinese EFL learners' reading ability in both L1 and L2, and accordingly enables us to know more about their cognitive reading style. The interrelations among the variables might provide experimental support to develop a model that has implications for research and for pedagogy.

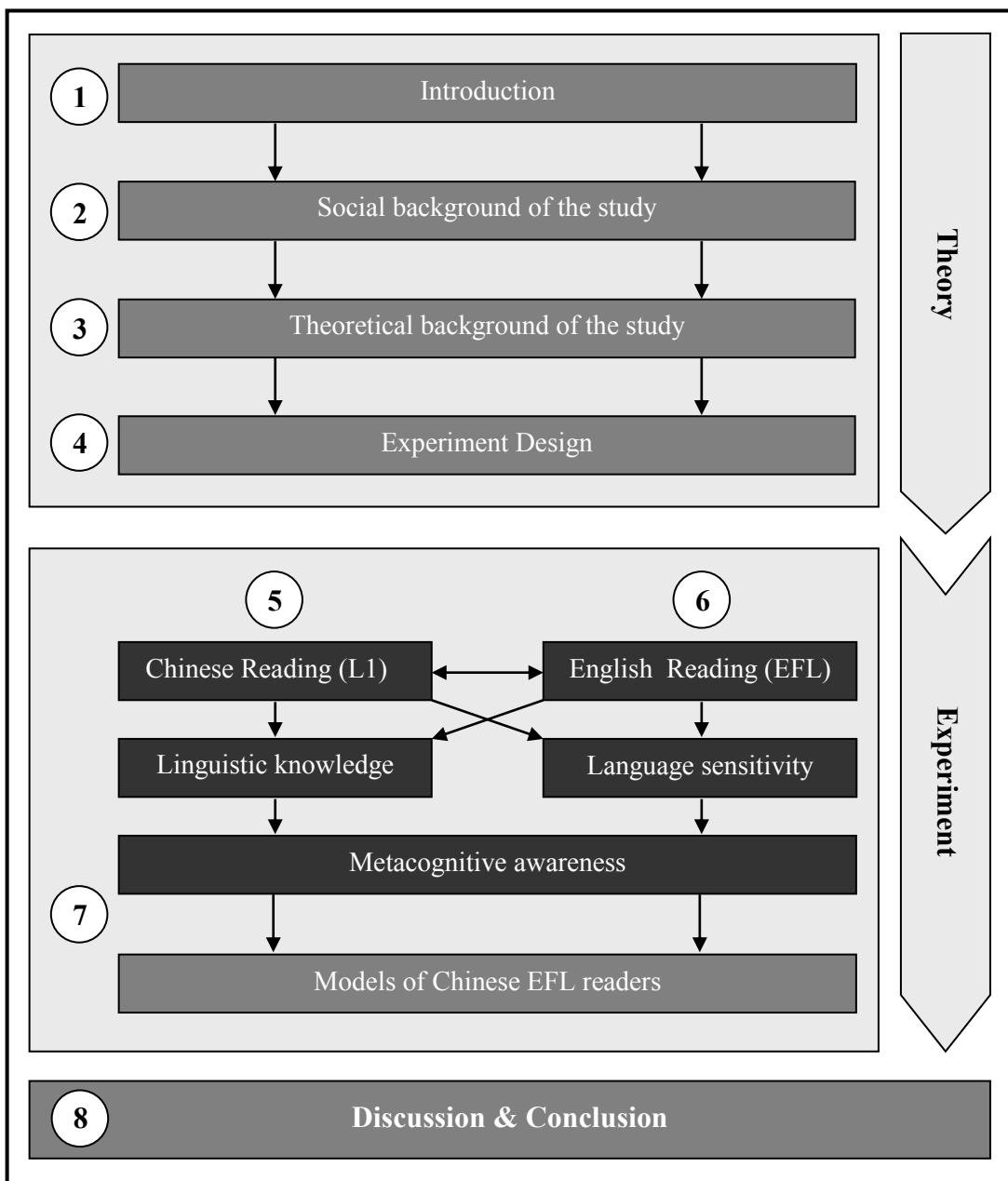


Figure 1: Outline of the dissertation

2 Social background of the study

2.1 Introduction

In China, English as a foreign language is an official subject in school education. Teaching and learning English has been obligatory from the third grade of primary education since 2001, and until the second year of university. The length of English instruction can last twelve years in formal education. The important status of English education is visible not only in its duration of learning, but also in exams. English is always a complementary subject at different levels of entrance exams, such as the high school entrance exam, college entrance exam, and so on. No matter what kind of exams, the test of reading ability is given a big weight. The highly valued status of English teaching and learning is also reflected in diverse training courses outside of schools and kindergartens that advertise English instruction as one of their specialties to attract parents' attention. Meanwhile, with wider contact and communication with the world, for instance, China's admission to the WTO and its successful hosting of the Olympic Games in 2008, English is taking on a prominent position in the public as an international communication tool. The number of English learners keeps on increasing, and various levels of training schools appear. On the other hand, an increasing number of foreign companies settle in China, and more foreigners come to visit China. As a result, English learning is in higher demand, especially the ability to read. In today's world, we are exposed to thousands of printed texts in digital or paper form, either on a daily basis or for a commercial purpose. The ability to read is an indispensable skill, and plays a vital role in many aspects of our life. However, school learners do not reach a satisfactory level in English reading due to the pervasive grammar-translating teaching approach in classes and a severe lack of qualified English teachers, especially with regard to linguistic theories and pedagogy, which can significantly affect teaching capability and efficiency. Also, the English learning environment is still quite poor, although English learning is highly promoted by the government and the public has a strong desire to learn English. Meanwhile, the attitudes and cooperativeness of parents and school learners are also very valuable in the achievement of English learning and teaching, and a proper teaching approach is still being sought.

To have a better understanding of the necessity and significance of this study, it is useful to get an overview of teaching and learning English as a foreign language in China, which is provided in section 2.2 from five perspectives: English curriculum in the education system, English teaching approaches in China, a short review of the quantity and quality of English

teachers, the components of an English test, and reading problems in English teaching and learning. Afterwards, the significance of the study is stated in section 2.3.

2.2 EFL in China

The wave of globalization laps against every country, and the progress of technology enables us to weave a world-wide net, in which English is like the knot of the net. English is often regarded as the most popular language in the world, which can be sensed in many aspects of daily life. In most countries, EFL is provided and required in school education. In Europe, students have more options in choosing a foreign language, whereas their peers at same level in most areas of China have no other options besides English. English is the only foreign language in most schools. In higher education, both at the undergraduate level and graduate level, English leaning for non-English-major students always takes place at the early stage of studying. During the last three decades, the number of English learners has increased to 300 million, among which 214 million are school students (Shu, 2004), but there are not enough accordingly qualified English teachers to fulfil the task yet. Around 300,000 to 500,000 positions for English teachers are still open in primary and secondary education.

With the opening up of China, foreign language teaching and learning, especially English language teaching and learning, takes a prominent position in school education. In 1978, the first unified primary and secondary curriculum and accompanying draft English syllabus were issued by the Ministry of Education (MoE). At the fist National Conference on Secondary Foreign Language Education in 1982, “it was acknowledged that English language teaching (ELT) efforts since 1978 had largely failed and that the quality of secondary ELT was deplorably low”(Hu, 2004:8). From the mid-1980s onward, with the implementation of the policies of Reform in Opening-up initiated by Deng Xiaoping, English has become a bridge to connect China with the rest of world. The pace of economic growth accelerates the speed of reform in the educational system. In 1992, 1993 and 1996, national secondary English syllabuses were issued in which “English proficiency was seen as an integral part of a quality education” (Hu, 2004:10).

In January of 2001, guidelines for promoting primary English language teaching were issued by MoE. The aim of those Guidelines was that in the autumn of 2001, an English course was to be offered from the third grade in all primary schools located in cities and developed areas, and it was to be set up in remote areas, too, no later than the autumn of 2002, and local administrations of Education could adjust it to accommodate the local situation (MoE, 2001a). In that same year, MoE further issued English curriculum standards for compulsory education

and senior secondary education in July. On a macro-level, a lot of policies and regulations were issued to support English learning and teaching, whereas on a micro-level there were still many issues to be solved.

2.2.1 English curriculum in the education system of China

In China, the education system is composed of three categories: basic education, higher education and adult education. Basic education consists of pre-school education, primary education and regular secondary education. According to the Compulsory Education Law, primary education and junior secondary education are obligatory, for a period which lasts nine years, while senior secondary education and higher education are voluntary. English curriculum runs through both obligatory education and voluntary education. An overview of English curriculum at different levels of the education system in China is depicted in the following table (adapted from Xu, 2010).

Educational status	Educational Level	Age	English /Year					
Obligatory	Primary education	6/7-11/12	1	2	3	4	5	6
	Junior secondary education	12/13-14/15	7	8	9			
Voluntary	Senior secondary education	15/16-17/18	10		11		12	
	Higher education <u>Undergraduate education</u> <u>Graduate education</u>	18/19-22/23	1	2	3	4	Master	
			1	2	3	1	2	3

Grey background: English curriculum is compulsory (otherwise optional)

Table 1: English curriculum and education system of China

Primary education

Primary education lasts six years, and children enter primary school at the age of six or seven. Since 2001, English curriculum as a compulsory subject starts from the third grade of primary school and it should be no less than four times per week (MoE, 2001b). Usually, a class session is 45 minutes. Meanwhile, in principle, the class should have no more than 40 students, but in reality the number of the students is quite unbalanced among schools (based on my own experiences and observation), especially between those good-reputated or experimental schools and below average schools. In some big cities and developed areas, many schools start offering English class even from the first grade.

Secondary education

Secondary education in China has two phases, junior secondary education and senior secondary education, each of which lasts three years. Junior secondary education refers to the education in junior middle school, which is obligatory according to the education law. At this level, English class is held every day, and a class session is 50 minutes instead of 45 minutes from this level on. In total, it is around 4 hours per week. After the ninth grade, students have to take a locally administered entrance exam to the senior secondary education, on the basis of which students have option of either continuing in academic high schools, or entering vocational high schools. According to the statistics of MoE (2010), 85.6% of the graduates from junior middle school entered high schools in 2009.

Senior secondary education at the academic high school level is a preparatory stage for higher education, and vocational high schools train graduates from junior secondary education for positions requiring production and operation skills. The length of both academic and vocational high schools is typically three years, in which English curriculum is always a compulsory subject. At academic high schools, English curriculum is evenly stressed as much as Chinese and Mathematics. Those three compulsory subjects carry more weight than any other subjects in the entrance exam of higher education, whatever the students study in the future. In the last year of senior secondary school (12th grade), English teaching and learning is focused on repetition and review to prepare for the National Matriculation Test (NMT).

Higher education

Higher education at the undergraduate level consists of three-year tertiary institutes and four-year bachelor programs. From 2001 on, there is no longer a limit of age and marital status to take the NMT (MoE, 2001). The ages listed in table 1 refer to the mainstream population. English curriculum at the undergraduate level is compulsory in the first two years.

In China, the length of undergraduate education is normally fixed at 4 years, except for the 5-year medical major, which is under reform at present. English curriculum is compulsory in the first two years of a Bachelor degree program, with two instruction sessions of 100 minutes per week. After that, students are required to take the National College English Test band 4 (CET-4) that is associated with a college degree in many tertiary institutes. In the third or fourth year of the program, some English curricula specifically related to students' majors are offered in some universities, such as Computer English, Advanced English, Scientific English, and so on. Students who have passed CET-4 are allowed to take the National College English

test band 6, which is optional, but most of the students are willing to take it because of its high reputation in the job market. CET is regarded not only as a criterion to evaluate students' English proficiency, but also as a measurement for the university and teachers. One of the academic evaluations for the quality of universities is the pass-ratio of CET, and the promotion of teachers may be directly affected by the pass-ratio of CET as well (Feng, 2009).

Higher education at the graduate level includes graduate programs leading to Master degrees and PhD degrees. Students who have Bachelor degrees can take a national entrance exam to graduate education. Similar to NMT, English is again a compulsory subject in the exam. At an early stage of either a Master program or PhD research program, English curriculum is always a compulsory subject.

From the summary above, we can see that English curriculum runs through all formal education levels. The length of formal English instruction reaches up to 12 years, and in between there are lots of big and small, formal and informal, obligatory and optional English tests for a Bachelor graduate to overcome. Various English tests build up students' capabilities of dealing with tests instead of the ability to use English in daily life, and have a direct influence on English teaching and learning.

2.2.2 English teaching in China

In 2001, a new English curriculum standard was issued, which speeds up the pace of reform in English teaching. The old style of teaching put more attention on grammar and vocabulary, but the new English curriculum standards require teachers to switch their attention to the comprehensive use of language, focusing on the students' interests and stimulating students to practice their English (MoE, 2001b). Also, the new standard integrates an international language assessment that categorises language ability into 9 levels. After primary education, pupils should reach the second level; followed by the fifth level after junior secondary education, and the eighth level after senior secondary education (3,300 words required). The ninth level (4500 words required) is for those schools with an emphasis on English learning, like foreign language schools or foreign language specialties. The other levels are considered as transitional levels.

At the basic phase of English education, the new standard focuses on training the ability of comprehensive use of language, which is composed of five aspects: linguistic knowledge, language skills, cultural awareness, emotional attitude and learning strategy (see figure 2). Linguistic knowledge consists of topics, functions, grammar, vocabulary and phonetics. Lan-

guage skills include listening, speaking, reading and writing. Cultural awareness ranges from cultural knowledge, understanding and multicultural communication, to awareness and cognitive ability. Emotional attitudes are described as motivational interest, confident personality, cooperativity, national awareness, and an international perspective. Learning strategy refers to cognitive, adaptive, communicative and resource strategies.

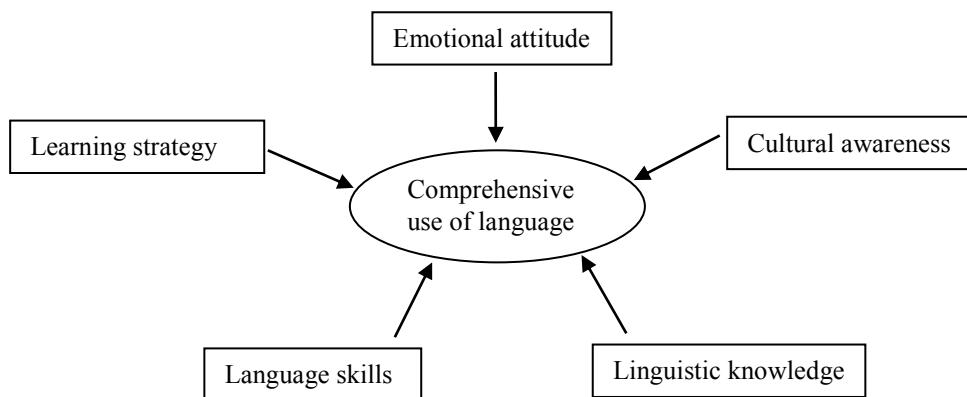


Figure 2: The Aim of English Curriculum (MoE, 2001b)

Because of the amendment of curriculum standards, English teachers are required to switch their teaching methods from the traditional grammar-translation approach to a communicative language teaching (CLT) approach. The emphasis of the CLT approach is on listening and speaking along with the previous focus on reading and writing. However, the traditional grammar-translation approach still dominates in English classroom teaching, considering class size, teachers' qualifications and the pressure of tests. Teachers are still struggling with the transition of English teaching (Yu, 2001).

The number of students in an English class should not be over 40, but in reality the number is bigger than that, both at the level of primary education and secondary education. At the higher education level, English classroom teaching is also mostly on a large scale. Since the expansion of universities in 1999, the number of participants in an English class has increased up to more than 100 at many colleges, sometimes even up to 150 (Wang et al, 2003). It is hardly possible to conduct English teaching in a communicative way. Moreover, due to the pressure of the entrance exam to senior secondary education and to higher education, English classroom teaching at secondary education is test-oriented. It is also well known that 9th grade and 12th grade are the reviewing years for students to prepare for the entrance exams, which is a big barrier confronted by teachers to design their classroom teaching in the CLT style. The results of a survey conducted by the National Research Center for Foreign Language Education reveal that teachers adopt a traditional English teaching approach partly owing to test

pressure (Zhou, 2002). On the other hand, it is also a big risk for students to concentrate their English study on communicative ability because of the design of the English test. Therefore, students are used to spending much time reciting words by heart to expand their vocabulary, and going over grammar to build up sentences. Although their vocabulary is probably quite large, they are unable to use these words correctly in practice. They are good at all grammar, although they are “deaf” and “dumb.”

The existing exam system hinders reform in English classroom teaching approaches, and the shortage of qualified English teachers makes the situation even worse. As Yu (2001:197) mentions, “quite a number of teachers know only some basic English grammar and vocabulary. For them the grammar-translation method is the most acceptable because they can basically teach English in Chinese”. The way that a teacher was taught will also influence his own teaching style, which is also pointed out by Xiao (1998:28): “the most serious fact is that this inefficient approach (grammar-translation) is continually reinforced. When some of the students who have been taught with grammar-translation method turn out to be English teachers, they are most likely to use the same method in their teaching”. The quantity and quality of English teachers are like a bottleneck of English teaching and learning in China.

2.2.3 The quantity and quality of English teachers in China

In 1979, Cowan, Light, Mathews and Tucker, sponsored by the U.S International Communication Agency, visited China for three weeks to investigate diverse aspects of English teaching there. In their survey, they reported, “in addition to the widespread teaching of English at the primary and middle school levels with a currently estimated 65,000 English teachers, there are approximately 23,000 students majoring in English at tertiary institutions taught by 4,800 teachers. Additional 6,000 staff members teach English for non-major students, especially for those in natural science”(Cowan, Light, Mathews and Tucker, 1979:466). After three decades, the number of learners and teachers has increased dramatically. There are about 112, 463, 000 primary school children in China (Chen, 2008), 1.5 million primary school teachers, and 500,000 secondary school EFL teachers (Liao, 2004). Due to the numerical increase of EFL teachers, the quality of teachers and professional training education for EFL teachers have begun to attract the attention.

A large-scale survey that Hu (2004) refers to indicates that 53% of the teachers of ordinary schools and 69% of the teachers of key schools had never received any formal professional training, and a study by Liu and Gong (2000) shows that 89.4% of English teachers in junior secondary education and 55% of English teachers in senior secondary education are profes-

sionally qualified, out of 550, 000 middle schools in China. For higher education, English teachers who only have Bachelor degrees or even lower comprise up to 73% of the total (Anonymous, 2003). “In general, the teachers had a weak grounding in pedagogy, lacked professional competence for the subject and knew very little about recent developments in foreign language education both at home and abroad” (Hu, 2004:12-13).

A review (from 2000-2006) on English teaching at primary schools was conducted by Lin Chen, Professor of Beijing Foreign Studies University, and presented at the International Conference on Primary English held from 18 to 20 October 2008. In table 2, we can see that in 2000, only 9.7% of all school children were learning English, but in 2002 this figure reached 22.10%. In 2004, it was four times higher than in 2000. In 2006, it increased dramatically to 60.50%. Within short seven years, English classes were widely promoted. Changes took place not only in the number of school children learning English, but also in academic status of primary school English teachers.

Year	Percentage
2000	9.70%
2002	22.10%
2004	35.10%
2006	60.50%

Table 2: Number of school children learning English

Table 3 depicts the educational attainment of teachers. Those with college degrees and above increased from 5.48% in 2000 to 6.51% in 2002, and two years later there was a small decrease, but in 2006 it doubled to 12.65%. The percentage of teachers with community college degrees is greater, but there was no big fluctuation over those seven years. The percentage of teachers with senior high school diplomas decreased dramatically from 51.97 in 2000 to 29.01 in 2006. The number of teachers who have not completed senior high school has never been an influential factor, but in 2006 it again reached 2.05%. On a temporal line, in 2000 teachers with senior high school and community college diplomas were the mainstream at primary schools, and there were very few teachers who completed college or above; there were even some teachers with less than senior high school diplomas. In 2002, the situation did not greatly improve, but at least there were no longer any teachers without senior high school diplomas any more. The number of teachers who completed college and above increased a little bit, as

did those with community college diplomas, and the number of teachers with a senior high school diploma in 2004 decreased dramatically. Teachers who finished community college become the mainstream in 2006, and teachers with college degrees and above doubled from past years. In addition, teachers with senior high school diplomas dropped to half the percentage from previous years, and the number of teachers with less than senior high school diploma climbed up to 2.05% again. Obviously, the educational attainment of EFL teachers is still unfavorable, and qualified teachers are still a critical problem in English teaching and learning.

Year	\geq College	Community College	Senior High	<Senior High
2000	5.48%	42.00%	51.97%	0.55%
2002	6.51%	44.99%	48.50%	0
2004	6.19%	45.18%	48.43%	0
2006	12.65%	56.29%	29.01%	2.05%

Table 3: Educational attainment of primary school English teachers

The shortage of qualified teachers is still a bottleneck problem. Figure 3 shows the changes in the shortage of qualified teachers: the percentage keeps on going up. In 2002, it was 9.07%, but in 2004 it increased to 13.72%, and in 2006 it doubled to 26.78%. The lack of qualified teachers is becoming an urgent problem to be solved, which also, to a certain extent, pushes the implementation of the policy on expanding the scale of higher education (Kang, 2000). In addition, it reminds people that neither professional training of English teachers nor re-training throughout their career can be neglected with teachers' booming.

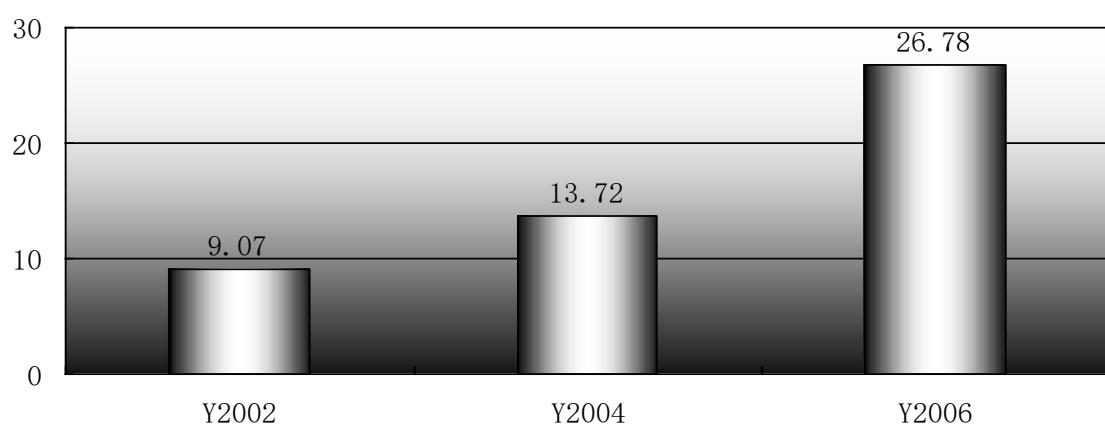


Figure 3: The shortage of qualified English teachers (Prof. Chen Lin's talk at the 2008 International Conference on Primary English; <http://www.fltrp.com/newsdetail.cfm?icntno=87222>) (%)

If the shortage of qualified English teacher is an obstacle to improving English teaching and learning in China, the present English test system might be another barrier for such reform.

2.2.4 English tests in China

As already mentioned, English teaching is partially oriented toward English tests. The current test system decides, to a great extent, how teachers design their classroom lessons and how students learn English at home. English tests, according to the new curriculum standard, are standardized into four parts, listening, speaking, writing and reading, which are mainly in the form of multiple choice questions (see table 4: an example of an English test for students in junior secondary education).

Tasks	Types/Forms	Questions	Percentage
Listening	Multiple choice	20	20%
Speaking	Complete the conversation (gap-filling)	10	10%
Reading	Reading comprehension (multiple-choice)	20	30%
	Cloze (multiple-choice/gap-filling)	10	10%
Writing	Composition	1	10%
Use	Vocabulary & Grammar (multiple-choice/change the form of given words)	25	20%
In total			100%

Table 4: An example of an English test for junior middle school students in their 2nd year

As shown in table 4, listening skills are examined by choosing the right answer to the questions posed in the tape, and oral English is tested by completing a conversation in the form of filling the gap. Students do not have a real opportunity to communicate in English. Besides the four skill tasks, vocabulary and grammar are examined in a task of comprehensive use and are given 20% of the weight on the test. So far, it is quite obvious that most test tasks are directly or indirectly centered on vocabulary and grammar, and adopt the format of multiple-choice, which has a negative backlash-effect on language teaching (Wu, 2001).

On the other hand, we can see that reading skills, either in the form of reading comprehension with multiple choice questions or cloze with multiple choice (choosing the most appropriate word in a given context) or with gap-filling (filling the gap with the right form of the given

word), carries a big weight: two fifths. However, how to read an English text and reading strategies are seldom explicitly taught in English classroom teaching.

2.2.5 English reading instruction

As a part of EFL teaching, the reform of English reading instruction in secondary education is also under way. To help students to find appropriate reading strategies and form good reading habits, English teachers are encouraged to implement strategy instruction through task-based exercises (MoE, 2003). The typical reading instructions usually go through pre-reading, during- and post-reading procedures, “in which students are required to do various kinds of comprehension-testing exercises that implicitly require a limited number of EFL reading strategies”. Under these circumstances, students are expected to acquire strategies implicitly, and explicitly to use these strategies while reading. However, this does not satisfy the students who complain that they do not see any improvement in their reading ability and do not know what strategy to use, either (Zhang & Wu, 2009:38).

The traditional teaching method for reading — spotting by teachers, guided by grammar, analyzing sentences, emphasizing the importance of translation — focuses on linguistic knowledge at the cost of thoroughly comprehending the whole text, ignores the ability of language use, and is harmful to the activeness and creativity of getting involved in the class. EFL reading instruction in the classroom is not satisfactory yet, and essentially the teachers/educators do not have a comprehensive understanding of the reading process and lack methods to improving their teaching practice, which results in unfavorable teaching (Qin, Jiang, Xiao & Cui, 2010).

As I have observed, English courses are taught with the help of textbooks. The organization of the textbook is focused on a text, around which different tasks are designed. Based on the belief of “language first, comprehension later”, the time allocated to English reading is very brief in class, and the students are very seldom stimulated to think about why and how they read in English. A small-scale survey on the goal and the time allocation for English reading instruction in the classroom has been conducted. With regard to different grades, teachers have relatively different opinions. Those who are teaching 7th and 8th grade spend very little time on reading instruction; instead of explicit teaching, they give a lot of reading exercises to the students, in which reading strategies were implicitly conveyed. Teachers of 9th grade spend one teaching-hour on reading instruction per week, but mainly through exercises because of the pressure of the entrance-exam for senior secondary school. Very few teachers

state clearly that one of their goals for reading instruction is to foster strategic and skillful English readers.

Therefore, a significant challenge confronting us is how to optimize classroom teaching on reading comprehension and how to help the students become strategic readers. To find a better way to deal with reading in EFL, first we have to find out what the indispensable components of reading in EFL are. Moreover, a componential study on the ability to read in Chinese EFL readers needs to be conducted, through which a picture of the ability to read is presented to the teachers. A qualified English teacher should not only be capable in the four language skills, but also master the appropriate teaching method to meet the students' needs in the classroom.

2.3 The significance of reading research of Chinese EFL learners

On a macro level, the significance of reading research for Chinese EFL is presented to reading researchers and to English teachers and learners in China; on a micro level, it helps the teachers and students read in EFL.

The introduction of English teaching and learning in the Chinese education system mapped out an overall picture of EFL in China. Chinese is probably the most widely spoken language in the world, and many specific features make it a unique language that differs in some important ways from many Indo-European languages. How Chinese is processed, undoubtedly, is indispensable to the general understanding of other languages (Chen & Tzeng, 1992).

Culture is such a broad concept, which encompasses religion, philosophy, social science, literature, history, etc.. Chinese EFL learners are in an unfavorable English setting, so that their thoughts might be strongly affected by Chinese thought patterns, which might lead to some Chinese-specific features that would enrich our insight into reading research. In addition, considering the specific characteristics of EFL teaching and learning in Chinese society, and the unique features of the Chinese language, it would be worth the effort to conduct a componential reading study among Chinese EFL learners. Alphabetic reading research dominates and orients reading research. Studies on non-alphabetic reading are still quite few.

With the importance of reading comprehension both in English language learning and in Chinese tests, the teaching of reading needs to be urgently improved. Many studies have been conducted on reading comprehension, but there is still no ideal way to explain how to evaluate it. To what extent are readers different when reading in their native languages as opposed to a foreign language? A method is needed for testing reading, and human reading ability

needs a better explanation. Moreover, from the perspective of pedagogy, a comprehensive linguistic and metacognitive study on reading is also necessary to show a full picture to educators, in order to help them to see what the problems are and to improve their students' reading ability.

Meanwhile, a componential analysis in reading comprehension is often centered on the question of identifying the overall factors in reading comprehension and how they interact with each other. So far, there is no single model of reading comprehension that has gained a wide acceptance. Regarding the complexity and interdisciplinary nature of the reading process, a systematic model to satisfy everybody is still far out of reach. That should not be an excuse to give up. In order to determine the conditions of the overall development of reading ability, it is necessary to investigate the underlying skills, not in isolation (reading in L2; and in L1) but within one integrated framework. My aim in this study is to achieve an interactive model through a componential analysis of reading comprehension of Chinese EFL learners.

The present study is set up in the framework of linguistics and metacognition to study the text reading ability of Chinese EFL learners in junior secondary education, in order to find a componential model applicable to Chinese English-learners. This is expected to optimize learning efficiency and, accordingly, an effective teaching approach to improve the ability to read, motivate students to enjoy reading instead of suffering from their homework, and speed up the reading process. For teachers, this is helpful and supportive to develop an English teaching approach focused on reading. Conversely, an efficient teaching and learning approach would optimize the efficient use of limited time, and save a lot of social and financial resources.

2.4 Summary

EFL has a highly valued status in China because of its popularity and importance in the world. This chapter introduced the situation of EFL in China at length, beginning with the English curriculum in the education system of China, and followed by English classroom teaching approaches in China. Afterwards, it stated the present situation of English teaching and learning in China. The shortage of qualified English teachers and the on-going English test system were identified as the main obstacles to reform English teaching and learning. In addition, English reading instruction at school was also covered, and a pilot study showed that reading instruction is implicitly given through exercises and the students are less aware of it. The end of the chapter highlighted the significance and the expected implications of the study.

3 Theoretical background of the study

3.1 Introduction

“Reading is never an abstract, meaningless activity..... Readers always read something; they read for a purpose, and reading and its recollection always involve feelings as well as knowledge and experience” (Smith, 2004:178). Readers’ intents influence their behaviors, and the purpose a reader has for reading affects the outcome of his understanding. Widdowson (1979) states that reading is the process of getting linguistic information via print. This definition is too general to be of any practical value. Besides the linguistic aspect, there are also various types of information and different purposes for reading. Perfetti (1985) defines reading as decoding – thinking guided by print, which brings about some good arguments. Similarly, Nuttal (1982) defines reading as thinking aloud. Whatever the case may be, it is true that reading is first and foremost linguistic processing, which corresponds to the traditional linguistic view that linguistic information can be carried either in the form of print or in the form of sound (Alderson & Urquhart, 1984). The simple view of reading suggests that “reading consists of only two parts, decoding and linguistic comprehension, both necessary for reading success, neither sufficient by itself” (Hoover & Gough, 1990:132). In their opinion, good comprehension is a combination of these two factors.

Both in terms of theory and practice, understanding of reading has changed considerably in the last three decades. The persuasive arguments of Goodman (1967, 1973) and Smith (1971, 1979) have turned into a psycholinguistic model of reading. Building on that, Clarke and Silberstein (1977) translate it into an ESL context and outline implications for reading instruction, which is similar to Coady’s (1979) reinterpretation. In reading research, however, the debate on the relative importance of lower-level processes or higher-level processes in reading comprehension is always ongoing. Goodman’s (1971) transfer hypothesis is that L2 reading comprehension is globally guided by the higher order ability of L1 reading, and Alderson’s (1984) threshold hypothesis emphasizes the function of L2 linguistic knowledge in reading comprehension. The concept of efficiency in the processing hypothesis stresses the automatic word recognition that is fundamental to proficient L2 reading comprehension (Koda, 1996, Segolawitz, 2000). Moreover, some researchers promote an interactive model, which is considered as a combination and integration of various sources including both higher-level and lower-level sources (Bernhardt, 1991; Fender, 2001; Grabe, 1991). Stanovich (1980) further proposes an interactive-compensatory model. Recently, the componential mod-

el seems to have become more popular among researchers (Carr, Brown, Vavrus and Evans, 1990, Just & Carpenter, 1992; Perfetti, 1999; Stanovich, 1991; Van Gelderen et al 2003; 2004; & 2007). It is commonly accepted that, to a certain extent, a combination of sub-skills is the best way to explain the inherent complexity of L2 reading¹. No matter how reading is processed, the underlying ability related to reading is relatively stable.

In this chapter, a literature review with regard to the issues addressed in this dissertation will be provided from three aspects: processing models, linguistic knowledge and its significance for reading comprehension, and metacognitive awareness of reading. First of all, some terms often used in reading research are introduced in section 3.2. Reading processes are then illustrated from previous studies, models and theories/hypotheses in section 3.3. Section 3.4 reviews linguistic components of reading, such as word recognition, lexical knowledge and text comprehension. In section 3.5, metacognitive awareness is presented from its development, assessment and application. Finally, the effects of language distance on reading are discussed in section 3.6.

3.2 Some terms in reading research

3.2.1 Short-term memory vs. Long-term memory

Reading, especially fluent reading, requires efficient cognitive processing. In the cognitive psychology paradigm, reading is understood as information processing. Reading research, especially in L2 reading, strongly overlaps with language acquisition or second language acquisition. The framework of information processing is to explain how information is stored in the memory and processed. The simplest form of the information processing framework assumes that information is stored in two distinct ways, either in short-term memory or long-term memory. “Short-term memory, the active working memory, holds modest amounts of information only for a brief period. Long-term memory, the sustained storage of information, may be represented as isolated elements or more likely as interconnected networks”(O’Malley and Chamot, 1990:17).

Short-term memory is interchangeable with working memory or buffer memory. “As far as language is concerned, the contents of short-term memory are usually the last few words you have read or listened to or whatever thoughts you had in your mind instead”(Smith, 2004: 98). The turnover of short-term memory is very fast. Whenever it is applied, and whatever it is

¹ The distinction between L2 and foreign language is not clear yet (cf. Alderson & Urquhart, 1984). In this paper, L2 is interchangeable with foreign language.

applied to, short-term memory is always related to people's attention span. Smith (2004) declares that short-term memory is of central importance in reading, because it is always where the reader lodges the traces of what has just been read, while the reader makes sense of the next new words or commits them to rote memorization. The capacity of short-term memory is limited. When we move to the next item, we have to erase the last one. It is at least big enough to hold the visual input, which results in a persistence that is quite brief, but normally lasts until the next stimuli. The retrieval is somehow effortless and fast.

Long-term memory is anything that persists in our minds quite independently of rehearsal or conscious knowledge. Attention, which accounts for only a small part of this knowledge, can be attracted at one time. Compared to that of short-term memory, the capacity of long-term memory is unlimited. There is a vast amount of complex interrelationships ranging from what can be perceived to what can be predicted among the objects and events in the world. There is no apparent persistence and retrieval depends on the nature of the information, but "tip-of-the-tongue" recollection happens quite often (Smith, 2004). Both short-term memory and long-term memory have strengths and weaknesses. It is very difficult to say which one is more important or better, they are just different in function. Both are necessary and dispensable to readers. According to Smith (2004), the differences between short-term memory and long-term memory are summarized in table 5.

	Input	Capacity	Persistence	Retrieval
Short-term	Fast	Limited	Very brief	Immediate
Long-term	Relatively slow	Indefinite	Practically unlimited	Relatively slow

Table 5: The differences in memory

To acquire new information, the flow of information goes first to short-term memory, through which it reaches long-term memory (as shown in the flow diagram of memory in figure 4). The structure of the diagram depicts a flow in one direction, but that does not necessarily mean that short-term memory is an antechamber of long-term memory. Input might bypass short-term memory and go directly to long-term memory. The general framework of information storage in the reading process is elaborated in figure 5.

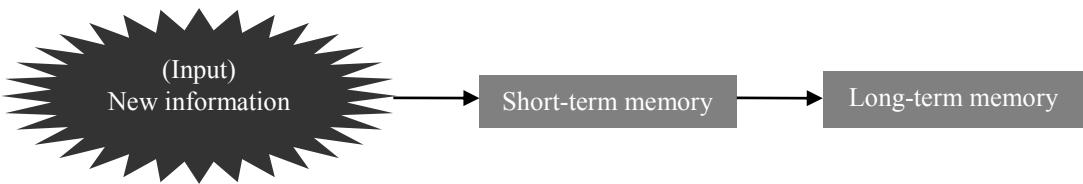


Figure 4: The flow diagram of memory

Information is extracted from the input stimuli into short-term memory/working memory. Then the filtered message goes into long-term memory. “This long-term memory contains information about the world, from our experiences about language and shapes (the semantic memory), the cumulative experiences which we have had in life (the episodic memory) and the automatic procedures involved in skilled behaviors (the procedural memory)” (Randall, 2007:14). The filtered message or the stored information in long-term memory is transferred back to short-term memory to conduct the next interaction. The message is passed along the arrow while working or integrating it with knowledge contained in long-term memory, and with the control factors, such as reading purposes, reading strategies, and plans.

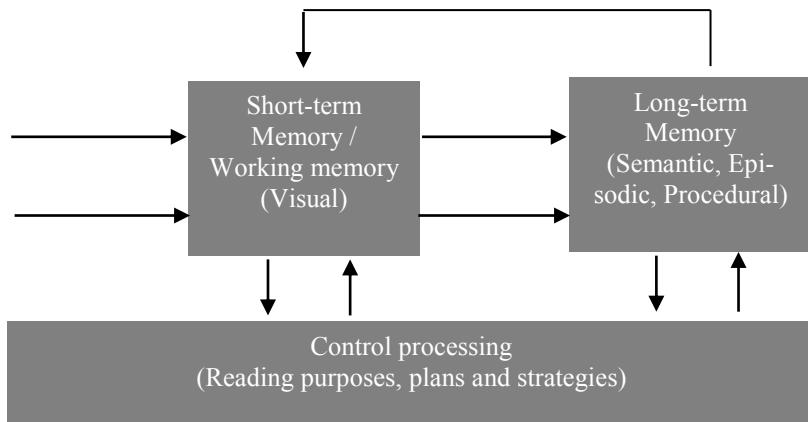


Figure 5: A representation of information storage in reading process (adapted from Randall, 2007)

According to a study by Weinstein and Mayer (1986), new information is acquired through a two-stage framework of short-term memory and long-term memory, with four mental processes: selection, acquisition, construction and integration (cf. O’Malley, Chamot, 1990: 17-18). This process applies mostly to problem solving, vocabulary learning, reading comprehension, and the acquisition of factual knowledge, instead of the totality of language. Besides memories, in the framework of information processing there are two basic types of processing: lower-level processing and higher-level processing.

3.2.2 Lower-level processing vs. Higher-level processing

Lower-level processing mostly involves activating word meanings for use in working memory. Therefore, at this level readers have to be able to recognize words rapidly and automatically, to pull out and use basic structural information and to assemble clause-level meaning (Grabe, 2002:52). Under this notion, word recognition is centrally involved in reading comprehension, but it is commonly not considered a form of reading processing yet. The argument is still on as to whether reading comprehension has to be established on strong word recognition and lexical access skills. Many researchers believe that they are potentially two separate abilities for L2 readers. Fluent L1 readers can recognize, on average, four to five words per second, but it actually takes time to read each of those words. In this respect, readers can access words and meanings automatically in most cases. While they are reading, readers do not have time to read each word carefully and think consciously about the meaning of the words. Thus, fluent readers cannot suppress the activation of known words. Fluent comprehension cannot take place without the smooth lower-level processes that include “word recognition, syntactic parsing (using grammatical information), and semantic proposition encoding (building clause-level meaning from word meanings and grammatical information)” (Grabe, 2009:22).

Higher-level processing is the ability to combine information from clause-level meaning into a basic text representation, a text model of reading, which represents a basic summary of the text that is in line with what the author wrote. Meanwhile, “a more elaborate copy is created that combines the text model with stronger reader views about the purposes of the author in writing the text, the attitude of the reader to the material in the text, past experiences with reading similar texts, reader motivations for reading, and reader evaluation of the text itself (likes, agreements, interests, surprises, support for opinions, disagreements with the text)”, which is also often described as a situation model of text interpretation (Grabe, 2002:53). In higher-level processing phases, a good reader is able to monitor or control executively her/his reading to see whether it is on the right track to achieve the intended purposes or, otherwise, to make some adjustments for better comprehension if necessary.

According to the information processing model, a continuum of skill from ‘higher’ to ‘lower’ levels is required. In general, we intend to accept that the readers who are not making progress in L2 reading are not making the lower level processing sufficiently automatic, and then they can not make use of their high level processing. In reality, the discussion is still under way.

No matter how the researchers argue over those questions, one important caution has to be kept in mind - that both short-term memory/lower-level processing and long-term memory/higher-level processing are only models, not physical realities (Randall, 2007). Meanwhile, Anderson's theory (1983) comes up with three forms of memory: working memory, declarative memory, and procedural memory, and accordingly, declarative knowledge and procedural knowledge.

3.2.3 Declarative knowledge vs. Procedural knowledge

Anderson's ACT model² (1983) focuses on the production system, made up of production rules. In this model, three forms of memory are distinguished: working memory³, declarative memory and procedural memory. "Static" information in the memory – what we have known about, and "dynamic" information in the memory – what we know how to do, are categorized into declarative knowledge and procedural knowledge by Anderson (1983; 1985). Declarative knowledge is stored in the long-term memory (declarative memory) in terms of a specific meaning instead of precisely replicated external events, and it is also in terms of either propositions or schemata; for example, *Barack Obama is the first American president who won the Nobel Prize in Peace*. Procedural knowledge is more "automatic", not available to consciousness; for example, knowing how to drive a car. From the linguistic viewpoint, declarative knowledge of language consists of lexical morphemes such as "dog" – having a specific meaning and available consciously to the speaker, while procedural knowledge of language consists of sentence structure, grammatical morphemes such as '-ing' for present tense and 'a/an' before a noun, which by themselves have no specific meaning but have grammatical functions and are unconsciously available to the speaker. Anderson (1980) distinguishes between declarative knowledge from procedural knowledge using the following example:

When we learn a foreign language in a classroom situation, we are aware of the rules of the language, especially just after a lesson that spells them out. One might argue that our knowledge of the language at that time is declarative. We speak the learned language by using general rule-following procedures applied to the rules we have learned, rather than speaking directly, as we do in our native language. Not surprisingly, applying this knowledge is a much slower and more painful process than applying the procedurally encoded knowledge of our own language.

² ACT stands for Adaptive Control of Thought; see Anderson (1983; &1985).

³ Working memory, here, is used for the actual performance of the production rule, and requires interaction between declarative memory and procedural memory.

Eventually, if we are lucky, we can come to know a foreign language as well as we know our native language. At that point, we often forget the rules of the foreign language. It is as if the class-taught declarative knowledge had been transformed into a procedural form. (p224)

Sometimes, the difference between them is not so clear. Domain-organized declarative knowledge has a substantial effect on L2 production from the L1 transfer. When new information is acquired, there are three stages from declarative to procedural knowledge (Cook, 1993) (cf. Anderson, 1983 & 1985, MacWhinney & Anderson, 1986): the declarative stage, the knowledge compilation stage or associative stage, and the tuning production stage or autonomous stage.

The description of the outline of Anderson's model is a linear process, on the condition that there are no other factors. New information acquired starts from the declarative stage, in which the process involves conscious attention; then the compilation stage, in which less attention is required to develop procedural knowledge, and finally a tuning production stage, in which automatic processing improves little by little. This three-stage development is shown in figure 6.

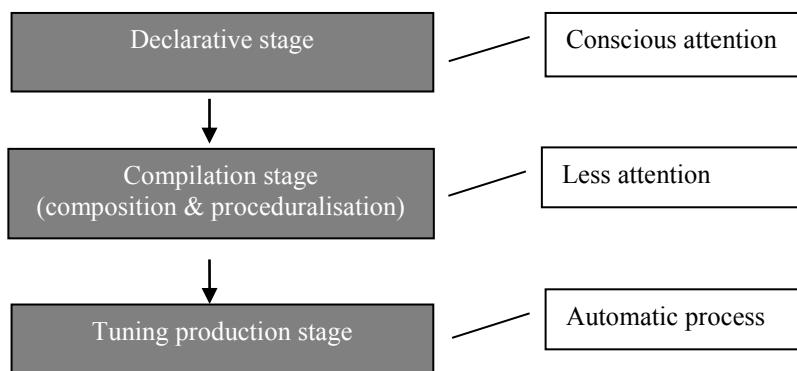


Figure 6: Three stages from declarative knowledge to procedural knowledge

This production model is set by a goal, moves from top to bottom, and starts with an overall decision that leads to concrete steps. For example, IF [you want to read in L2], then [you have to know words, syntax, semantics....]. The separation between declarative and productive memory and the production system convention, however, is denied by connectionism.

3.2.4 Bottom-up approach vs. Top-down approach

Bottom-up and top-down approaches are two strategies of information processing in reading research. The bottom-up approach takes resources from the outside and deals with information with little higher-order knowledge, whereas the top-down approach is a process from inside to outside, which is guided by one's prior knowledge and expectations. In bottom-up models, reading development is considered as a linear accumulative process. The lower-level processes, word encoding and lexical access, play a vital role in reading processes (Gough, 1972; Holmes, 2009). Conversely, in top-down models the reading process starts from higher-level processes; and readers are the main actors who use prior knowledge and context clues to drive the reading process. Goodman's psycholinguistic reading model is a typical top-down model (see 3.3.1). Both views are challenged by the supporters of interactive models (see 3.3.3), who insist that both approaches interact in the reading process.

Howard (1985) proposed that the effective processing of a text requires the use of both top-down and bottom-up processing in cognitive theory. "McLaughlin et al. (1983) drew on cognitive theory in suggesting that learners may achieve automaticity in second language acquisition by using either a top-down approach (knowledge-governed system), which makes use of internal schemata, or a bottom-up approach (an input-governed system), which makes use of external input. In either case, cognition is involved, but the degree of cognitive involvement is set by the interaction between the requirements of the linguistic knowledge of the task and the mental processes used by the readers" (O'Malley, Chamot, 1990:11).

3.3 Reading processes

Reading is assumed to be a holistic unit, a process of constructing meaning in that the higher order process plays a big role, and is presumed to be universal across languages - a reading problem but not a language problem (Goodman, 1967, 1969). Cummins focuses on two questions: the interrelationship between L1 and L2 reading competence, and the transfer of reading skills from L1 to L2, and proposes a threshold theory. Alderson made a clear concept of linguistic threshold hypothesis, in that he assumed that there is a linguistic threshold in L2 before the transfer of reading skill occurs from L1 to L2 reading. Empirical studies involving readers of different language backgrounds suggest that there is a language specific problem in the reading process (Akamatsu, 1999; Koda, 2002; Wang et al, 2003), which challenged the assumption of universal reading - that the reading process is similar across languages. The holistic view of reading also excluded the component skills underlying reading ability that

were ignored in earlier studies. In cognitive theory, reading comprehension is generally considered an active and complex process in which the reader constructs meaning from the written information. In this section, reading processes are presented through four models: a psycholinguistic model, threshold hypothesis, interactive model and componential model.

3.3.1 Psycholinguistic model of reading

It is often believed that reading is processed by first decoding words, then combining the meanings to form phrases, then sentences, and finally constructing the meaning of the whole text. Given that reading is a linear process, lower-level textual components play a big role in the reading process, and higher-level contextual knowledge is of little importance. Goodman, however, describes reading as a “psycholinguistic guessing game”, and strongly emphasizes the decisive function of higher-order processing. His psycholinguistic model has highly influenced L2 reading research (Goodman, 1967, 1973). In his opinion, reading consists of lower-level processing (graphic and word level) and higher-level processing (clause level), and it is a movement from inside to outside, from prediction to comprehension, from what the reader has in his head to what is printed in the text. The flow of outside-inside information is only to process the graphic array of printed items, which invokes the inside-outside flow of what has been learned and stored in the head. Prediction is the core element here, and it is based on prior knowledge (previously learned and stored information) with the printed graphemes. The reading process proves and confirms the predictions. Foreign language reading is possible due to the skills that the readers learned in their L1 reading and is guided by their native language. He also strongly emphasized the higher-level knowledge, such as syntactic and semantic information, contextual and background knowledge sources, and downplays the contribution of basic lower-level knowledge, such as visual word recognition. The better the reader’s capability of prediction is, the less necessary dependence on words via text is.

Goodman’s model is supported by the miscue analysis⁴ of numerous L1 reading studies. “Miscue analysis is a procedure that compares the reader’s observed responses to expected responses as the person reads a text aloud, and then determines if there are any similarities or differences between the errors made by the reader and what is actually in the text” (Nassaji, 2003:262). Using miscue analysis, considerable similarities were found in the reading of EFL learners from a variety of different language backgrounds (Rigg, 1977). Then, it would be expected that reading ability would transfer across languages, as Clarke said “if the reading

⁴ For the relationship between miscue analysis and Goodman’s model, see Cambourne (1977).

process is basically the same in all languages we would logically expect good native language readers to be good second language readers. Furthermore, good readers would be expected to maintain their advantage over poor readers in the second language” (1979). Unfortunately, these research assumptions were not supported by experiments.

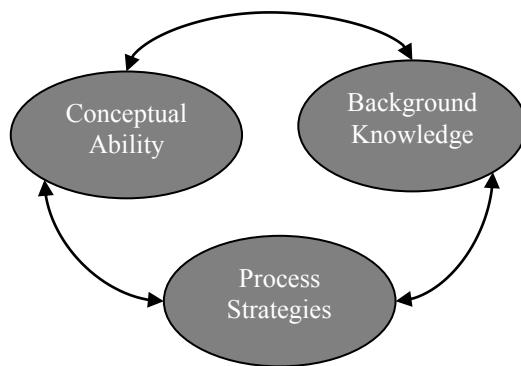


Figure 7: Coady's Model of ESL Readers (1979:9)

On the basis of Goodman’s psycholinguistic model, Coady (1979) further developed it into a model which consists of the reader’s background knowledge interacting with conceptual abilities and process strategies (shown in figure 7). In his opinion, reading is an interactive process between the background knowledge of the readers and the text. The ability to relate the textual information to one’s own background knowledge is required in efficient reading processing. At the same time, he asserts that reading in a foreign language is a reading problem but not a language problem, and it requires the transference of ability or skills in L1 reading, not the learning of new ones. “We have only recently come to realize that many students have very poor reading habits to transfer from their first language, and thus, in many cases, we must teach reading skills which should have been learned in first language instruction”(1979:12). Directly and indirectly, their viewpoints are influenced by Goodman’s view that the reading process is much the same for all languages; reading is universal.

Smith (2004) adopts visual and non-visual information to distinguish what the readers see and what the readers have behind “seeing”, the prior knowledge/background knowledge, which are, in his opinion, two sources of information available while reading. The visual information is necessary but not sufficient to read, so it must be supported by non-visual information that is stored in long-term memory to distinguish the information taken in visually. The relationship is reciprocal between them. “Within certain limits, one can be a tradeoff for the other. The more non-visual information a reader has, the less visual information the reader needs. The less non-visual information that is available from behind the eyes, the more visual infor-

mation is required” (Smith, 2004:74). This reciprocal characteristic is represented by the curved line between visual and non-visual information in figure 8.

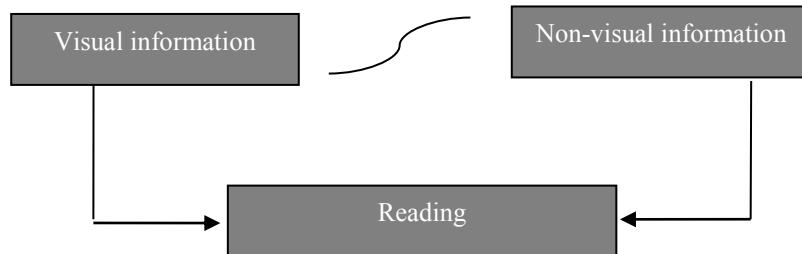


Figure 8: Two sources of information in reading (Smith, 2004:74)

The trade-off between two sources depends on an individual’s behavior and the differences lie in the non-visual information that a reader can bring to bear. Thus, the fact that it is harder for children to read has less to do with what they are actually reading, but results from their little relevant non-visual information. At the same time, insufficient visual information, poor perception of the print, makes it even harder to read, especially for children, and even makes reading impossible. Readers are more dependent on what they see, the visual information, which the brain can handle at any time. If there is a bottleneck (shown in figure 9) between visual information and reading, it makes reading become difficult (Smith, 2004:75).

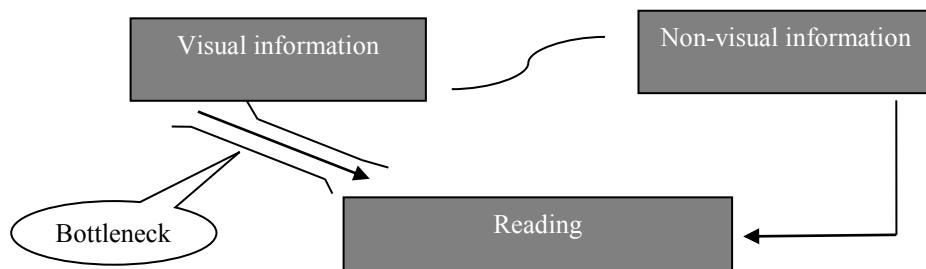


Figure 9: The bottleneck in reading (Smith, 2004:75)

Pearson made the statement: “The influence of psycholinguistics on reading is nowhere better demonstrated than in the work of Kenneth Goodman (1965) and Frank Smith (1971). For both Goodman and Smith, looking at reading from a psycholinguistic perspective meant looking at reading in its natural state, as an application of a person’s general cognitive and linguistic competence” (Pearson, 2009:11).

3.3.2 Threshold hypothesis

Is L2 reading a language problem, or a reading problem? Many studies have been conducted on this “problem”. A language problem, here, refers to inefficient linguistic knowledge that is required by the L2 reading process, i.e. lexical, syntactic, orthographic, etc., and a reading problem refers to insufficient cognitive strategies, such as prediction, inference, retrieval, and so on. Alderson, in his paper *Reading in a foreign language: a reading problem or a language problem?*, raised two hypotheses, a) “poor foreign language reading is due to incorrect strategies for reading that foreign language, strategies which differ from the strategies for reading the native language”; b) “poor foreign language reading is due to reading strategies in the first language not being employed in the foreign language, due to inadequate knowledge of the foreign language. Good first-language readers will read well in the foreign language once they have passed a threshold of foreign language ability” (1984:4). Centered on these two hypotheses, he summarizes the empirical evidence to prove that there is a threshold in foreign language reading and L1 reading strategies’ transfers exist in FL reading. Moreover, he strongly insists that knowledge of the FL is more important in the comprehension of FL texts than reading ability or skills in the L1, and there is a threshold linguistic competence before transfer can occur. That is to say, a certain amount of the L2 linguistic knowledge is necessary in order for L1 reading ability to start engaging in L2 reading.

His opinion was shared by Clark (1979). He conducted an analysis on Spanish adult readers in both L1 and ESL, and found that good L1 readers are significantly better than the poor readers either in Spanish or in English cloze tests. He attributed this to the guessing strategies exhibited by readers using higher-level knowledge of syntax and semantics, which is the same as shown in their L1 reading. However, when the concrete cloze responses were analyzed, good readers made more semantically acceptable responses than poor readers in their L1; while in the FL cloze tests, good readers did not show expected differences from poor readers. “When reading in English, the good readers were superior to the poor readers in that they were able to produce more acceptable cloze responses. Yet when confronted with difficult blanks the good readers appear to be little better than the poor readers in producing high quality guesses” (p.130). Therefore, Clark suggests that there might be a threshold of language competence that hampers good L1 readers from employing their effective L1 reading skills in FL reading. Their limitation in the foreign language would ‘short circuit’ good L1 readers’ reading skill system and they would turn to the strategies of poor readers when confronted with a more complicated task. Thus, there is no certain decline in foreign language reading between a good L1 reader and a poor L1 reader, and either of them could be a poor

foreign language reader. Because of his language problem, a good L1 reader is not able to transfer his L1 reading ability to the foreign language reading. Clark's 'short-circuit hypothesis' implies that no direct transfer of ability or strategies takes place across languages, and there is a language competence threshold to overcome before transfer can happen. This hypothesis was supported by Cummins, not only in its theoretical aspect, but also from an experimental perspective.

To account for the relationship between bilingualism and cognitive development, a threshold hypothesis was proposed by Cummins (1976, 1979). He states that there may be a threshold level of bilingual proficiency that children must attain before the cognitive advantages of bilingualism appear. There is not one threshold, but two thresholds that are identified as the higher and lower threshold levels of bilingual proficiency: "this raises the possibility that there may be not one but two thresholds. The attainment of the first threshold would be sufficient to avoid cognitive retardation but the attainment of a second, higher level of bilingual competence might be necessary to lead to accelerated cognitive growth" (Cummins, 1976:24). Given individual differences, this threshold may vary over a certain span of time.

After Alderson's (1984) publication, the concept of this threshold became much clearer. He indicates that the answer to the question lies in an examination of L2 linguistic knowledge instead of L1. Is L2 linguistic knowledge, or L1 reading ability a better predictor of L2 reading comprehension? Several studies were designed to examine this topic (Carrell, 1991; Brisbois, 1995; Taillefer, 1996; Bernhardt & Kamli, 1995; 1997; Yamashita, 1999).

Brisbois (1995) found that the contribution of L1 reading ability among the higher level readers is twice that of the lower level readers, but there is a very small difference between the higher and lower level readers with regard to the contribution of the L2 language ability. In a study conducted by Taillefer (1996), there is no evidence to show the role of L1 reading ability in L2 reading among both higher and lower level students. The contribution of L2 language ability can explain 19% of the variance of L2 reading ability in the higher level group, but did not significantly account for variance in the lower level group.

Bernhardt and Kamli (1995) indicate that neither L2 language ability nor L1 reading ability can fully explain L2 reading comprehension, but it seems that L2 linguistic knowledge is a more powerful predictor according to the experimental analysis. That is confirmed by a study conducted by Carrell (1991), too. She accounted for 35% of the variance in the L2 reading scores through language and reading ability for a Spanish-English group, and 53% for an

English-Spanish group. Yamashita (1999) had an interesting finding that the different components of L2 language ability (grammar and vocabulary) play different roles at different levels.

3.3.3 Interactive model of reading

Successful reading is not only a perceptual, but also a cognitive process. Most of the current models in L2 reading are interactive ones, which consider reading as a combination and integration of various sources, including both higher-level and lower-level processes (Bernhardt, 1991; Fender, 2001; Grabe, 1991).

Rumelhart (1977) created an interactive model, and emphasized the influences of various components such as feature extraction, orthographic knowledge, lexical knowledge, syntactic knowledge and semantic knowledge on the text processing, and the readers' interpretation. He proposed that the different levels of processing, which compose the information processing system in reading, work independently of one another and operate in a parallel manner. They incorporate a "message center" mechanism that stores the information and redirects it when required, and that enables the various sources of knowledge to interact with each other and thereby higher-level processing to influence lower-level processing. In his model, the data-driven processing of the graphic information via a visual information store (VIS) enters the process, and then a cognitive feature extraction device selects the important features of the graphic input, which goes along with syntactic, semantic, orthographic, lexical and pragmatic knowledge to interpret the information carried by the graphic input in a pattern synthesizer. The output of each level is sent to a central organizer, in which a decision will be made in light of the complete information. Reading comprehension is ultimately the combination and integration of the parallel application of sensory and non-sensory sources of information contained in the message center. Basically, Rumelhart's model stands on a bottom-up/data-driven process. It emphasizes the strength of the bottom-up process at the cost of the top-down process, while Stanovich (1980) makes use of the strength of both bottom-up and top-down processes. He introduced a similar interactive-compensatory model.

In his opinion, reading is an interactive process and readers adopt bottom-up and top-down processes simultaneously and alternately depending on the texts, motivation, prior knowledge, and so on. When one sort of information is not available, another sort of information can additionally compensate. To account for individual differences between good readers and poor readers in approaching a text or reading, he argued that there must be a supplementary mechanism to compensate for a deficiency in one level of processing from the other level. One of the processors fails; the others will automatically facilitate processing despite its absence. To

At this point, his model offers theoretical support to researchers for distinguishing different reading approaches. Both lower-level word recognition and graphic-phonetic information, and higher-level syntactic and semantic information play a significant role in reading comprehension, but it is mainly lower-level processing that orients reading comprehension (Stanovich, 1982, 1984). Higher-level knowledge resources can compensate for a deficiency in word recognition at the expense of cognitive capacity, which will impose an extra burden on the reader's attention. In turn, the direct outcome is that the reader has a lower capacity or fewer resources left for reading comprehension. To solve this problem, the reader must have a high competency in lower-level processing, which "exhausts little attention developing higher-level contextual expectancies" (Stanovich, 1982:83). Thus, the reader has more attention to deal with reading comprehension. This view is shared by many cognitive psycholinguists.

Schema theory combines the reader, text and context, and it regards reading comprehension as an interactive process between the text and the prior knowledge of readers. Readers are regarded as a composer, who is rewriting the text with a certain expectation. The text is like a bridge to connect the reader and the writer. "The role of background knowledge in language comprehension has been formalized as schema theory", and "a text only provides directions for listeners or readers as to how they should retrieve or construct meaning from their own, previously acquired knowledge" (Carrell & Eisterhold, 1983:556). While reading, the reader has to activate the right schemata to reach the expectation of the writer; when there is a mismatch, it might result in failure of comprehension.

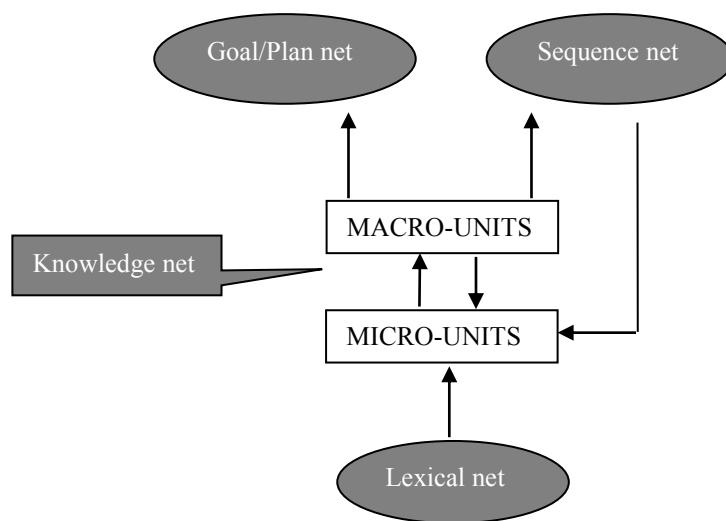


Figure 10: A connectionist model of text comprehension (adapted from Sharkey, 1990:488)

Given the studies at that time, Sharkey (1990) presented a connectionist model of text comprehension, which includes sentence processing, word recognition, and memory distortion, as

shown in figure 10. In this model, there are four sections which correspond to three components: “(a) a knowledge net, in which individual propositions are assembled into schemata; (b) a lexical net, in which micro-features are assembled into lexical entries, and (c) the interface between (a) and (b), which maps micro-features in the lexicon onto propositions in the knowledge net”(p.487). The sequence net and goal/plan net are supposed to be controlled by the macro-unit configuration. “The macro-units are compacted representations of the lower level propositions. Their role is to categorize the input propositions, such as a plan for the sequencer, and interface the goal-plan module”(p.491).

3.3.4 Componential model of reading

In the view of de-contextualization, reading can be divided into several parts or components. Recent studies have regarded reading as a set of sub-skills (e.g. Carr& Levy, eds. 1990; Perfetti, Landi, & Oakhill, 2005). The notion of componential theory involves those relevant skills/components, which allows relationships to be traced among components, and the interconnections within a component. Under the componential paradigm, decoding skills and the relationship between L1 and L2 are closely examined.

“Successful reading comprehension reflects the presence of many component capabilities. Comprehension relies on decoding skills (reading words accurately and fluently, accessing lexical representations), knowledge in several domains (vocabulary, linguistic structure, and discourse as well as world knowledge), and cognitive processing capacities (memory for text, accessing relevant background knowledge, drawing justified inferences).” (August, Francis, Hsu and Snow, 2006:222). According to Sternberg (et al., 2001), a componential theory of reading comprehension enables the readers to understand a text in almost any situation. “Componential reading comprehension is an instructional approach that encourages students to capitalize on their strengths to learn important content, including what they come to understand through integrating the analytical, creative, and practical aspects of reading text.” (Randi, Grigorenko, & Sternberg, 2005:28).

The concept of componential modularity offers us a great opportunity to prove our ideas, and the multi-component model leaves it open to any potential interactive variables and makes any attempts possible. Many approaches in reading research have been tried in which reading ability is componentially analyzed; and the idea of modularity has been used to frame the various relevant components. The componential modularity approach in reading research is not intended to make a claim that it is the best or the most correct, but it provides a comprehen-

sive framework for better understanding reading ability, especially in those language-specific studies.

Componential or component skill analysis is usually guided by the information-processing structure of the reading system. Carr, Brown, Vavrus and Evans (1990:3) illustrate a general approach of component skills analysis and the major processing mechanisms involved in reading comprehension:

- (1) Identifying the set of mental operations involved in any given performance;
- (2) Identifying the organization of the operations and the pattern of information flow among them;
- (3) Identifying the means by which the system of operations is controlled and coordinated, including the stimulus conditions, strategies, and capacity demands associated with effective performances;
- (4) Identifying parameters of the system of its individual operations, its organization and its control – whose variation is responsible for individual and developmental differences in the system's overall effectiveness and efficiency.

A framework for comprehension has also been proposed by Perfetti (2005), in which he believes that comprehension takes place while the reader is building a mental representation of a text message, and this representation brings about language processing across multiple levels, such as word level (lexical processes), sentence level (syntactic processes) and text level, which interact with the reader's conceptual knowledge. The different information sources interact freely, or within a certain extent. Sometimes it can be dependent on linguistic knowledge, sometimes it is independent. Moreover, reading is considered as an integrative interaction and involves three major components: “(a) *decoding* (extracting linguistic information directly from print); (b) *text-information building* (integrating the extracted information into phrases, sentences, and paragraphs); and (c) *reader-model construction* (synthesizing the amalgamated text information with prior knowledge)” (Koda, 2007:4).

“Multi-component views are open-ended because any linguistic, cognitive, or social skill might potentially influence comprehension” (Paris & Hamilton, 2009:39). The analysis of reading is a complex activity that concerns a range of skills from linguistic to cognitive. Therefore, it would be useful to break it into manageable tasks in order to measure reading ability by different components.

3.4 Linguistic components of reading

3.4.1 Word recognition

Word recognition or decoding has been proven by numerous studies. It has a strong relationship with reading development, especially in the early stages of reading. From the simple view of reading to the componential analysis of reading, word recognition has never been ignored. The strength of the relationship between decoding and reading comprehension decreases with the transformation from beginning readers to advanced readers.

Word recognition or decoding is “the transformation of a string of letters into a phonetic code”, which does not indicate using a rule-based mechanism and saying a word aloud (Perfetti, 1985:90). Decoding is below the word level and on the sequence of graphemes and phonemes. Advanced readers might be faster at decoding and more accurate on low-frequency words and pseudo-words. It is assumed that readers are different in reading comprehension when they are different in word recognition.

In the verbal efficiency theory, Perfetti (1985) assumes that reading comprehension and decoding compete for the limited capacity of the short-term memory; and reading comprehension would be inhibited when a lower-level process, like decoding, takes up too much of this capacity. This viewpoint is similar to the idea of Daneman and Carpenter (1980) that skillful readers who are more efficient at lower-level processes such as decoding, lexical access would have more space left in their working memory for higher-level processes. A study by Holmes (2009) reveals a strong association between efficient word recognition and reading comprehension. However, Stanovich (1980) found that students who are poor at decoding seem to apply higher-order processes as well.

The word recognition process is the analysis of visual input into linguistic symbols, which is a prerequisite to lexical access. The experimental measurement of word recognition is usually through letter strings of true words and pseudo-words. The role of word recognition in reading comprehension does not yet have a consensus. It might change with experimental designs and with languages as well.

3.4.2 Lexical knowledge

Word recognition is the first step to accessing lexical knowledge. For a fluent reader, it might be impossible to suppress himself from accessing the meaning of the word. In this context, lexical knowledge is an equivalent of word recognition. However, for children or non-fluent

readers, the process of word recognition might be initiated, but without accessing the meaning of the word, which is a good argument to distinguish between word recognition and lexical knowledge (Grabe, 2009).

It is already quite clear that vocabulary is relevant for reading comprehension, and the accumulation of words will not hinder reading comprehension. Successful comprehension is heavily dependent on vocabulary, and the contribution of vocabulary knowledge to reading comprehension has been measured by many studies (Stanovich, 1986; Carr & Levy, 1990; Just & Carpenter, 1992; Perfetti, 1999; Von Gelderen et al, 2003; 2004; &2007; Segalowitz, 2000; Koda, 1996). As vocabulary expands, readers' ability to guess the meaning of unknown words increases as well (Hsueh-chao, Nation, 2000). However, it is not always the case that people comprehend more with a larger vocabulary size, e.g. the Chinese language is a more context-dependent and less word-dependent language than English (Palij & Aaronson, 1992).

On the other hand, the reverse effect of reading on vocabulary has also been found, for example, on average, 15% of the unknown words that students encountered were acquired during normal reading (Swanson & de Groot, 1999). In addition, a reciprocal causal relation between reading development and vocabulary development was discovered as well (Bast, 1995). Moreover, it is claimed that free reading is one of the most important sources to enlarge vocabulary (Nagy, Herman & Anderson, 1985).

3.4.3 Text comprehension

Text comprehension, under the influence of linguistic input, is predominantly thought of as a bottom-up model of processing, which is apparently not full sided, as far as the reader is concerned. A wealth of research has been conducted at the level of text comprehension, and the argument still focuses on higher-order and lower-order processes. A full-fledged model of reading is not achievable yet. Considering individual differences and language-specific characteristics, it is unlikely to provide a concrete criterion for good readers and poor readers.

Print and speech are the two modes of communication, but they have a shared-linguistic knowledge. From the simple view of reading, Cain (2010) predicts in her book *Reading Development and Difficulties* that decoding and language (listening) comprehension are necessary to become good readers (figure 11).

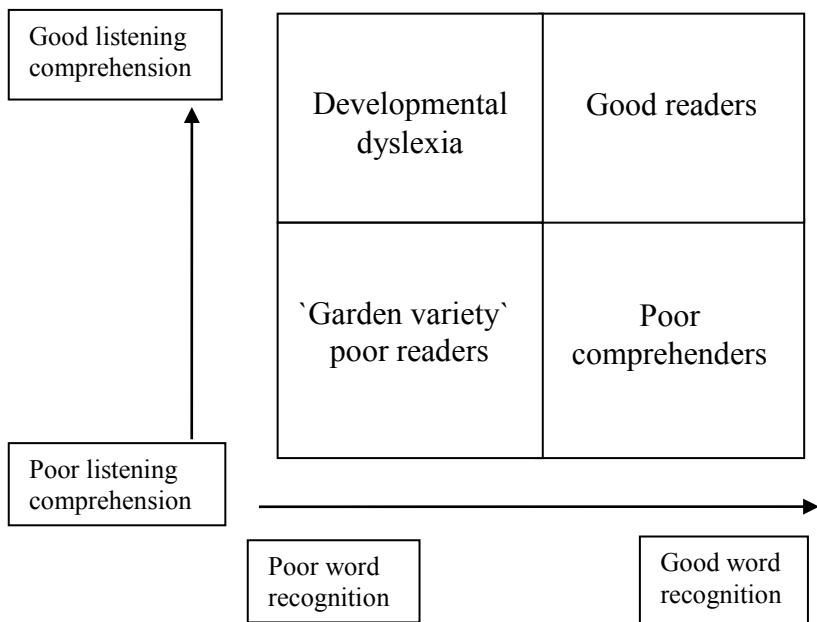


Figure 11: Reader types predicted from the simple view of reading (Cain, 2010:218)

In the dimensions of language knowledge and processing ability, cognitive ability, and metacognitive strategic competence, Pang (2008:11) outlines a profile of good readers: automatic and rapid word recognition; automatic syntactic parsing and semantic proposition formation; reasonable size of vocabulary; awareness of text type and discourse organization; good store of cognitive strategies; ready access to a variety of purposeful strategies; higher and proficient use of strategies; effective use of prior knowledge; supportive use of mother tongue in L2; good knowledge of cognition; competence in monitoring the comprehension process; and competence in evaluating and regulating strategy use to achieve maximum comprehension. Besides the incapability of one or more of these items, poor readers seem to be unable to integrate information resources.

Text comprehension for readers is to construct a representation of the situation described in the text, rather than a description of the actual text (Cain, 2010). This representation is also called a mental model or a situation model that reflects the integration of prior knowledge with the information explicitly in the text (Goldman, Golden, & van den Broek, 2007). Traditionally, L2 reading comprehension emphasizes the language to be comprehended, not the reader. In this linguistic view, reading comprehension involves studying the meaning of words, phrases, sentences in the texts. Meaning is isolated from the reader. It is mostly due to linguistic knowledge that people differ from one another in the ability to read. Cognitive strategies and metacognitive awareness of readers, however, are easily ignored. In comprehension research, text reading is regarded as an interaction between linguistic stimuli and the cognitive

ability stored in the reader's memory. The overall picture of the interaction between linguistic knowledge and cognitive strategies of readers is opaque. Meaning is not only inherent in a text, but also a cooperative effort of linguistic knowledge and the cognitive strategies of a reader. Acquiring the meaning of a text is a reconstruction process through activating all prior knowledge. "Reading is a complex behavior that involves interactions among perceptual processes, cognitive skills, and metacognitive knowledge" (MyersII & Paris, 1978:680). Basically, reading comprehension is dependent on various sorts of linguistic skills, as well as on an independent variable – metacognitive awareness.

3.5 Metacognitive awareness of reading comprehension

Reading, a complex multivariate cognitive process, can not be fully represented by a simple definition. The cognitive basis of reading is to understand how readers learn to read and how readers process a text. Incontrovertibly and undeniably, reading can not exist without either readers or texts. Readers and texts are the two indispensable elements in the activity of reading. They are dependent on each other. Reading is an interaction between readers and texts that contain writers' intentions, and equally plausibly, between the reader and the writer. Readers must have something to read, and texts must have readers, otherwise there is no "reading" (Alderson & Urquhart, 1984). If the text is a static factor, the reader will be a dynamic factor. Besides the nature of the texts or the contexts, reading can never be separated from the objectives of readers, prior knowledge, metalinguistics, and metacognition such as reading strategies.

In the 1970s, metacognition became a meaningful factor in reading research. Studies of metacognitive awareness in reading comprehension have shown that metacognitive awareness plays a big role in understanding reading comprehension (cf. Baker & Brown, 1984; Schoonen, Hulstijn, & Bossers, 1998; Israel, Block, Bauserman & Kinnucan-Welsch, 2005, Isrel & Duffy, 2009). The way the readers integrate reading strategies into the reading process to achieve their purposes during reading reflects the variety in metacognitive awareness. Metacognitive awareness is presented to the readers in the form of the ability to use strategies to regulate the reading process. It is another predictor of reading comprehension besides a reading proficiency test or an intelligence test score. Metacognitive awareness might answer some questions that could not be explained by those 'objective scores'. To this extent, reading is a dynamic interplay of cognitive relationships.

When metacognitive awareness is concerned, those abstract words, such as classification, categorization, conduction, deduction, might come to mind. Actually, it is, in most cases, a

kind of adaptability and flexibility, and refers to those strategic readers who make it more apparent and conscious. Sometimes, it might be manifested in the form of a ‘habit’, other times as a ‘conscious routine’. They adapt this kind of awareness of L1 reading to the L2 reading (Paris, Lipson, & Wixson, 1983).

Metacognition is normally assumed to be relatively independent of a text. Theoretically, this kind of metacognition is acquired and maintained in L1 reading, and can be transferred to L2 reading. Especially, in the view of psycholinguists, the lower level processing in L1 reading is more efficient than in L2 reading, and thus people reading in their L1 can have more cognitive capacity to deal with the text and strategies, so the readers in L1 deserve the title of “strategic readers”. On the other hand, in the view of the interactive compensatory supporters, readers have to activate more metacognitive knowledge to compensate for the lack of the lower level processing in L2 reading, so that the readers must possess sufficient metacognitive knowledge. Compensatory strategies at the “macro” level are oriented towards compensation for failure at the “micro” level. Whether L2 reading is, in the end, a “language problem”, or whether L2 reading is, after all, a “reading problem”, and whether readers adopt the same strategies or borrow strategies from L1 reading still need to be proven.

In this section, the development of metacognition is reviewed from the definition of metacognitive awareness; metacognitive strategies used by bilingual students; metaognitive processes in reading; and the assessment of metacognitive awareness in experimental study.

3.5.1 Metacognitive awareness

Metacognition began to appear on the research stage from the late 1970s. It is a meaningful extension to reading research and makes up for the deficiencies of the studies of schemata theory and text analysis that put more emphasis on declarative knowledge while ignoring procedural knowledge: how to engage a strategy for comprehension or memory (Pearson, 2009). As far as metacognitive awareness is concerned, we cannot by-pass those pioneers who led the early work in metacognition: Flavell, Brown and his associates.

The concept of metacognition or metacognitive awareness was first proposed by Flavell, and in his article, *Metacognition and Cognitive Monitoring: a New Area of Cognitive-Developmental Inquiry*, he defined it as “knowledge and cognition about cognitive phenomena” (1979: 906), and tied it to cognitive monitoring or regulation. He incorporated metacognitive knowledge and metacognitive experiences in a model of cognitive monitoring, and de-

scribed it thus: “a wide variety of cognitive enterprises occurs through the actions of and interactions among four classes of phenomena (Flavell, 1979: 906-907):

- | | |
|-------------------------------------|--|
| (a) <i>Metacognitive knowledge</i> | Segment of your (a child’s, an adult’s) stored world knowledge that has to do with people as cognitive creatures and with their diverse cognitive tasks, goals, actions and experiences. |
| (b) <i>Metacognitive experience</i> | Any conscious cognitive or affective experiences that accompany and pertain to any intellectual enterprise. |
| (c) <i>Goals/tasks</i> | The objectives of a cognitive enterprise. |
| (d) <i>Actions/strategies</i> | The cognitions or other behaviors employed to achieve them. |

Metacognitive knowledge is characterized as the combination, interaction and integration of information around three variables: person (the nature of oneself and others as processors, including intra-individual differences, inter-individual differences and universals of cognition), task (understanding the nature and demand of the task), and strategy (sorting the goals and adopting appropriate strategies). Simply speaking, metacognitive knowledge is the individual knowledge or beliefs about the factors, e.g. using strategy A rather than B in Task X rather than Y to achieve a certain goal. Metacognitive experiences are defined as “items of metacognitive knowledge that have entered consciousness” (Flavell, 1979: 908), and sometimes this can occur in a momentary sense, that can happen at any time, to trigger the appropriate cognitive strategies in order to solve this task. Metacognitive knowledge and metacognitive experience are manifested and altered in accordance with goals/tasks and actions/strategies. They both can occur in conscious form or unconscious form. Metacognitive knowledge can have a big effect on cognitive enterprises of people, and it can lead to a large variety of metacognitive experiences. On the other hand, metacognitive experiences can activate strategies at either cognitive levels (to make cognitive progress) or metacognitive levels (to monitor), affect metacognitive knowledge by deleting, adding or revising, and change the goals by abandoning or revising an old one, or establishing a new one (Flavell, 1979).

Based on Flavell’s model, metacognition is further elaborated into two interrelated clusters of information: knowledge of cognition and regulation of cognition (Baker & Brown, 1984; Brown, 1985). The first cluster, *knowledge of cognition*, focuses on readers’ individual knowledge about their own cognitive resources and the compatibility between readers and the reading situation, which are usually distinguished as three kinds of metacognitive awareness: declarative, procedural and conditional knowledge (Brown, 1987; Jacobs & Paris, 1987; Schraw & Moshman, 1995). It is also known as the *that, how, when and why* of metacognition (Paris, Lipson & Wixson, 1983). Readers know that prior knowledge is important for reading

comprehension, how to use strategies with their prior knowledge, and when and why to adjust their reading to the goals. The second cluster, *regulation of cognition*, is the metacognitive activities that help to solve problems, which consists of self-regulatory skills such as *planning, checking, monitoring, testing, revising and evaluating* (Baker & Brown, 1984; Brown, 1985). In their own words, “these indices of metacognition include *planning* one’s text move, *checking* the outcome of any strategies one might use, *monitoring* the effectiveness of any attempted action, *testing, revising and evaluating* one’s strategies for learning” (p.354/p. 502). These skills are not necessarily stable, even though older children and adults use them often. When the task is simple enough, younger children can also use self-regulatory skills. When the task is hard enough, neither older children nor adults can access their regulatory skills (Brown, 1985). As Pintrich and Zusho (2002:261) state: “the active control of cognition may be a rather late-developing phenomenon, coinciding with a developmental shift in adolescence that enables students to have their own thoughts not just as objects of their thinking, but also to control their own thinking”. Adolescence is a fast-growth period for metacognitive awareness.

Metacognition is considered to be a late-developing skill. Knowledge and control are two key metacognitive factors concerning what readers know about their cognitive resources and their regulation. In reading, regulation includes “the awareness and ability to detect contradictions in a text, knowledge of different strategies to use with different text types, and the ability to separate important from unimportant information” (Carrell et al., 1998:101). As far as regulation is concerned, strategy use seems to play a big role while reading. To be a strategic reader, people have to first know about strategies.

3.5.2 Metacognitive strategies

Strategies usually contain two levels: *cognitive* and *metacognitive*. “Metacognitive strategies are the routines and procedures that allow individuals to monitor and assess their ongoing performance in accomplishing a cognitive task”(Dole, Nokes, & Drits, 2009:349). They have often been considered as comprehension monitoring (Weinstein & Mayer, 1986). The assumption of metacognitive strategies is a conscious process, so the key issue of metacognitive strategies is to what extent these strategies are under conscious control of the readers (Dole, Nokes, & Drits, 2009).

Metacognitive strategies are not opposed to cognitive strategies. Cognitive strategies are often described as strategies that a reader is trained to use, such as guessing from context, noting discourse organization, recognizing a transitional phrase, skipping a word, identifying a known word part, forming a question about an author, or identifying a main idea; whereas,

metacognitive strategies require more explicit awareness of reading itself to support the goals of reading, and a conscious recognition of miscomprehension (Grabe, 2009).

Paris, Wasik, & Turner (1991) depicted a reading event divided into three phases: preparing to read, constructing meaning while reading, and reviewing and reflecting after reading. A strategic reader is supposed to be clear about the goals for reading, skim the text to get information about the length and structure of the text, and activate prior knowledge at the phase of preparing to read. At the second phase, he should read selectively, read quickly irrelevant information or reread important, difficult or interesting text; identify main ideas; predict; make inferences; interpret and evaluate; integrate ideas into a coherent representation of the text; and monitor understanding. Lastly, a strategic reader should keep on posing self-questions for understanding; invoke strategies to review the text and comprehension; summarize; and continue to process the text based on reading goals (Pressly, 2002 cited in Griffith & Ruan, 2005:7). Some examples of specific strategies are listed in Carrel et al. (1998:100-101): (a) establishing objectives in reading, (b) evaluating reading materials, (c) repairing miscomprehension, (d) evaluating the developing understanding of text, (e) analyzing the text and paragraph structure to clarify the author's intention, (f) adjusting reading speed and selecting cognitive strategies accordingly, and (g) engaging in self-questioning to determine if the objectives have been reached.

We do not believe that the strategies are obviously distinct in many reading situations. However, due to individual factors and the adaptions of strategies, it is impossible to list them all. Metacognitive strategies are also one type of strategy, and in the assumption of metacognitive strategies, we have to know about the strategies and how to use them effectively. Therefore, metacognitive processes in reading that back up the strategies might offer better insight than the strategies themselves.

3.5.3 Metacognitive processes in reading

Metacognitive processes in the field of reading research are composed of comprehension monitoring that entails deciding whether individuals understand or not (evaluation), and taking appropriate steps to correct whatever comprehension problems they detect (regulation) (Brown, 2005). Based on the theoretical explanations of Backer and Brown (1984), Schmitt (2005) depicted the flow of metacognitive processing while reading, which has three phases: planning, monitoring and revising (see figure 12).

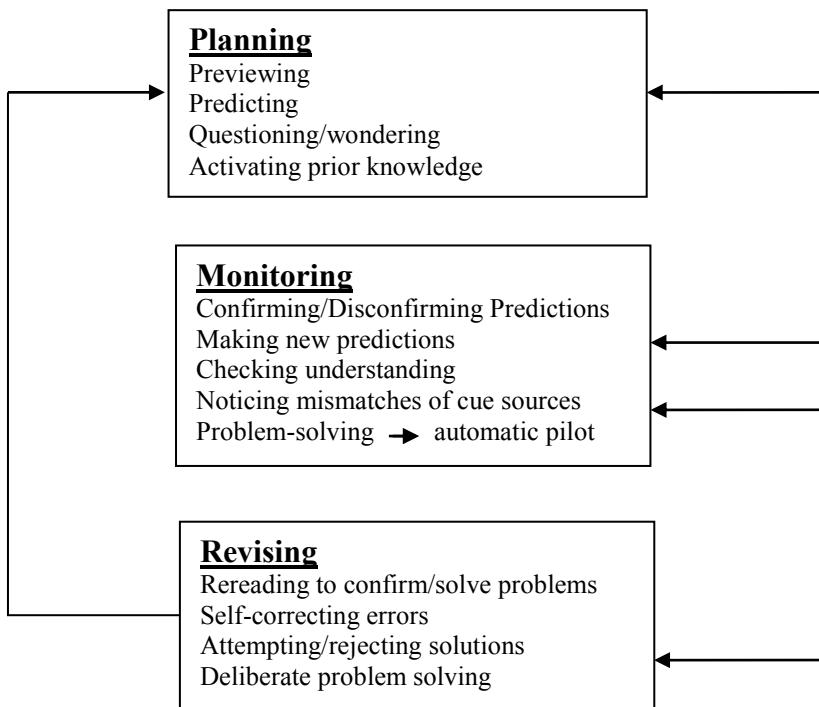


Figure 12: Metacognitive control (Schmitt, 2005:104)

“Metacognitive processes are presumed to take place when we think about our own thing, for instance, when we reflect on whether we know something, whether we are learning or whether we have made a mistake. Some researchers are inclined to regard metacognitive processes as another special set of skills which have to be taught and learned. On the other hand, children learn many things, including talking and much of literacy, without awareness of learning. And we are usually aware when we are confused by something, or when we don’t know something at a time when some knowledge is personally relevant and important to us. Metacognition could be regarded as a new fangled label for the old fashioned concept of reflection” (Smith, 2004:29).

Griffith and Ruan (2005) argue that the metacognitive processes of a skillful reader monitor and direct comprehension. The reader incorporates *macro and micro processes* with prior knowledge or context to construct a vivid mental picture of the text. At the micro level, the reader is working on vocabulary and sentences, from individual words to a phrase and further to a meaningful unit. At the macro level, the reader deals with the text structure, figures out the relationships between ideas, and relies on summarization and inference to rebuild a simplified presentation of the text. Above the micro and macro levels, the reader has to enable the information of the text to connect with the prior knowledge, which is under the domain of the metacognitive awareness, to fulfill the reading purpose. The ongoing processes of skilled

reading (see figure 13) also contains cognitive processes within the framework of metacognition (Griffith & Ruan, 2005:6).

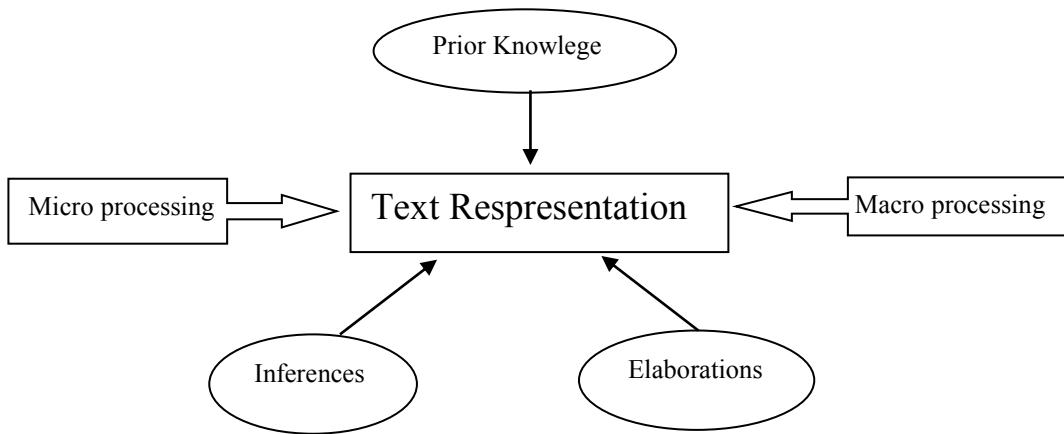


Figure 13: The ongoing metacognitive process of skilled reading

The contributions of the metacognitive process to reading comprehension have been recognized. More than 25% of the variance in reading comprehension among 7th and 8th grade students can be explained by metacognitive awareness, and another 5% can be accounted for with reading self-concept (Roeschl-Heils et al., 2003). Also, a longitudinal study of children between 8 and 11 years of age found that comprehension monitoring and working memory are significant predictors of comprehension, and the authors suggested that providing instruction in comprehension monitoring and inference making can help circumvent problems in reading comprehension (Cain, Oakhill, & Bryant, 2004). When text-comprehension is raised up to the level of a metacognitive process, a set of steps for metacognitive awareness may be carried out (see table 6) (Grabe, 2009:224).

-
1. Set (or reset) reading goals
 2. Expect to build a coherent interpretation of a text and establish the main ideas of a text
 3. Make inferences as necessary in line with our goals
 4. Monitor comprehension to maintain a coherent interpretation and awareness of main ideas
 5. Recognize when we are losing coherence of interpretation or the reading output does not match our reader goals
 6. Summarize the main ideas of a text
 7. Engage various strategies to help repair an incoherent interpretation
 8. Evaluate the reading input in various ways beyond simple understanding
-

Table 6: Metacognitive processes for comprehension

An important issue in L2 reading comprehension is that an L2 reader might not be able to decode all the linguistic items in a text, and he would rather look for other internal resources,

for example metacognitive strategies, to compensate for the deficit of linguistic knowledge. Hence, in practice, the measurement of metacognitive awareness would be a critical factor, especially in an experimental research study.

3.5.4 Metacognitive assessment

“Metacognitive assessment is defined as an evaluation of a reader’s awareness and knowledge of the mental processes engaged during reading. It also tests if a reader can monitor, regulate, and direct his thoughts before, during and after reading to obtain a complete comprehension of a text” (Block, 2005:84).

Self-reporting is one of the popular methods to assess metacognitive aspects of strategic reading, as it reveals how readers make plans, monitor their comprehension, and resolve problems they encounter (Pressly & Afflerbach, 1995). Similarly, to promote the development of metacognitive awareness, there is a method called *rubric* to ask students to assess their own understanding, by evaluating, regulating and monitoring their work, by which they will spot areas that need improvement. “A rubric, which includes statements to assess if metacognitive skills have been implemented, is one way to assess if students are implementing metacognitive skills before, during and after reading, as well as a means for students to assess their work. A rubric to assess metacognitive skills should include analyses, such as: checked my comprehension during reading, reread when it seemed necessary, looked back to make inferences, made predictions of what might come next, checked my memory of what was read, asked questions, self-monitored, and wrote a summary after each page before moving on to the next page” (Samuels et al, 2005:56).

Another common assessment is by an interview that might be composed of open-ended questions. The first reading interview was conducted by Myers and Paris (1978). Later on, different types of interviews were created to measure the frequency and value of different strategies used by children (Myers & Paris, 1981; Paris & Jacob, 1984; Wagner, Spratt, Gal, & Paris, 1989; Paris, 1991). Based on that, Schmitt (1990) created the Metacomprehension Strategy Index (MSI), which is a 25-item multiple-choice survey, focusing on the strategies used before, during, and after reading. The strategies addressed in the survey include declarative and conditional awareness, ranging from predicting and verifying, previewing, purpose setting, self-questioning, background knowledge, summarizing, to applying repair strategies. Each item is formulated either as “before I begin reading, it is a good idea to”; “while I am reading, it is a good idea to”; or “after I have read a story, it is a good idea to”.

Mokhtari and Reichard (2002) designed a 30-item Likert survey that addresses metacognitive awareness of reading strategies (MARSI). MARSI aims to assess the strategies used by students in grades 6-12 for academic reading, and has three subscales – global reading strategies, problem-solving strategies, and reading support strategies. Students are supposed to circle the number indicating how often they engage in this activity, for example, 1= “I never or almost never do this”; and 5= “I always or almost always do this”. Mokhtari and Sheorey (2002) were initially inspired to design a survey concerning metacognitive awareness and perceived use of reading strategies specific to ESL students while reading academic material such as a textbook, and they called this the Survey of Reading Strategies (SORS). SORS was adapted from MARSI.

Instead of strategies, Van Gelderen and her colleagues (et al., 2003, 2004, & 2007) measured metacognitive knowledge by a questionnaire that contained 80 statements concerning text characteristics, and reading and writing in general, some of which are specific to English or Dutch. The students were expected to say “agree” or “disagree”.

Whatever the form may be, self-reporting of thinking, interviews and surveys are revealed to be the three main instruments used by researchers. They try to access readers’ mental activity that constructs meaning from words and texts. To be more efficient, Paris and Flukes (2005:130) identified five fundamental principles that guide the study of metacognitive assessment (see table 7).

Assessments of metacognition should

1. Focus on important reading strategies that can be used widely and frequently.
2. Measure children’s personal conceptions and perceived values of various reading strategies.
3. Be developmentally sensitive to children’s progressive reading knowledge and proficiency.
4. Supplement and complement existing measures of reading fluency and comprehension.
5. Be aligned with instruction so they provide diagnostic and prescriptive information about specific reading strategies.

Table 7: Five design principles for the assessment of strategic reading

Baker and Cerro (2000) conducted a literature review on the assessment of metacognition in children and adults, critically examined the instruments and approaches used in research, and found out that few good instruments on metacognitive assessment were available, especially among younger students. They also suggested that teachers need to be cautious in using those conclusions and recommendations.

Besides linguistic knowledge and metacognitive awareness, language specificities might have an effect on reading as well. Regarding the uniqueness and variety of languages, there might be something interesting to discover in reference to the distance between L1 and L2.

3.6 Language distance effects on reading

Language distance, here, is the linguistic distance between two languages. “Linguistic distance refers to the degree of structural similarity between two languages” (Koda, 2007: 27). When two languages are closely related, it is assumed that the shared structural properties require similar processing demands. Therefore, it is believed that language distance should be an indicator of the differences in reading processes among L2 readers with diverse L1s (Koda, 2007).

Today, the writing systems in use, generally speaking, belong to two broad categories. “The first category is those in which each symbol represents a single morpheme, and the written symbol is shaped directly into meaning. Examples include Chinese..... In the second category, each symbol represents a speech sound, and the relationship of a sign to its meaning is mediated through the phonological system of the spoken language. Writing systems in this category can be further subdivided into alphabetic scripts such as English, in which each written symbol represents a phoneme; and syllabic scripts.....”(Lee, Wee, Tzeng & Hung, 1992:427-428). Chinese and English, as an outstanding example of a non-alphabetic and alphabetic language system, are obviously different in terms of orthography. The knowledge of writing-orthography is indispensable for reading, along with other aspects, like linguistic knowledge, cognitive strategies and metacognitive awareness, world knowledge, etc., which are often considered as necessary components of reading comprehensions. Without acquiring the written code, reading cannot take place. This fundamental factor is a significant factor in learning to read.

The ability to read both fluently and accurately requires the acquisition of multiple skills. Researchers have made significant progress on word reading, and have gotten to know the alphabetic principle in word reading, recoding written letters into corresponding sounds to generate the pronunciation of a written word (Byrne, 1991). Proficient readers require fast and automatic word recognition (Ehri, 2002, 2005; Stanovich, 1982), which is also to say orthographic learning (Castles & Nation, 2006). However, Chinese employs a logographic writing system, in which a character is the basic grapheme, and which implements a “phonology bypass”/ “direct access” route (Chen, 1996). It has been estimated that around 72% of the characters that Chinese children learn in primary school are semantic phonetic compounds (Shu,

Chen, Anderson, Wu & Xuan, 2002). Meanwhile, morphological awareness and orthographic knowledge are found to be important for Chinese literacy acquisition (Tong, McBride-Chang, Shu & Wong, 2009).

It is often believed that there would be a transfer effect on L2 once a language was established (e.g. L1). “The aspects of transferred awareness, which are attuned to dominant first-language properties, are gradually adjusted to those unique to the second language”, which is also the belief of the metalinguisitc model, which predicts that “language distance is responsible, in part, for the rate at which second language metalinguistic awareness and related reading sub-skills evolve among learners with diverse first language backgrounds” (Koda, 2008:85). Thus, it would be a good explanation for the differences in the efficiency of extracting information. ESL/EFL studies have found that learners with an alphabetic language background are more accurate and faster in their performance, compared to learners with a non-alphabetic language background (Koda, 2000; Muljani et al., 1998). Dual-language research is critical for determining how the two languages interact during L2 processing, which is also applied to reading research. English reading research dominates the reading field, and the findings are mainly from English learners with an L1 that has an alphabetic system. A greater distance between L1 and L2 might bring us some interesting features to broaden the scope of reading research.

3.7 Summary

First of all, some terms often used in reading research were introduced in this chapter. In a chronological manner, several dominant models were reviewed. Following that, the linguistic component in reading was described from the level of word recognition and lexical knowledge, and the level of text comprehension. Afterwards, metacognitive awareness, an independent variable in reading comprehension, was addressed as well, and was reviewed from its development, application (e.g. metacognitive strategies) and assessment. In the end, language distance effects on reading were discussed. Research in English, either as L1 or as L2, has been conducted very often, which has solved some “puzzles” and meanwhile has led to more discussions as well.

Either a top-down model (psycholinguistic model) or a bottom-up model (threshold hypothesis or verbal efficiency theory) in reading research has its own advantages and disadvantages. Neither interactive model nor componential model can fully explain the reading process. Although we have not reached a consensus yet, linguistic knowledge is acknowledged to be a necessary component of reading comprehension.

In the reading processing, the reader has to firstly decode graphic symbols in the text, and check word recognition; this information is then passed on to higher level processing, syntactic and semantic analyses. The microstructure of the text depends on the words and the syntactic relationships to form semantic units. When lower level processing, like word identification, is insufficient, there will be a burden on higher level processing because of the limited capacity of the brain. When one pays more attention to a lower level process, it must be at the cost of the others. Therefore, there is a linguistic component in reading comprehension, but as to whether there is a threshold effect, the discussion never stops. At a macrostructure level, the individual's metacognitive knowledge has to be taken into account. Metacognitive awareness has shown its 'charming' and influential effect in reading research. It is highly relevant to reading ability, though it is independent of the text. If information processing procedures reflect the properties of languages, then metacognitive awareness is related to reading skills or strategies. Then, having nothing to do with the L2 text and reading skills, i.e. as an independent variable, L1 reading proficiency might be another predictor of L2 reading comprehension. Finally, a componential model of L2 reading comprehension was theoretically founded.

In summary, this dissertation is based on the assumption that successful reading comprehension is an integrative process and can be better understood from the perspective of a componential model with weight on word recognition/decoding, linguistic knowledge, metacognitive awareness (reading strategies) and L1 reading proficiency. The study is to be carried out among English learners with Chinese as L1. To get better insight into the reading of Chinese English-learners, the analysis is to be conducted in both English reading and Chinese reading. In addition, it will be observed whether a transfer of metacognitive awareness from L1 to L2 happens. The design of the study is described in the following chapter.

4 Design of the study

4.1 Introduction

My research interest focuses on the roles of different components in explaining L1 and L2 text reading comprehension. From a holistic viewpoint, Chinese English-readers might have a specific cognitive reading style which differs from speakers of other languages. From a concrete viewpoint, there might be differences in the linguistic component to explain L1 reading comprehension as opposed to L2 reading comprehension; there might be a language threshold in L2 reading comprehension; the question whether higher-level processing or lower-level processing contributes more to explain reading comprehension is still open. In addition, whether there is an effect of language sensitivity on explaining reading comprehension, and whether the readers “borrow” metacognitive strategies from L1 reading to use in L2 reading need to be further proven in the case of Chinese EFL-readers.

To find the answers to these questions, a longitudinal study was designed to access text-reading comprehension in English and in Chinese. Research questions will be introduced in section 4.2, and the background of the sample is described in section 4.3. Section 4.4 centers on the measurement of each variable that is assumed to explain reading comprehension, and section 4.5 states the detailed procedure of data-collection. The analysis method and the relevant statistical terms are presented in section 4.6, in which the presumed models are depicted as well.

4.2 Research questions

This study addresses the following research questions:

1. *How do language sensitivity and linguistic knowledge contribute to reading comprehension, either in L1 reading or in L2 reading?*

As what was reviewed before, language sensitivity (decoding) and linguistic knowledge are supposed to be two necessary factors in English reading. It predicts that there might be a language threshold effect for the poor readers (lower-level processes seem more important to poor readers), and good readers benefit more from higher-order processes while dealing with reading. Considering language distance and language specificity, there might be a unique phenomenon among Chinese English-readers.

2. *How does metacognitive awareness differ in L1 reading and in L2 reading?*

This is to see whether readers share a cognitive mechanism while reading in different languages. If there is no difference, readers are assumed to borrow their reading strategies acquired in L1 reading and apply them to L2 reading. If there is a difference, the assumption is then unable to be established; how the readers differ in reading in L1 from reading in L2 will require further study.

3. Do linguistic knowledge, language sensitivity and metacognitive knowledge contribute to the explanation of L1 and L2 reading comprehension? Can L1 reading proficiency be another component in explaining L2 reading ability?

From the analyses of two groups in English and in Chinese reading, the percentage of variance in reading comprehension is to be explained by the variables. If they explain most variances in reading comprehension in both groups, it is assumed to be a good model to explain reading comprehension, either in L1 or in L2. If there is no good model fit found, it is presumed that there must be other factors that have not been taken into consideration in this study affecting reading comprehension. Finally, by including L1 in the model of L2 reading comprehension, it is predicted that L1 reading proficiency would increase the model fit.

4. Is there a specific cognitive reading style used by Chinese-English speakers, compared to other bilinguals?

L2 reading proficiency is presumed to be related to L1 reading proficiency. Based on the analyses of the three questions above, equivalence/non-equivalence might be found between L1 and L2 reading among Chinese English-readers. Consequently, it is a causal relationship that would be generated as a language distance effect. If a language distance effect does exist, a specific cognitive reading model should be determined for Chinese English-readers.

4.3 Sample of the study

Participants in this study were randomly selected from 8th grade at No. 8 Junior middle school in Anyang City, Henan Province of People's Republic of China. At this school, there are 30 class-units, and each class has more or less 60 students. In this study, the participants belonged to the same class-unit, ranging in age from 14 to 16 years old, and among them there were 31 boys and 30 girls, at the time of measurement. They took all their classes together from Monday to Friday. They had an English class every day for one academic hour (45 minutes). They received the same instruction during the class hours and got the same homework for each subject. Considering their individual backgrounds of primary school, they started learning English from different grades. More than 85% of the participants started

learning English at primary school, and over one third of them had English class in 3rd grade (see table 8). Those students who started learning English at primary school received at that time a small amount of instruction in English basic skills of communication. No matter what their level of English, they all started learning it again from scratch when they entered junior middle school (7th grade) and had the same text books and learning materials. They were treated equally, although some of them had never studied English before. At the time of measurement, they had received, on average, two years of instruction in English as a foreign language at junior middle school.

Grade	The number of students	Percentage
1	13	21.3
2	6	9.8
3	20	32.8
4	11	18.0
5	1	1.6
6	1	1.6
7	9	14.8
Total	61	100

Table 8: Starting-Grade to learn English⁵

English is intensively learned, as a foreign language, from junior middle school, but Chinese, as the native language, is learned as a subject long before English. Because of the compulsory subjects either for the entrance exam to senior middle school or for the entrance exam to college, Chinese and English are evenly stressed at school, at least in middle school, and accordingly they receive equal attention among students and teachers. It is clear that students' Chinese proficiency is more advanced than their English. Given individual students' choice to take part or not, the number of the participants in this study fluctuated.

4.4 Instruments

The data of this study was collected based on tests and two questionnaires, assisted by teachers at Anyang No. 8 junior middle school. Linguistic knowledge was categorized from the exams that the students took. Normally, for the middle school students there are two formal

⁵ As mentioned in 2.2, it was decided in 2001 by MoE that English class has to be offered from the third grade. The numbers in the table stem from the author's own survey.

exams each semester, a mid-term exam and a final exam. The mid-term exam is usually administered by the school, and the test is designed by the teachers who teach that particular class, according to the students' present progress; while the final exam is administered by the city education bureau, and the test-paper is designed in line with teaching guidelines and standardized for all schools. Whatever exam is administered, the content is restricted to the textbooks that have been published in accordance with the teaching guidelines. An English test is usually standardized to contain several tasks (see 2.2.4), which are similar to the components of a Chinese test, though in the latter there are fewer pure vocabulary and grammar tasks than on an English test and reading tasks make up a higher percentage compared to an English test. Each language test, either in Chinese or in English, still focuses on four abilities: listening, speaking, reading and writing. For either of the tests, there is a time limit (90 minutes) for students to finish, and most of them are able to do it within the required time.

In this study, language sensitivity, linguistic knowledge and metacognitive awareness are the independent variables, and the dependent variable is reading comprehension. In total, 12 instruments were developed to answer the research questions. The data of linguistic knowledge was collected through three tests over two semesters, including two final exams and one mid-term exam. The content of the tests was selectively categorized into three parts, vocabulary, grammar, and reading comprehension. Metacognitive awareness was analyzed in terms of global strategies, problem-solving strategies, and support strategies. For all the measures, the selection and categorization of the items were established in a pilot study and reliability check, by which the instruments were to be improved, for example, questions' readability and clarity. Thus, the data is assumed to be more valid and objective. A detailed description and criteria for each variable is given below.

4.4.1 Measurement of language sensitivity

Language sensitivity, in this study, derives from the language decoding or decoding process. The measurement of language sensitivity includes two parts, *word recognition* and *sentence decision*, respectively in English and in Chinese.

English word recognition is a lexical decision task that was adapted from Van Gelderen (et. al. 2004, 2007). Taking into account the learning objectives of the English teaching Guide for junior middle school students and the current ability of the participants, 80 items were eventually adapted. These English words are strings that range from three to eight letters. The true English words are mono-morphemic, well-known words, and English pseudo-words are phonologically or orthographically related. Similarly, Chinese true words are selected from high-

frequency words of 3 strokes to 8 strokes in the corpus of the Center for Chinese Linguistics of Peking University, and Chinese pseudo-words are basically composed orthographically possible strokes. The participants have to make a decision as fast as possible, when they read these words. Usually, as far as word recognition is concerned, reaction time (fluency) comes into mind, which is achieved at the cost of accuracy. In this study, word recognition was measured in terms of accuracy instead of the usual measure of fluency.

“Sentence verification is the processing of a minimum sentence in which the reader compares the sentence input with his or her memory aside from semantic encoding of individual words”, and “verification here is essentially a question of comparing semantic information in memory with a semantic representation of the sentence” which requires only semantic category information (Perfetti, 1985:124). The measurement of sentence verification included 60 items that were adapted from the study of Van Geldern et al. (2004, 2007). To avoid ambiguity, given the cultural background and language distance, the items are designed to be more appropriate for Chinese students. For example, “*there is no real cold winter in Tibet*”; and “*Students in China go to school seven days a week*”, instead of “*Students in the Netherlands go to school seven days a week*”. Among those items, half of the sentences make sense, and the other half do not. A sensible example would be: “*The climate might be quite different according to where the man is*”; or “*Tennis is a sport for two or four players*”; and a non-sensible item is “*There is no mountain at all in China*”, or “*Most bicycles have seven wheels*”. Obviously, linguistic knowledge is a critical point for the students in such a sentence task, especially in English. Therefore, these sentences were designed to be closely related to common knowledge, and the students do not need more than that to make a decision. The Chinese items are the equivalent translation of the English items.

4.4.2 Measurement of linguistic knowledge

There are no experimental materials designed to measure linguistic knowledge and reading ability. Previous tests that the students had taken were collected and analyzed. The items were categorized by the criteria used in the study by Van Gelderen et al. (2004, 2007).

The measurement of English vocabulary knowledge was in the form of multiple-choice questions, and Chinese vocabulary knowledge was measured either by multiple-choice or fill-in-the-blanks. The students have to choose the most appropriate word among four options that might be synonyms or phrases, or the word’s different forms (noun, verb, adjective and adverbs). For example,

(1) “--- Mum, my feet hurt”. “---- Well, ____ your shoe and let me have a look”.

- A) take down B) take out C) take up D) take off

(2) ____ you do, I will be on your side.

- A) Whenever B) Whatever C) However D) Wherever.

(3) 在括号里填上适当的字 (Write a suitable word in the bracket)

()不顾身 () 往直前.

The tests of grammar knowledge concentrate more on the syntax and semantic levels, like conjugation of verbs (the tense), morphological phenomena in nouns, adjectives and functional words. In this part, both the English and the Chinese test are either in a multiple-choice or an open-answer format, and in addition to that, finding an error in a statement is one of the most commonly used forms in Chinese tests. For example⁶,

(4) *The woman _____ lives next door is a doctor.*

- A) which B) whom C) where D) who

(5) *China has _____ the 2008 Olympic Games. How great!*

- A) successful in host B) succeeded in hosting C) success in hosting D) succeeded in host

(6) 找出句子中的错误并改正 (There is an error in the sentence, please find and correct it)

美国三大汽车公司的首席执行官对媒体目前先后表示自动减薪。

4.4.3 Measurement of reading comprehension

English reading comprehension was measured by text-reading with multiple-choice questions to check whether the students understood what they read, and the test of Chinese reading was via an open-answer question or writing an opinion on what they read to see to what extent they comprehended the text. The text characteristics ranged from narrative text to expository text. The questions were directed either towards comprehension at the paragraph level or of the text as a whole. They might be generalized or deductive questions, and abstract or concrete questions. In general, the Chinese texts were more complicated than the English texts and the answers to the questions were not as obvious as those in the English tests because of the language characteristics and students' language proficiency. A summary of the categories is shown in table 9, which also applies to the measurements in Chinese.

⁶ All the examples are taken from the test papers.

Vocabulary:	synonyms, phrases, word forms (nouns, verbs, adjectives, adverbs)
Grammar:	syntactic and semantic level, like verb conjugation, morphological phenomena in nouns, adjectives and functional words
Reading:	narrative or expository texts, generalized or deductive/ abstract or concrete questions

Table 9: Criterion of categorization (adapted from van Gelderen et al., 2004:22)

4.4.4 Measurement of metacognitive awareness

Metacognitive awareness was measured in the form of questionnaires. The questionnaires were adapted from the survey of reading strategies (SORS) by Mokhtari and Sheorey (2002). The instrument SORS was developed on the basis of another instrument, Metacognitive Awareness of Reading Strategies Inventory (MARSI) (Mokhtari & Reichard, 2002), which is a pervasive tool for measuring native English speakers' awareness of reading strategies while reading academic materials, and to measure adolescent and adult ESL students' metacognitive awareness and perceived use of reading strategies while reading academic materials. There were 30 items divided into three categories as follows:

Global Reading Strategies (GLOB) are those intentional, carefully planned techniques by which learners monitor or manage their reading, such as having a purpose in mind, previewing the text as to its length and organization, or using typographical aids and tables and figures (13 items).

Problem Solving Strategies (PROB) are the actions and procedures that readers use while working directly with the text. These are localized, focused techniques used when problems develop in understanding textual information; examples include adjusting one's speed of reading when the material becomes difficult or easy, guessing the meaning of unknown words, and rereading the text to improve comprehension (8 items).

Support Strategies (SUP) are basic support mechanisms intended to aid the reader in comprehending the text such as using a dictionary, taking notes, underlining, or highlighting textual information (9 items).

(Mokhtari & Sheorey, 2002:4)

This survey was developed in English (see appendix 4a), to make a self-rating of reading capability, and of what and how the subjects think while reading. The purpose of this question-

naire was not to test the students' language proficiency, but to probe their metacognitive awareness while reading. Out of consideration for the participants' EFL proficiency and to guarantee the quality of the responses, it was translated into Chinese in order to avoid comprehension difficulties and to ensure the cooperation of the participants. Therefore, the questionnaire was offered to the participants only in Chinese, but the content of the questionnaire was in line with the English version. The participants were requested to give a self-rating on their reading ability, which was scaled into 5 gradations, ranging from 1 "never" to 5 "always". Meanwhile, an equivalent questionnaire of reading in Chinese was adapted as well, in which the items were the same as the measurements of English reading. A uniform questionnaire was used to see to what extent they were different in L1 and L2 readings, because the participants might give a different rating on the same item in L1 and L2 readings. Hence, it is possible to give some hints or shed some light on the question "*how does metacognitive awareness differ in L1 reading and L2 reading?*", or any further indications of the reading strategies used. In addition, some individual information of the participants was attached to the questionnaires, such as gender, age and the grade they started learning English. A complete survey is available in appendix 4.

4.5 Data collection procedure

The test-papers were first collected with the help of the class teachers for two semesters; one was in the summer semester of 8th grade, and the other two were in the winter semester of 9th grade. The tasks of the tests were then organized into three categories: grammar, vocabulary, and reading comprehension. To categorize each task of the tests, seven experienced teachers made the judgment for categorization according to the criterion mentioned above. The final decision on categorization of the tests was based on the degree of agreement or the homogeneity among raters on each item, i.e. inter-rater reliability, as measured by Cronbach's alpha. A reliability model was created to guarantee the validity of the categorization and the quality of the data obtained. Among the raters, there was no disagreement on reading comprehension at all, and in total there were 26 vocabulary questions and 29 grammatical questions with an internal reliability coefficient ($\alpha=.93$, $n=7$), and 10 reading texts with 50 questions.

As for the categorization of Chinese linguistic knowledge tests, four Chinese teachers who were teaching the participants were interviewed. In their opinions, grammatical items in Chinese tests were very seldom addressed in an isolated way, and the tests were more on language use, selectivity in filtering information, oral expression, common knowledge of literature, and practical reading. There was no argument on the separate items of vocabulary and

grammar questions, but the discussion centered on the categorization of vocabulary and grammar questions in the context of reading comprehension. Two of the teachers took it as a controversial issue. One held the opinion that vocabulary or grammar should not be categorized into reading in any circumstances, which was strongly opposed by another one. He said “any items that show up in reading comprehension cannot be categorized in isolation any more, and they have to be taken into consideration in the context. The readers might get clues from the context. For example, a character with multiple pronunciations, such as “行” in the word “银行”, is different in the word “行人”. When it is an isolated item in a test, it is 100% an item of vocabulary, but when it is in a reading context, the context decides its pronunciation and function”. In the end, they were requested to make a clear Yes/No choice, and then an agreement was achieved that the isolated items about vocabulary and grammar were categorized into their respective groups, and the questions related to reading were categorized as reading items. Theoretically, there was no intersection among the categories.

Measurements of language sensitivity were taken through two tasks: word identification and sentence decision, respectively in English and in Chinese. It was quite similar to a decoding test, but accuracy was measured instead of reading speed (reaction time). The students were offered a paper-test, and they were supposed to make a true or false choice as fast as possible when they read the words and the sentences. A pilot study was conducted, in case of any ambiguity or uncleanness. Except for two ambiguous sentences, a final test with 80 items in a lexical decision task and 58 items in a sentence identification task was decided upon. To avoid the effect of interpretation from L1 to L2, the students were requested to do the English test first, and two weeks later the equivalent Chinese test was conducted.

Students' metacognitive awareness in reading was measured through two questionnaires; one was about English reading and the other one about Chinese reading. Essentially, the English version of SORS by Mokhtari and Sheorey (2002) was translated into Chinese. The translated version was reviewed by an English teacher and a Chinese teacher to verify its faithfulness, readability, and clarity. Following this, a pilot-study was carried out with a small scale sample. Five students, who came from other classes, were invited to give their responses to the questionnaires. Four out of five complained about item 4 (*I take an overall view of the text to see what it is about before reading it*) and item 8 (*I review the text first by noting its characteristics like length and organization*). They said: “when we take an overall view of the text, we pay attention to text length and organization at the same time”, which is in accordance with Zhang and Wu (2009). In addition, an argument was raised also by item 2 and item 10; they were taking notes by underlining the key sentences and circling the key word. Thus, item 4

and item 8 were converted into one item “*I take an overall view of the text first to see the content of the text, the length and the organization*”; and item 2 and item 10 were incorporated into one “*I take notes (e.g. underline or circle information) while reading to help me remember and understand what I read*”. Item 14 was considered as a repetition of item 25, hence, they were combined into one item as “*when the text becomes difficult, I pay closer attention and re-read what I am reading to increase my understanding*”. Regarding any ambiguity or uncleanness, certain items, especially those that the participants had questions about while responding, were paraphrased to be more specific and understandable. For example, item 3 “*I think about what I know to help me understand what I read*” – “*I remind myself of my prior knowledge or common knowledge consciously to help me understand what I read*”. After the correction and improvement of the items, another five students were invited to take another re-trial. They did not have questions with ambiguity of the items any more. At last, with the help of the teachers, the feedback from the students and the observations of the sample trials, a final complete questionnaire about English reading was achieved (see appendix 4b), composed of 27 items with an overall reliability coefficient ($\alpha=0.939$), 12 items of GLOB category ($\alpha=0.883$), 7 items of PROB category ($\alpha=0.847$), and 8 items of SUP category ($\alpha=0.661$). Additionally, item 29 “*when reading, I translate from English into my native language*” and item 30 “*when reading, I think about information in both English and my mother tongue*” were obviously inappropriate to reading in their native language, and the readers never did this in Chinese reading, so these two items were skipped in the questionnaire about Chinese reading. Therefore, the final adapted questionnaire about Chinese reading (see appendix 4d) included 25 items with an overall reliability coefficient ($\alpha=0.894$), with 12 items of GLOB ($\alpha=0.793$), 7 items of PROB ($\alpha=0.709$) and 6 items of SUP ($\alpha=0.843$).

The participants were requested to do the questionnaires after the exams, to avoid any effects of the questionnaire that might have given them hints to improve their comprehension. That also guaranteed the data to be as natural as possible. And they were not intended to be informed which item belonged to which category, which might result in an unnecessary argument and trouble. The questionnaire about English reading was handed out to the participants first, and then one week later the questionnaire about Chinese reading was carried out, which was to avoid the students mixing the items with languages. There was no time limit for the participants to make the self-rating choices, but they were capable of finishing it within 10 minutes. Finally, a total of 61 responses to the questionnaire were collected.

4.6 Data analysis

All the collected data are to be analyzed by SPSS statistics that is computer software package for social science. For any measurements, a skipped item was scored as incorrect. When more than half of the items were skipped, it was treated as a missing value on the test. Missing values in each test might lead to different numbers of participants, so that there were different participants in the following analyses. For the language sensitivity measurement, one item was one point. The items in the linguistic knowledge measurement and in the reading comprehension were scored not as the marks in the tests, but a question or a filling-blanket was scored as one item. Thus, a correct answer led to a point, while an incorrect answer and a skipped question were scored as zero. For the metacognitive awareness survey, a skipped item was scored as zero as well.

To check whether there is a language threshold effect and to what extent higher-order processing contributes to reading comprehension, an inter-group comparison had to be computed. The participants were divided into three proficiency streams (high, intermediate, and low) depending on their average scores on three English tests: high stream (94-98), intermediate steam (59-93), and low stream (26-58). The same approach was applied to the Chinese reading group, and the scores of the high proficiency stream range from 89 to 93; those of the intermediate range from 73 to 88; and those lower than 72 belong to the low proficiency stream.

The data analysis was conducted using regression analysis. It is a way of predicting an outcome variable from one or more variables, and in an equation it is illustrated as “*Outcome = Model + Error*” (Field, 2009). Regression offers us an opportunity to insert different values (the possible predictor variables) into the model until the best model fit is achieved. Before we continue with regression analysis, some relevant statistical terms will be introduced.

4.6.1 Statistical terms

Simply put, a *variable* is something that may change or vary. The *independent variable* is the one selected by the researcher to examine its effect on the dependent variable. The *dependent variable* is the central variable that we are trying to explain and for which it is observed what effect the other variables may have on it. The purpose of descriptive statistics is usually to see the frequency and indicate the central tendency and dispersion of the scores, for which three indicators are often used: the mean, the mode, and the median. The *mean* is the same as the arithmetic average. The *mode* is the score that occurs most frequently in a set of scores. The *median* is the middle point in a distribution, or a set of scores. On the other hand, *standard*

deviation offers a chance to see how the performance of individuals varies from the central tendency, as it provides a sort of average of the differences of all scores from the mean. In tests of language studies, *correlation* is an important concept in general because the sets of scores or the students are compared often. The *correlation coefficient* is the degree to which two variables covary or vary together. A correlation coefficient can have a value between -1 and +1. To compare two sets of interval data, the coefficient is called *Pearson product-moment correlation coefficient* or *Pearson's r*, which is defined as the covariance of the two variables divided by the product of standard deviation. If there is no relationship between two variables, the coefficient would be 0. The degree to which a test is reliable (internal consistency) can be estimated with a *reliability coefficient* that is commonly reported with *Cronbach alpha*. A high value of alpha is usually taken as evidence that the set of items measures an underlying construct. *Test validity* is considered as the degree to which a test measures what it claims to measure. *One-way analysis of variance (ANOVA)* is based on the mean comparisons to examine a ratio (*F-distribution*) of more than two groups in the independent variable, which is applied to the test when there is one interval-scale dependent variable and one nominal-scale independent variable (Brown, 2002; Walsh, 1990).

To understand the following predicted models and the results in the chapter 7, the concept of regression has to be introduced too. *Simple regression* is also called simple linear regression, which describes a functional relationship between two variables. *Multiple regression* includes three types: standard multiple regression, sequential (hierarchical) regression, and statistical (stepwise) regression. In this study, standard multiple regression and sequential regression analyses are involved. *Standard multiple regression* is to investigate whether all the independent variables equally predict dependent variable. It is possible for an independent variable in standard multiple regression to be unimportant to but highly correlated with the dependent variable. *Sequential multiple regression* is assumed that independent variables enter the equation in an order specific by the researcher, or by logical or theoretical considerations (Tabachnick & Fidell, 2007; Von Eye & Schuster, 1998).

In statistical analysis, the “real” causes will be never uncovered, even though we do perform causal analysis. Please keep in mind that a high correlation between a criterion and predictor variable is not to indicate a causal relationship. It is often believed that *A* is assumed to be a causal factor of *B* if the presence of *A* increases the probability that *B* will occur, which does not mean *A* will cause the changes of *B*. If the direct causal models can not be statistically developed, it does not affect us to think causally, which is to be indirectly tested by correlational analyses (Brown, 2002; Walsh, 1990).

4.6.2 Predicted models

To answer the first research question, a basic model was estimated, in which reading comprehension was regressed on vocabulary knowledge and grammar knowledge (linguistic knowledge), and on word recognition and sentence decision (language sensitivity) respectively, to see how they influence reading comprehension in each language and to what extent they are different between languages. There was no cross-language regression in this basic model (see figure 14). Correlations between dependent and independent latent variables were calculated in this basic model to see the strength of the relationship between the independent variables and reading comprehension, and the regression weights of the independent variables on the dependent variables (reading comprehension in L1 and L2) were calculated to indicate the relative importance of each component in explaining reading comprehension in the context of each language (English and Chinese).

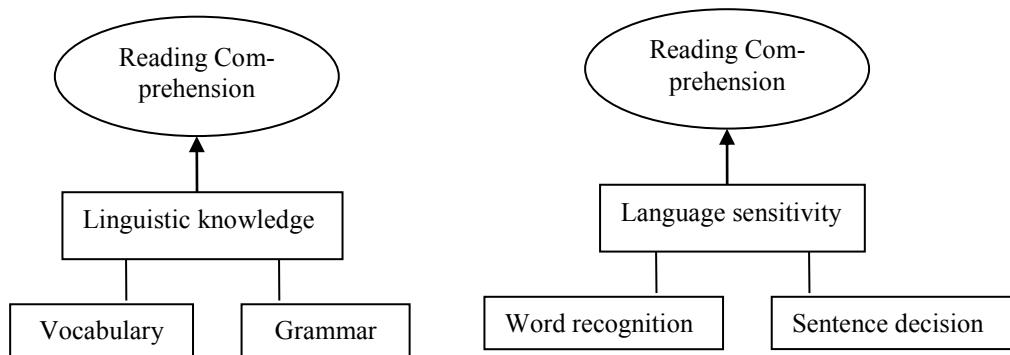


Figure 14: Basic Model 1

Accordingly, regression equations were available, for example:

$$\text{Reading} = b + b_1 \text{ vocabulary knowledge}; \text{ or}$$

$$\text{Reading} = b + b_2 \text{ grammar knowledge}; \text{ or}$$

$$\text{Reading} = b + b_1 \text{ vocabulary knowledge} + b_2 \text{ grammar knowledge};$$

$$\text{Then} \quad \text{Reading} = b + b_k \text{ linguistic knowledge}$$

Similarly, it was also applicable to language sensitivity, for example:

$$\text{Reading} = b + b_3 \text{ word recognition}; \text{ or}$$

$$\text{Reading} = b + b_4 \text{ sentence decision}; \text{ or}$$

$$\text{Reading} = b + b_3 \text{ word recognition} + b_4 \text{ sentence decision};$$

$$\text{Then} \quad \text{Reading} = b + b_s \text{ language sensitivity}$$

As for the second research question, i.e. how the student differs in dealing with L1 reading from L2 reading under one metacognitive processor, the correlation was calculated first of all

between reading comprehension and metacognitive awareness. Then, a comparison of how they differed in the choice of strategy between languages was analyzed. Furthermore, the students were grouped into three streams (high, medium and low) to check whether there was a specific strategic flow among the groups.

So far, the analysis of each single component – language knowledge, language sensitivity and metacognitive awareness – with reading was explored, respectively. The question is how the model fit changes, when another variable, for example, language sensitivity or metacognitive awareness, is included. A sequential regression analysis was conducted to find the best model fit. Thus, an alternative model 2 (see figure 15) was assumed to examine how linguistic knowledge and language sensitivity together predict reading comprehension, and the regression formula is:

$$\text{Reading} = b + b_k \text{linguistic knowledge} + b_s \text{language sensitivity}$$

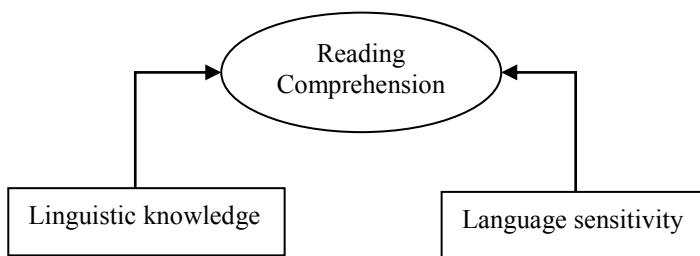


Figure 15: Predicted Model 2

The third model (see figure 16) was to predict reading comprehension with one more variable (metacognitive awareness). A sequential regression analysis was again carried out, in order to see the variance of the model fit, and the predicted equation was as follows:

$$\text{Reading} = b + b_k \text{linguistic knowledge} + b_s \text{language sensitivity} + b_m \text{metacognitive awareness}$$

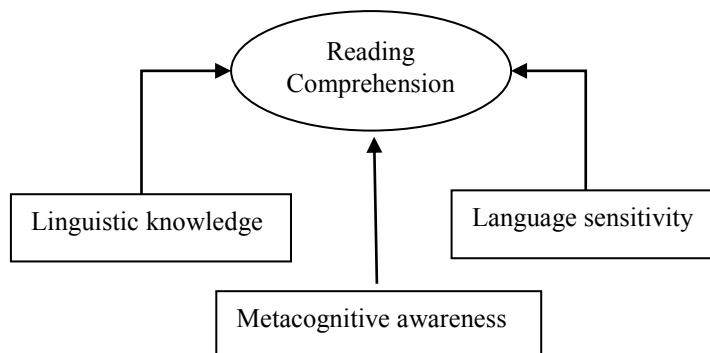


Figure 16: Predicted Model 3

To address the third research question, model 3 answers whether linguistic knowledge, language sensitivity and metacognitive awareness can account for reading comprehension in L1 and L2. Could L1 be an additional indicator in explaining English reading comprehension? Let's go back to the analysis of metacognitive awareness. If a significant difference existed among the students, which would mean that students adopt different strategies in L1 reading than in L2 reading, we could assume that there is no correlation between L1 reading and L2 reading. Thus, we could assume that there is no certain pattern to follow between them, and L1 reading ability might be another predictor in explaining L2 reading. The fourth predicted model is thus as follows: figure 17 with the according formula:

$$\text{"Y} = b + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + e\text{"}$$

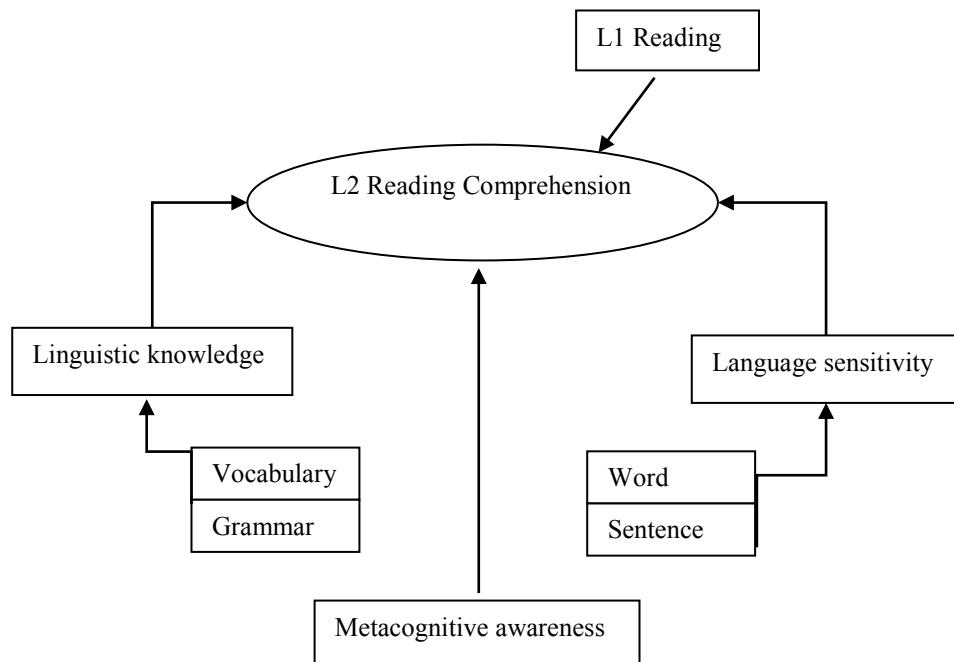


Figure 17: Predicted Model 4a

On the other hand, if there was no significant difference in reading strategies between languages, we could predict that the students' metacognition controls the students' reading behavior, and that it does not change with languages. That is also to say, the students might use the same strategies in L1 reading as in L2 reading, which may result in that the students who have a higher proficiency in L1 reading also have a higher reading proficiency in L2. It displays the larger picture of Chinese-English speakers, how they deal with and what compo-

nents are involved in their reading behavior. There might be a unique cognitive reading style of Chinese English-learners (see figure 18: model 4b).

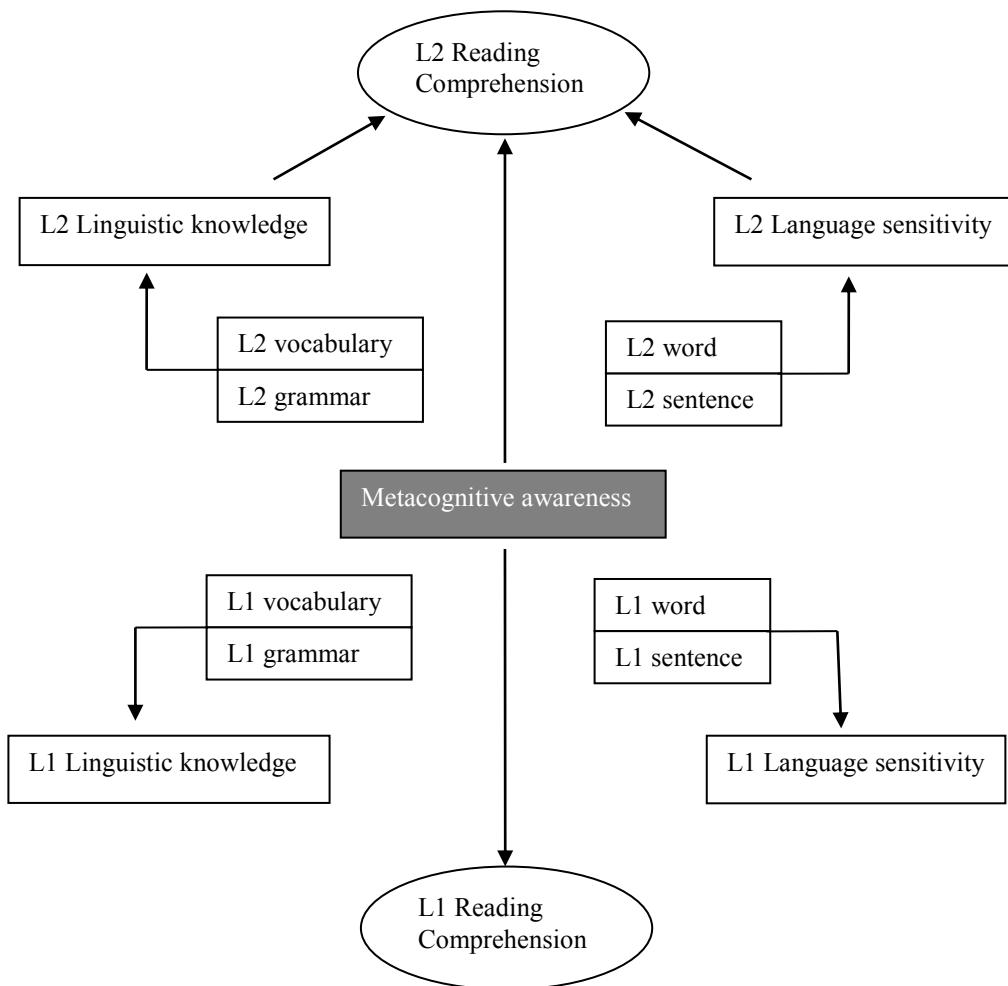


Figure 18: Predicted Model 4b

In addition, to reach a better componential model, all those sub-level components have to be taken into consideration as well. Regression analysis offers not only a chance to identify the relationship among those factors, but also an opportunity to get the relative importance of the factors. All the factors were brought into the model one by one, then the model fit was compared until the best model fit was achieved, and then a specific cognitive reading model used by Chinese English-learners was developed (see figure 19, model 5).

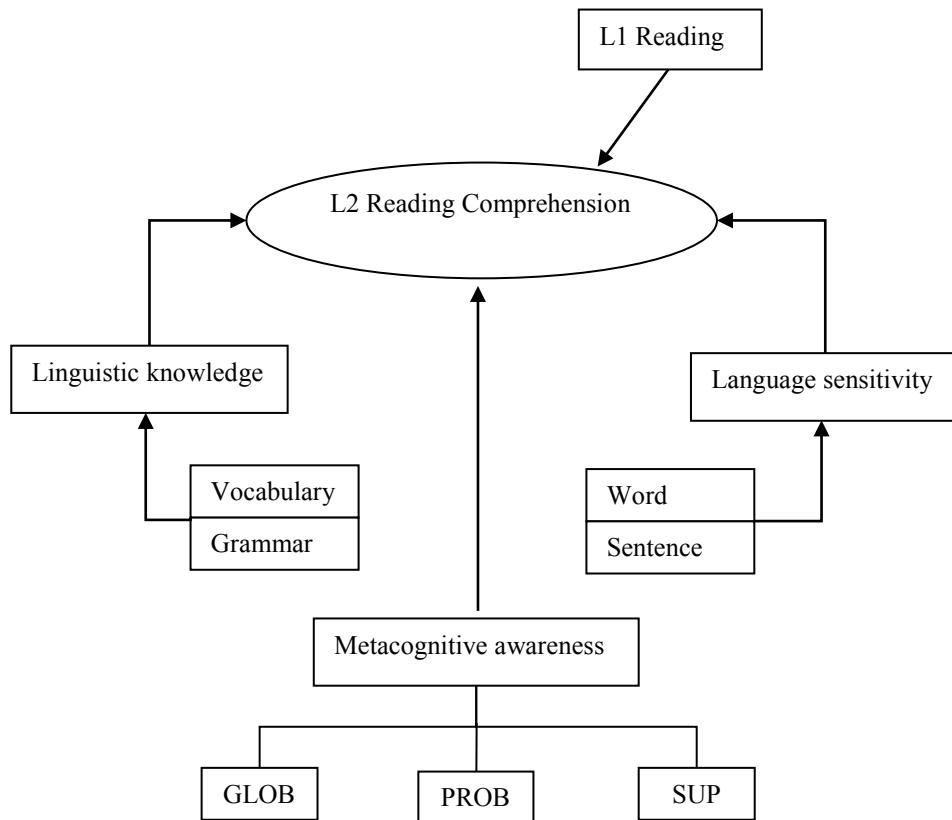


Figure 19: Predicted Model 5

4.7 Summary

This chapter focused on research questions and experimental elements. The sample of Chinese EFL readers was selected, and their English levels, their contact with English, and the length of English learning were reported. Sequentially, the instruments used in this study were illustrated, and meanwhile the experimental procedure was presented as well. At last, the analysis method was formulated. The analyzed results will be presented in the next chapter.

5 Descriptive results of English reading

5.1 Introduction

In this chapter, the descriptive results of linguistic knowledge and English reading are presented, which were obtained during the three measurements; and the descriptive results of language sensitivity tested by word recognition and sentence decision and the descriptions of metacognitive awareness of English reading are included, which partially provides an answer to the first two research questions (see section 4.2) and shows an overview of all the variables concerned with English reading in this study. In all the analyses in this chapter, the number of the participants was not always the same, whereas most of them kept on taking part in the measurements. In section 5.2, the reliability levels of the measurements are presented. This starts with the descriptive results of the tests and the correlations between the dependent variable and independent variables (section 5.3.1), and ends with the test results and correlations of cross-groups (section 5.3.2). In section 5.4, the descriptive results and correlations of the survey and cross-groups' description and correlations are presented. At the end of the chapter, a brief summary is made on the results of English reading by Chinese EFL readers.

5.2 Reliability levels of the measurements

The reliability level of the tests is evaluated by Cronbach's alpha, which is the estimation of reliability, showing the internal consistency of each scale. Table 10 shows the reliability coefficients for the scores obtained from the three tests, including reading comprehension, and linguistic knowledge such as vocabulary and grammar. Also, the reliability of language sensitivity is processed in two tasks - word recognition and sentence decision. The reliability level of the metacognitive survey, measured in terms of global, problem-solving, and support strategies, is presented in table 11.

Reliability levels for the tests

As mentioned in section 4.5, the data on reading comprehension, vocabulary and grammar were extracted from three tests; thus, the corresponding reliability levels were checked on three measurements instead of the test-items. As shown in table 10, the reliability levels of those variables are quite satisfactory (.764-.877), which indicates that the tests are able to measure what they are intended to measure. The reliability level of language sensitivity

is .663 based on the measurement of word recognition and sentence decision, which is also satisfactory and shows that the group of students does not differ so much.

	English Reading	Linguistic knowledge		Language sensitivity	
		vocabulary	grammar	word	sentence
No. of the measurements	3	3	3	1	1
Alpha level	.846	.764	.877	--	--
Alpha level/tests	--	.912 / 6		.663 / 2	

Table 10: Reliability levels (Cronbach's alpha) for the tests

Reliability levels of the survey

As shown in table 11, the reliability levels were first tested on each measurement and then an overall reliability was given. The reliability level of support strategy ($\alpha=.527$, $n=8$) is considerably lower than that of global strategy ($\alpha=.760$, $n=12$) and problem-solving ($\alpha=.672$, $n=7$). However, the reliability level of the survey reaches .833 ($n=27$), which shows that the survey is capable of reflecting what it was intended to investigate.

Strategy	Global	Problem-solving	Support	Overall
No. of items	12	7	8	27
Alpha level	.760	.672	.527	.833

Table 11: Reliability levels (Cronbach's alpha) for the measurements of metacognitive awareness of English reading

5.3 Results of the tests

5.3.1 Descriptive results of the tests

Table 12 presents the means, mean percentages with standard deviations, and the number of the items for the reading tests of the three measurements. As the table shows, the mean percentages are between 75.9 and 81.5, which show a high ratio of the correctness for the students. Although the second test shows the lowest mean, it has also the smallest deviation, which means less individual variation. In total, the mean of the all items (50) is nearly 80% correct answers, which indicates that the students are able to read in English ($SD= 8.76$).

English reading		Mean/ %	SD	No. of items
	1 st	11.97 / 79.8	3.36	15
	2 nd	11.38 / 75.9	2.71	15
	3 rd	16.30 / 81.5	3.84	20
	Overall	39.65 / 79.3	8.76	50

Table 12: Means, mean percentages, and standard deviations of English reading in three measurements ($N=63$)

Table 13 contains descriptive information on the independent variable of linguistic knowledge, which consists of vocabulary and grammar knowledge, measured in three tests. As shown in the table, the mean percentages of vocabulary knowledge increase from 76% to 87.7%, and meanwhile with an increase of the means and a decrease of the standard deviations (2.65 - .60). The items were unbalanced in each test, thus a total mean of vocabulary knowledge was calculated out of 26 items (mean=20.83, SD=5). A similar tendency is also observable with grammar knowledge; the mean percentage ranges from 70.6% in the first measurement to 80.8% in the third, while showing an increase of the standard deviation from 2.02 to 2.41. In sum, the mean of linguistic knowledge is over 80% of the maximum possible scores, with a relatively big standard deviation of 10.73. It appears that students showed an improving tendency from the first measurement to the third measurement both on the vocabulary test and on the grammar test, with individual variations.

Linguistic knowledge		Mean/ %	SD	No. of items
<u>Vocabulary knowledge</u>		20.83 / 80.1	5.00	26
	Vocabulary test 1	9.12 / 76.0	2.65	12
	Vocabulary test 2	9.06 / 82.3	2.21	11
	Vocabulary test 3	2.63 / 87.7	.60	3
<u>Grammar knowledge</u>		22.47 / 77.5	6.09	29
	Grammar test 1	5.66 / 70.6	2.02	8
	Grammar test 2	7.11 / 79.0	2.35	9
	Grammar test 3	9.69 / 80.8	2.41	12
	Overall	43.39 / 80.4	10.73	54

Table 13: Means, mean percentages, and standard deviations of linguistic knowledge in three measurements

Language sensitivity	Mean	SD	No. of items
Word recognition	63.87	14.51	80
Sentence decision	49.28	8.48	58
Overall	113.15	20.55	138

Table 14: Means with standard deviations of language sensitivity test ($N=61$)

Table 14 shows the descriptive results of language sensitivity consisting of two sub-items, word recognition and sentence decision. Both variables show a high mean (63.87 out of 80, and 49.28 out of 58), with a big deviation ($SD=14.51$, and $SD=8.48$). In total, out of 138 items, the mean of language sensitivity is 113.15, but the individual variation reaches to 20.55. There is a high variation among the readers while making a judgement.

English reading		
Language sensitivity	Word recognition	.422**($n=59$)
	Sentence decision	.722**($n=59$)
Linguistic knowledge	Vocabulary	.869**($n=63$)
	Grammar	.869**($n=62$)

* $p<0.05$ ** $p<0.01$

Table 15: Pearson correlations of independent variables to EFL readers' comprehension

An overview correlation between dependent and independent variables of English reading is presented in table 15. As shown in the table, we can see that vocabulary knowledge and grammar knowledge have quite a high correlation to English reading comprehension with a significant possibility ($r=.869$, $p<.01$; $r=.869$, $p<.01$), followed by sentence decision ($r=.722$, $p<.01$) and word recognition ($r=.422$, $p<.01$). All the independent variables are significantly correlated to the dependent variable, English reading comprehension.

5.3.2 Cross-group comparison results of the tests

Whether there is a difference between the proficiency groups (high-, intermediate-, and low-proficiency) on the measurements such as reading comprehension, word recognition, sentence decision, vocabulary and grammar, was processed by one-way ANOVA. Table 16 presents the descriptive results of the three proficiency groups, in which we can see that the means are in accordance with the groups: means in the high proficiency group are higher than those in the intermediate, in turn higher than those in the low proficiency group. A significant differ-

ence among the groups on English reading was predicted ($F(2, 62) = 75.086, p < 0.01$), on sentence decision ($F(2, 58) = 28.171, p < 0.01$), on vocabulary ($F(2, 62) = 35.698, p < 0.01$), and on grammar ($F(2, 61) = 40.136, p < 0.01$). No significant difference was observed on word recognition among groups ($F(2, 58) = 2.424, p > 0.05$).

Measurement	EFL proficiency		
	High	Intermediate	Low
English reading	47.80 / 1.095	42.25 / 4.760	23.10 / 5.646
Language sensitivity	Word recognition	65.40 / 9.788	65.16 / 12.331
	Sentence decision	56.00 / .707	51.49 / 5.743
Linguistic knowledge	Vocabulary	25.60 / .547	22.02 / 3.265
	Grammar	28.00 / 1.000	24.04 / 4.112

Table 16: Means with standard deviations of the measurements for high-, intermediate-, low-proficiency EFL

Table 17 presents the correlation of English reading comprehension with the independent variables across the three EFL proficiency groups. In the high-proficiency group, there are no significant correlations between them. In the intermediate-proficiency group, English reading is significantly highly correlated to vocabulary ($r=.701, p < .01$) and grammar knowledge ($r=.702, p < .01$), and intermediately correlated to word recognition (.432, $p < .01$), but no strong significant correlation was found to sentence decision ($r=.222, p > .05$). In the low-proficiency group, the variation of English reading is 66.7% related to the variation of sentence decision ($p < .05$), and 64.7% related to vocabulary knowledge ($p < .05$). No commonality is found across the groups.

English reading	EFL proficiency		
	High	Intermediate	Low
Language sensitivity	Word recognition	.686	.432**
	Sentence decision	-.645	.222
Linguistic knowledge	Vocabulary	.667	.701**
	Grammar	.228	.702**

* $p < 0.05$ ** $p < 0.01$

Table 17: Pearson Correlations of independent variables to EFL readers' comprehension across proficiency groups

5.4 Results of the survey

5.4.1 Descriptive results of the survey

To answer the second research question (i.e. “How does metacognitive awareness differ in L1 reading and L2 reading?”), the descriptive results of the metacognitive survey of EFL readers are presented in this section. The perceived reading strategies were sorted on each individual item, and meanwhile overall statistics for each category were presented. For the general language reading strategy with a scale ranging from 1 to 5, Oxford and Burry-Stock (1995) suggested three levels of usage: high ($\text{mean} \geq 3.5$), medium ($2.5 < \text{mean} \leq 3.4$), and low ($\text{mean} \leq 2.4$). The results show that the students on the whole consciously reported using strategies in English reading at an above average level ($\text{mean}=3.32$, $\text{SD}=0.53$). As far as the three categories of metacognitive awareness are concerned, students show a high usage level of problem solving strategies ($\text{mean}=3.56$, $\text{SD}=0.702$, in table 19) and of global strategies ($\text{mean}=3.40$, $\text{SD}=0.637$, in table 18) as well, but a medium usage level of support strategies ($\text{mean}=2.99$, $\text{SD}=0.608$, in table 20) in English reading.

Descriptive results of global strategies

Within the category of global strategies (see table 18), the mode of item 2 (*I remind myself of my prior or common knowledge consciously to help me understand what I read*), 6 (*I use tables, figures, and pictures in the text to increase my understanding*) and 8 (*I use typographical features like bold face and italics to identify key information*) are 5, which means the most frequent usage among the readers in a set of scores on those items. The readers always consciously use “tables, figures and pictures (item 6)” and “typographical features (item 8)” in the text to identify key information and to increase their understanding. In addition, they consciously “remind themselves of prior or common knowledge (item 2)” to increase understanding in English reading. On the other hand, it seems that the readers seldom use strategies like, “making a choice of what to read closely and what to ignore (item 5)”; “critically analyzing and evaluating the information in the text (item 9)”; and “double-checking whether their guesses were wrong or right (item 12)” (mode=2). In English reading, 7 out of 12 (58.3%) global strategies were reported to be of high frequency usage ($\text{mean} > 3.4$), and none of them fell into low usage ($\text{mean} < 2.5$), and the overall usage of global strategies was moderately high ($\text{mean}=3.40$, $\text{SD}=0.637$). In general, the results predict that the readers can monitor their

reading on a macro-level, and make use of the information presented in the text to increase their understanding.

Global strategy	in EFL reading		
	Mean	Mode	SD
1. I have a purpose in mind when I read.	3.41	4	1.202
2. I remind myself of my prior or common knowledge consciously to help me understand what I read.	3.85	5	1.195
3. I take an overall view of the text first to see the content of the text, the length and the organization.	3.69	4	1.218
4. I think about whether the content of the text fits my reading purpose.	3.00	3	1.317
5. When reading, I decide what to read closely and what to ignore.	2.80	2 ^a	1.289
6. I use tables, figures, and pictures in the text to increase my understanding.	4.03	5	1.048
7. I use context clues to help me better understand what I am reading.	3.64	4	1.170
8. I use typographical features like bold face and italics to identify key information.	4.03	5	1.278
9. I critically analyze and evaluate the information presented in the text.	2.56	2	1.133
10. I check my understanding when I come across new information.	3.11	3	1.279
11. I try to guess what the content of the text is about when I read.	3.52	4	1.178
12. I check to see if my guesses about the text are right or wrong.	3.18	2	1.258
Overall	3.40	--	.637

a. Multiple modes exist and the smallest value is shown

Table 18: Means, modes, and standard deviations of EFL readers' use of global strategy (N=61)

Descriptive results of problem-solving strategies

While working directly with the text, the readers adapt their strategies when problems occur, which is predicted by the frequent usage of problem solving strategies in English reading (see table 19), like “reading slowly and carefully” – item 13 (mean= 3.41, SD=1.216); “getting back on track when losing concentration” – item 14 (mean=3.67, SD=1.165); “adjusting reading speed with texts” – item 15 (mean= 3.57, SD=1.204); “paying closer attention and re-reading to increase understanding” – item 18 (mean= 3.66, SD=1.315); and “guessing the meaning of unknown words in the context” – item 19 (mean= 4.10, SD=0.978). 71.4% of problem-solving strategies occur at a high frequency usage level in English reading, which is shown by the modes: none of the modes of those items is lower than 4. Thus, it is posited that

the readers show a quite stable tendency with little deviation in their use of problem-solving strategies in English reading (mean=3.56, SD=0.702).

Problem solving	in EFL reading		
	Mean	Mode	SD
13. I read slowly and carefully to make sure I understand what I am reading.	3.41	4	1.216
14. I try to get back on track when I lose concentration.	3.67	5	1.165
15. I adjust my reading speed according to what I am reading.	3.57	4 ^a	1.204
16. I stop from time to time and think about what I am reading.	3.38	3	1.227
17. I try to picture or visualize information to help remember what I read.	3.16	2	1.319
18. When the text becomes difficult, I pay closer attention and re-read what I am reading to increase my understanding.	3.66	5	1.315
19. When I read, I guess the meaning of unknown words or phrases.	4.10	5	.978
Overall	3.56	--	.702

a. Multiple modes exist and the smallest value is shown

Table 19: Means, modes and standard deviations of EFL readers' use of problem-solving (N=61)

Descriptive results of support strategies

Support strategy	in EFL reading		
	Mean	Mode	SD
20. I take notes (e.g. underline or circle information) while reading to help me remember and understand what I read.	3.57	5	1.347
21. When the text becomes difficult, I read aloud to help me understand what I read.	2.46	1	1.324
22. I use reference materials (e.g., a dictionary) to help me understand what I read.	3.38	3	1.157
23. I paraphrase (restate ideas in my own words) to better understand what I read.	2.77	2 ^a	1.189
24. I go back and forth in the text to find relationships among ideas in it.	3.18	3	1.073
25. I ask myself questions I like to have answered in the text.	2.25	1 ^a	1.206
26. When reading, I translate from English into my native language.	2.90	2	1.411
27. When reading, I think about information in both English and my mother tongue.	3.39	4 ^a	1.357
Overall	2.99	--	.608

a. Multiple modes exist and the smallest value is shown

Table 20: Means, modes, and standard deviations of EFL readers' use of support strategy (N=61)

In contrast to global and problem-solving strategies, support strategies are considerably less adopted by the readers, and fall into a medium usage level, see table 20, (mean=2.99, SD=0.608). In English reading, item 20 – “*taking notes while reading, like underlining or circling information*” – is reported with a high frequency usage (mean=3.57, SD=1.347), whereas, item 21 “*reading aloud*” and item 25 “*asking my own questions while reading*” show a very low frequency in usage (mode=1, mean=2.46, SD=1.324; and mode=1, mean=2.25, SD=1.206). The readers reported that they “*think in two languages*” – item 27 (mode=4, mean=3.39, Std. =1.357) more often than they do “*translation from L2 into L1 while reading*” – item 26 (mode=2, mean=2.90, SD=1.411).

Summary

In the metacognitive survey on English reading, among 27 strategies, 13 items (48.2%) fall into a high frequency level (mean>3.4), two items (7.4%) fall into a low frequency level (mean<2.5), and the other 12 items (44.4%) fall into the medium level (2.5=< mean =< 3.4). As for the variable of metacognitive awareness, it was computed as a scaled variable, and the mean here shows that the higher the score is, the more frequently the strategy is adopted. It appears that support strategies (mean=2.99, n=61) are adopted less frequently than global reading strategies (mean=3.40, n=61) and problem solving strategies (mean=3.56, n=61). Problem-solving strategies were the most frequently used in English reading by the EFL students in this study.

In addition, the correlations of English reading comprehension to the strategies are displayed in table 21. 42.5% of English reading comprehension is significantly related to global strategies ($p<.01$), and 53% to problem-solving strategies ($p<.01$). No significant correlation of support strategies is observed to English reading. English reading is 48.1% related to metacognitive awareness of reading as a unified variable ($p<.01$).

Strategies	English reading
Global	.425**
Problem solving	.530**
Support	.207
overall	.481**

* $p<0.05$ ** $p<0.01$

Table 21: Pearson Correlations of independent variables to EFL readers' comprehension (N=58)

5.4.2 Cross-group comparision results of the survey

The difference of the metacognitive awareness of English reading among the proficiency groups (high-, intermediate-, and low-proficiency) was calculated by one-way ANOVA. The descriptive results are presented in table 22, in which the means are in accordance with proficiency groups: the highest means occurred in the high proficiency group, and in turn the second highest in the intermediate proficiency group and the lowest in the low proficiency group. Consequently, the means of the whole survey shows the same tendency across proficiency groups. The ANOVA test demonstrates that there is a significant difference of the metacognitive awareness of English reading across proficiency groups ($F(2, 57) = 3.307, p < .05$). As for the strategies, the usage of problem-solving strategies varies across the proficiency groups with a high probability ($F(2, 57) = 7.668, p < 0.01$), and the usage of global strategies shows a difference among the groups but under a less strict significant condition ($F(2, 57) = 2.337, p = 0.106$). No significant difference was observed across groups in the usage of support strategy while dealing with English reading, $F(2, 57) = .144, p > 0.05$. Thus, it is assumed that EFL readers with high language proficiency do adopt more strategies than those EFL readers with intermediate and low language proficiencies. The readers with different language proficiency do perform differently in selecting the usage of reading strategies in English reading.

Strategy	EFL proficiency		
	High	Intermediate	Low
Global	3.48 / .469	3.51 / .596	2.98 / .751
Problem solving	4.09 / .594	3.65 / .643	2.80 / .394
Support	3.05 / .694	2.99 / .619	2.88 / .484
Overall	94.80 / 11.054	91.61 / 13.822	78.29 / 11.644

Table 22: Means/Standard deviations for high-, intermediate-, and low-proficiency EFL readers' use of reading strategy ($N=58$)

Additionally, the relationships between English reading comprehension and the strategies across the groups are presented in table 23. A meaningful relationship between the strategies and English reading comprehension was only observed in the intermediate proficiency group: 41.8% English reading is related to the usage of global strategies ($p < .01$), and 33.7% to the selection of support strategies ($p < .01$). As it can be seen, the performance in English reading by the students in the intermediate proficiency group is nearly half related to the metacogni-

tive awareness of English reading ($r=.431$, $p<.01$). No significant findings are observed for the high- and low- proficiency groups.

English reading	EFL proficiency		
	High	Intermediate	Low
Global	-.211	.418**	.228
Problem solving	.746	.228	.459
Support	-.354	.337*	-.105
Overall	-.004	.431**	.250

* $p<0.05$ ** $p<0.01$

Table 23: Pearson Correlations of independent variables to EFL readers' comprehension across proficiency groups ($N=58$)

5.5 Summary

This chapter focused on the descriptive results of the tests and of the metacognitive awareness of English reading, and the correlations between the dependent variable and independent variables. The results indicated that Chinese EFL readers are able to read in English, which is in line with their linguistic knowledge and their capability of language sensitivity. English reading comprehension is highly correlated to linguistic knowledge and language sensitivity, which was proven by the means and mean percentages, but individual variations do exist according to the standard deviations. Across the EFL proficiency groups, variations were observed in performance on linguistic knowledge and sentence decision, but not in the performance on word recognition. A meaningful correlation of English reading to linguistic knowledge was observed in the intermediate proficiency group.

As for the metacognitive awareness of English reading, Chinese EFL readers reported themselves to be strategic readers. They are inclined to use, in turn, problem-solving strategies, global strategies, and support strategies, during English reading. The usage of strategies helps in improving their reading comprehension, and EFL readers with high language proficiency do adopt strategies more frequently than those with intermediate and low language proficiencies. Among the proficiency groups, a significant correlation of English reading comprehension to the metacognitive awareness was observed only in the intermediate proficiency group.

6 Descriptive results of Chinese reading

6.1 Introduction

This chapter presents the descriptive results of Chinese reading and linguistic knowledge, which were obtained from the three tests that the readers had taken before. Meanwhile, the descriptive results of language sensitivity measured by word recognition and sentence decision, and the description of metacognitive awareness of Chinese reading are also displayed in this chapter. Together, they are expected to determine an overview of the variables concerned in this study and partially provide an answer to the first two research questions (see 4.2). Similar to the analysis of English reading in chapter 5, the number of participants is not constant, while most of them continued to take part in the measurements of all the analyses. Firstly, the reliability levels of the measurements are presented in section 6.2. Then in section 6.3, the results of the three measurements on Chinese reading and linguistic knowledge, and the measurement on language sensitivity are described. Also, the correlations between the dependent variable and the independent variables are presented. At the end of this section, a cross-groups analysis of the variables is stated. The descriptive results of the metacognitive survey on Chinese reading are shown in section 6.4. At the same time, the correlation of Chinese reading comprehension to the sub-items of the survey is calculated. Following this, a cross-groups description of the survey is given, and the correlations across groups are explained. Subsequently, the chapter offers a brief summary on the results of Chinese reading comprehension by Chinese native speakers. All the analyses in this chapter strongly focus on means, mean percentages, and correlation coefficients.

6.2 Reliability levels of the measurements

Similar to the analysis of English reading in the last chapter, the reliability levels are tested by Cronbach's alpha. The reliability coefficients for the variables obtained from the three tests are presented in table 24, which includes reading comprehension, linguistic knowledge such as vocabulary and grammar, and the reliability level of language sensitivity measured by word recognition and sentence decision, as well. An overall reliability level of the metacognitive awareness of Chinese reading and the sub-reliability levels of the strategies: global, problem-solving, and support strategies, are illustrated in table 25.

Reliability levels for the tests

As introduced in the data collection procedure, the data of linguistic knowledge and reading comprehension were obtained from three tests; thus, the corresponding reliability levels were checked on the three measurements instead of the test-items. The reliability level of Chinese reading is quite good ($\alpha=.836$, $n=3$), which predicts that the students do not differ so much in their performance in L1 reading. The reliability levels of vocabulary and grammar are satisfactory ($\alpha=.431$, $n=3$ & $\alpha=.544$, $n=2$), but the readers seem to have a high variation on the judgment of word recognition and sentence decision ($\alpha=.268$, $n=2$).

	Chinese Reading	Linguistic knowledge		Language sensitivity	
		vocabulary	grammar	word	sentence
No. of the measurements	3	3	2	1	1
Alpha level	.836	.431	.544	--	--
Alpha level/tests	--	.634 / 5		.268 / 2	

Table 24: Reliability levels (Cronbach's alpha) of the tests

Reliability levels of the survey

The reliability levels of the strategies adopted in Chinese reading by Chinese readers is presented in table 25. Firstly, the reliability levels of the strategies were measured for the items of each category, and then an overall reliability of the survey was calculated based on the whole survey (25 items). The reliability levels of the three strategies (categories) are less satisfactory (.464-.700) than that of the survey ($\alpha=.810$, $n=25$). However, in general, the survey can still fulfil the task it was intended to do.

Strategy	Global	Problem-solving	Support	Overall
No. of items	12	7	6	25
Alpha level	.700	.547	.464	.810

Table 25: Reliability levels (Cronbach's alpha) for the measurements of metacognitive awareness of Chinese reading

6.3 Results of the tests

6.3.1 Descriptive results of the tests

The means, mean percentages with standard deviations, and the number of items on the reading tests for each of the three measurements are displayed in table 26. The mean percentages increased over time from 59.7% to 75%, and further to 76.8%, with relatively constant standard deviations (2.22-2.59). On average, the mean of Chinese reading comprehension reaches 38.9 out of a maximum possible score of 54 ($SD=6.23$), which indicates that Chinese readers seem to improve their reading ability with age and there was no large variation among them during the three measurements.

Chinese reading		Mean/ %	SD	No. of items
	1 st	7.76 / 59.7	2.22	13
	2 nd	15.00 / 75.0	2.36	20
	3 rd	16.13 / 76.8	2.59	21
	Overall	38.90 / 72.0	6.23	54

Table 26: Means, mean percentages, and standard deviations of Chinese reading in three measurements ($N=55$)

The descriptive results of linguistic knowledge categorized from the three tests are presented in table 27. The items of both vocabulary knowledge and grammar knowledge were quite unbalanced. In total, there were 22 items in the measurement of linguistic knowledge, including 16 items of vocabulary knowledge and 6 items of grammar knowledge. Regarding the criteria of categorization achieved by the teachers (see section 4.5), there was an extreme case of the grammar knowledge: there was no grammar item in the first collected test-paper. On average, the mean of vocabulary knowledge is 12.70 out of a maximum of 16, with a standard deviation of 2.44, which indicates that most Chinese readers were able to find the right answers: 80%, 77.7%, and 95% correct on the tests, with small deviations ($SD = 0.87, 1.85$, and 0.23). The performance on the grammar test by Chinese readers was quite similar ($M= 1.78/1.67$, $SD=.85/.82$). In sum, the mean for linguistic knowledge is 16.15 ($SD=3.39$, $n=22$), which is 73.4% of the maximum possible score. No correlation of the vocabulary and grammar knowledge among Chinese readers was observed during the three measurements.

Linguistic knowledge	Mean/ %	SD	No. of items
<u>Vocabulary knowledge</u>	12.70 / 79.4	2.44	16
Vocabulary test 1	3.20 / 80.0	.87	4
Vocabulary test 2	8.55 / 77.7	1.85	11
Vocabulary test 3	.95 / 95.0	.23	1
<u>Grammar knowledge</u>	3.45 / 77.5	1.39	6
Grammar test 1			0
Grammar test 2	1.78 / 59.3	.85	3
Grammar test 3	1.67 / 55.7	.82	3
Overall	16.15 / 73.4	3.39	22

Table 27: Mean, mean percentages, and standard deviations of linguistic knowledge in three measurements ($N=55$)

The descriptive results of language sensitivity consisting of two sub-items, word recognition and sentence decision, are presented in table 28. The performance of Chinese readers in word recognition and sentence decisions showed a high mean (68.98 out of 80, and 54.10 out of 58), with a big deviation ($SD=16.71$, and $SD=6.67$). In total, out of 138 items, the mean of language sensitivity is 123.08, with a high deviation ($SD=19.33$), which indicates a highly individual performance, though Chinese readers have a high sensitivity to their L1 words and sentences.

Language sensitivity	Mean	SD	No. of items
Word recognition	68.98	16.71	80
Sentence decision	54.10	6.67	58
Overall	123.08	19.33	138

Table 28: Means with standard deviations of language sensitivity test ($N=61$)

The correlations of Chinese reading comprehension to the sub-items of linguistic knowledge and language sensitivity are outlined in table 29. Apparently, Chinese reading is strongly correlated to vocabulary knowledge ($r=.735$, $p<.01$), and less correlated to grammar knowledge ($r=.643$, $p<.01$). A low but significant correlation of Chinese reading to sentence decision was also observed ($r=.345$, $p<.05$). No strong significant correlation between word recognition and Chinese reading was observed in this sample ($r=.234$, $p>.05$).

Chinese reading		
Language sensitivity	Word recognition	.234 (n=51)
	Sentence decision	.345*(n=51)
Linguistic knowledge	Vocabulary	.735** (n=55)
	Grammar	.643** (n=55)

* p<0.05 ** p<0.01

Table 29: Pearson correlations of independent variables to Chinese L1 reading

6.3.2 Cross-group comparison results of the tests

Whether there was a difference across the proficiency groups (high-, intermediate-, and low-proficiency) in performance on Chinese reading, linguistic knowledge, and language sensitivity, was measured by one-way ANOVA. The descriptive results across the three proficiency groups are presented in table 30. The performance on each item fits the characteristics of each proficiency group: the readers in the high proficiency group had a higher mean of each item, while in turn that of intermediate proficiency group was higher than the low proficiency group. Meanwhile, ANOVA shows that there is a significant difference in the performance on Chinese reading ($F(2, 54) = 62.398, p < 0.01$), vocabulary ($F(2, 54) = 23.652, p < 0.01$), and grammar ($F(2, 54) = 10.739, p < 0.01$), across language proficiency groups. At the probability-level of 0.06, group difference was also observed on sentence decision ($F(2, 50) = 3.198, p < 0.06$). No significant difference was found on word recognition across groups ($F(2, 50) = .77, p > 0.05$).

Measurements	L1 Proficiency		
	High	Intermediate	Low
Chinese reading	46.00 / 3.162	39.41 / 3.499	26.86 / 3.437
	74.33 / 2.958	69.24 / 17.259	64.00 / 10.344
Language sensitivity	56.22 / 1.856	54.92 / 6.512	47.40 / 12.074
	15.22 / .833	12.77 / 1.939	9.00 / 1.826
Linguistic knowledge	4.44 / 1.014	3.54 / 1.253	1.71 / .951

Table 30: Means with standard deviations of the measurements for high-, intermediate-, and low-Chinese L1 proficiency

In addition, the correlations of the Chinese reading comprehension to the independent variables across the proficiency groups, respectively, are presented in the table 31. In the high proficiency group, Chinese reading is inversely proportional to sentence decision ($r=-.682$, $p<.05$), and no meaningful correlation was found to linguistic knowledge and word recognition. In the intermediate group, Chinese reading is correlated to linguistic knowledge, represented by vocabulary knowledge ($r=.460$, $p<.01$) and grammar knowledge ($r=.536$, $p<.01$). No significant correlation was observable in the low proficiency group. Comparing this with the result in table 30, we could interpret it to mean that there was no apparent correlation obtained within groups.

		L1 Proficiency		
Chinese reading		High	Intermediate	Low
Language sensitivity	Word recognition	-.441	.238	-.365
	Sentence decision	-.682*	.294	-.410
Linguistic knowledge	Vocabulary	-.285	.460**	.425
	Grammar	-.390	.536**	.444

* $p<0.05$ ** $p<0.01$

Table 31: Pearson Correlations of independent variables to Chinese reading across L1 proficiency groups

6.4 Results of the survey

6.4.1 Descriptive results of the survey

Given the second research question (i.e. “How does metacognitive awareness differ in L1 reading and L2 reading?”), this section focuses on the results of metacognitive awareness of Chinese reading obtained from the survey on three strategies. In Chinese reading, the readers tend to incorporate problem-solving strategies most frequently into reading comprehension (mean=3.55, SD=0.60, in table 33), assisted with global strategies (mean=3.44, SD=0.56, in table 32), and relatively less frequent use of support strategies (mean=2.79, SD=0.61, in table 34). Above all, the Chinese subjects appear to be strategic readers in their L1 reading (mean=3.31, SD=.49).

Descriptive results of global strategies

The mode tells us how frequently each strategy is adopted among the participants. As shown in table 32, within the category of global strategies, item 6 (*I use tables, figures, and pictures in the text to increase my understanding*), and 8 (*I use typographical features like bold face and italics to identify key information*) are the most frequent strategies adopted by the readers (mode=5). Meanwhile, item 2 (*I remind myself of my prior or common knowledge consciously to help me understand what I read*), item 3 (*I take an overall view of the text first to see the content of the text, the length and the organization.*), and item 7 (*I use context clues to help me better understand what I am reading*) fall into high frequency usage as well (mean>3.4). Chinese readers show a conscious usage of the global strategies while reading in Chinese (mean=3.44), with a small deviation (SD=.56), and none of the means is lower than 3.10. Chinese readers are reluctant to incorporate the strategies like item 5 “*making a choice of what to read closely and what to ignore*”; item 9 “*I critically analyze and evaluate the information presented in the text.*”; and item 12 “*double check whether the guesses were wrong or right*” (mode=2), into their reading. At a macro-level, Chinese readers are aware of applying the strategies to their L1 reading.

Global strategy	in Chinese reading		
	Mean	Mode	SD
1. I have a purpose in mind when I read.	3.26	3	.998
2. I remind myself of my prior or common knowledge consciously to help me understand what I read.	3.75	4	1.043
3. I take an overall view of the text first to see the content of the text, the length and the organization.	3.79	4 ^a	1.142
4. I think about whether the content of the text fits my reading purpose.	3.13	3	1.132
5. When reading, I decide what to read closely and what to ignore.	3.20	2	1.302
6. I use tables, figures, and pictures in the text to increase my understanding.	3.80	5	1.209
7. I use context clues to help me better understand what I am reading.	3.48	4	1.105
8. I use typographical features like bold face and italics to identify key information.	4.13	5	1.162
9. I critically analyze and evaluate the information presented in the text.	3.11	2	1.253
10. I check my understanding when I come across new information.	3.18	3	1.025
11. I try to guess what the content of the text is about when I read.	3.33	4	1.091
12. I check to see if my guesses about the text are right or wrong.	3.10	2 ^a	1.363
Overall	3.44	--	.56

a. Multiple modes exist and the smallest value is shown

Table 32: Means, modes, and standard deviations of Chinese readers' use of global strategy (N=61)

Descriptive results of problem-solving strategies

A strong, frequent usage of problem-solving strategies in their L1 reading was revealed (mean=3.55, SD=.60), see table 33. Chinese readers seem to have a tendency to *adjust their reading speed with texts* (item 15), to *pay closer attention and re-read to increase understanding* (item 18), and to *guess the meaning of unknown words in the context* (item 19), while working directly with the text (mode=5). Whereas, *reading slowly and carefully to make sure I understand what I am reading* (item 13) and *stopping from time to time and thinking about what I am reading* are less favored by the Chinese readers in their L1 readings (mode=2).

Problem solving	In Chinese reading		
	Mean	Mode	SD
13. I read slowly and carefully to make sure I understand what I am reading.	3.10	2	1.165
14. I try to get back on track when I lose concentration.	3.67	4	1.106
15. I adjust my reading speed according to what I am reading.	3.90	5	1.150
16. I stop from time to time and think about what I am reading.	2.87	2	1.231
17. I try to picture or visualize information to help remember what I read.	3.46	4	1.246
18. When the text becomes difficult, I pay closer attention and re-read what I am reading to increase my understanding.	3.80	5	1.236
19. When I read, I guess the meaning of unknown words or phrases.	4.02	5	.991
Overall	3.55	--	.60

Table 33: Means, modes and standard deviations of Chinese readers' use of problem-solving (N=61)

Descriptive results of support strategies

The selection of support strategies while reading in Chinese by the Chinese readers is reported in table 34. None of the strategies is frequently adopted. Reference materials (such as a dictionary) are often used (item 22, mode=3), and the others are sometimes used (mode=2). They seem to never or nearly never read aloud to increase their comprehension (item 21, mode=1). The usage of support strategies was reported at a medium level ($2.5 < \text{mean} < 3.4$) in Chinese reading among the Chinese subjects (mean=2.79, SD=.61).

Support strategy	In Chinese reading		
	Mean	Mode	SD
20. I take notes (e.g. underline or circle information) while reading to help me remember and understand what I read.	2.87	2	1.258
21. When the text becomes difficult, I read aloud to help me understand what I read.	2.18	1	1.176
22. I use reference materials (e.g., a dictionary) to help me understand what I read.	3.11	3	1.156
23. I paraphrase (restate ideas in my own words) to better understand what I read.	2.84	2	1.172
24. I go back and forth in the text to find relationships among ideas in it.	3.23	2 ^a	1.071
25. I ask myself questions I like to have answered in the text.	2.51	2	1.192
Overall	2.79		.61

a. Multiple modes exist and the smallest value is shown

Table 34: Means, modes, and standard deviations of Chinese readers' use of support strategy (N=61)

Summary

In the survey of the metacognitive awareness of Chinese reading, among 25 strategies, 10 items (40%) fell into the high usage level (mean>3.4), 1 item (4%) into the low usage level (mean<2.5), and the other 14 items (56%) into the medium usage level (2.5=< mean =< 3.4). At a macro-level, the readers show a higher medium strategic tendency in Chinese reading (mean=3.31, SD=.49). As for specific categories, problem-solving strategies are the favorite strategies applied to Chinese reading by Chinese readers, followed by global strategies, while support strategies are relatively less favored.

Strategies	Chinese reading
Global	.200
Problem solving	.350*
Support	.318*
overall	.327*

* p<0.05 ** p<0.01

Table 35: Pearson Correlations of independent variables to Chinese LI reading (N=53)

In addition, Chinese reading is significantly correlated to problem-solving strategies and support strategies ($r=3.50$, $p<.05$; and $r=3.18$, $p<.05$), see table 35. Also, it indicates that 32.7%

Chinese reading comprehension is due to metacognitive awareness of Chinese reading ($p<.05$). No meaningful relation was observed between global strategies and Chinese reading.

6.4.2 Cross-group comparison results of the survey

To see whether there are differences across the proficiency groups (high-, intermediate-, and low-proficiency) on the metacognitive awareness of Chinese L1 reading, one-way ANOVA analysis was carried out.

The descriptive results of the strategies across the groups are presented in table 36. The means of any strategies in the high proficiency group are higher than those in the intermediate group, and in turn higher than those in low proficiency group. Consequently, the means of the whole survey has the same tendency across proficiency groups. A distinctive group difference was observed on the variable of problem-solving strategy ($F (2, 52) = 4.99, p<.05$), and of support strategy ($F (2, 52) = 3.37, p<.05$). Although no meaningful difference was observed across groups on the usage of global strategy while working with a Chinese text by Chinese L1 readers ($F (2, 52) = .979, p>.05$), the survey shows a distinctive variation across proficiency groups, $F (2, 52) = 3.39, p<0.05$. Therefore, it is posited that more strategies are applied to Chinese reading by Chinese readers with higher language proficiency than those with intermediate and lower language proficiency.

Strategy	L1 proficiency		
	High	Intermediate	Low
Global	3.63 / .609	3.46 / .571	3.22 / .215
Problem solving	3.98 / .603	3.54 / .583	3.02 / .506
support	3.25 / .547	2.75 / .589	2.56 / .647
Overall	91.00 / 12.166	82.84 / 12.113	75.17 / 7.834

Table 36: Means with standard deviations for high-, intermediate-, and low-proficiency Chinese readers' usage of reading strategies (N=53)

The calculated correlations of Chinese reading comprehension to the strategies across the groups are shown in table 37. The results do not prove that there is a real and strong correlation of Chinese reading to any strategies across the proficiency groups, which indicates that there is no pattern in the usage of strategies across proficiency groups.

Strategies	Chinese L1 reading		
	High	Intermediate	Low
Global	.205	.036	.246
Problem solving	-.327	.124	-.219
Support	.229	.121	.474
Overall	.071	.098	.217

* p<0.05 ** p<0.01

Table 37: Pearson Correlations of independent variables to Chinese L1 reading across proficiency groups

6.5 Summary

The descriptive results of the measurements on Chinese reading comprehension were presented in this chapter, and the correlations of Chinese reading to the independent variables were revealed. Chinese readers did well on the measurements of linguistic knowledge and language sensitivity, and they made progress in Chinese L1 reading during three measurements. Linguistic knowledge and sentence decision have meaningful correlations to Chinese reading. Across proficiency groups, they did perform differently on linguistic knowledge and sentence decision, but no significant variation of performance on word recognition was observed, and there is no particular correlated pattern to trace across proficiency groups.

With regard to the metacognitive awareness of Chinese reading, Chinese readers show their capability of being a strategic reader in L1 reading. Chinese reading has meaningfully low correlation to metacognitive awareness, though it indicates that metacognitive awareness can be a contributor to the Chinese reading. Within the categories of the survey, Chinese readers tend to most frequently use problem-solving strategies with the assistance of global strategies of reading, and they have less interest in using support strategies in Chinese L1 reading. Chinese readers with higher L1 proficiency do adopt strategies in the process of Chinese reading more frequently than those who have intermediate and low L1 proficiency, and the variations across proficiency groups are obviously centered on problem-solving strategies and support strategies. No difference in group performance was observable for the global strategies. In general, Chinese readers show different metacognitive awareness of Chinese reading across proficiency groups. For each proficiency group, no meaningful correlation of Chinese reading comprehension to any strategies was found.

7 Results of hypothesized models of Chinese EFL readers

7.1 Introduction

This chapter presents the results of the hypothesized models (see section 4.6), which provide answers to the research questions (see section 4.2). Chapter 5 and chapter 6 have presented the descriptive information of the variables and the variations across proficiency groups, and this chapter focuses on the causal relationships between the independent and dependent variables, which is specified as: how the dependent variable changes when any one of the independent variables varies. The predictors are brought, step by step, into the predicted models, and the predicted models are tested by simple linear regression analysis, standard multiple regression analysis, and sequential multiple regression analysis. First of all, the predicted models are tested in one language, and there is no cross-language effect concerned. A cross-language effect is to be considered at the end.

The concrete hypotheses deriving from the research questions are raised in section 7.2, and the hypothesized relationships are also revealed. Section 7.3 contains the test of the step-by-step models in L1 reading, and the test of step-by-step models in L2 reading follows in section 7.4. A cross-language effect is included in section 7.5, in which a componential model of Chinese EFL readers is expected. This chapter ends with a brief comparison of L1 and L2 reading.

7.2 A hypothesized model

Under the paradigm of componential theory, a final componential model is hypothesized, which is composed of several small models (see section 4.6). The hypothesized relationships derived from the research questions have to be tested, and these are depicted in figure 20. An arrow (\rightarrow) represents the direction of the contribution, while a solid line (-) stands for a component of the variables.

Specific hypothesized relationships in figure 20

Hypothesis 1: L1 sensitivity (L1S) influences L1 reading comprehension (L1R).

Hypothesis 2: L1 linguistic knowledge (L1LK) influences L1 reading comprehension (L1R).

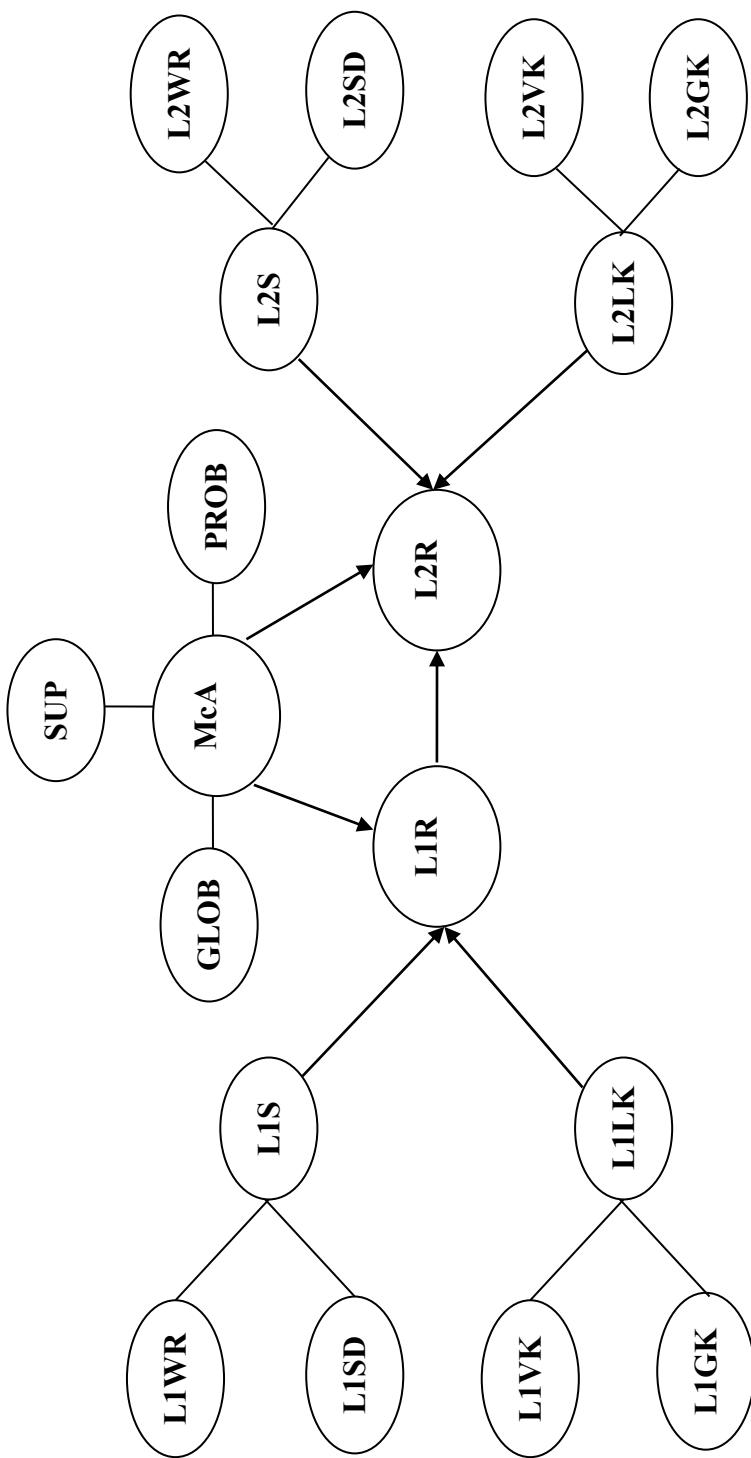
Hypothesis 3: Metacognitive awareness (McA) influences L1 reading comprehension (L1R).

Hypothesis 4: L2 sensitivity (L2S) influences L2 reading comprehension (L2R).

Hypothesis 5: L2 linguistic knowledge (L2LK) influences L2 reading comprehension (L2R).

Hypothesis 6: Metacognitive awareness (McA) influences L2 reading comprehension (L2R).

Hypothesis 7: L1 reading ability (L1R) influences L2 reading comprehension (L2R).



L1WR: L1 word recognition
L1SD: L1 sentence decision
L1VK: L1 vocabulary knowledge
L1GK: L1 grammar knowledge
L1S: L1 sensitivity
L1LK: L1 linguistic knowledge
L1R: L1 reading
McA: metacognitive awareness
GLOB: global strategy
PROB: problem-solving problem
SUP: support strategy
L2WR: L2 word recognition
L2SD: L2 sentence decision
L2VK: L2 vocabulary knowledge
L2GK: L2 grammar knowledge
L2S: L2 sensitivity
L2LK: L2 linguistic knowledge
L2RK: L2 reading

Figure 20: A hypothesized componential model of Chinese EFL readers

7.3 Results of L1 reading (Chinese)

7.3.1 Simple regression analyses

A simple linear regression analysis was done to explore the relationship between one independent variable and the dependent variable, and this focuses on the unique contribution of the predictor to the dependent variable. Firstly, the simple regression analyses between L1 reading individually and the independent variables were done to prove hypotheses 1, 2, and 3.

Hypothesis 1

The results of L1R weights on L1S are shown in table 38. This confirms hypothesis 1 that L1S predicts L1R: $\beta=.322$, $t(49) = 2.380$, $p<.05$, indicating that the participants who have higher sensitivity to the language have a better understanding of the texts. 10.4% of the variance in the L1R is explained by L1S, $F (1, 49) = 5.664$, $p<.05$.

Model	Unstandardized coefficients		Std. β	t	Sig.
	B	Std. Error			
1 (constant) Language sensitivity	26.253 .106	5.589 .045	.322	4.698 2.380	.000 .021
Model summary ^b		Analysis of variance ^b			
R	.322	Sum of squares	df	Mean square	F
R ²	.104	Regression	1	192.770	5.664
Adjusted R ²	.085	Residual	49	34.032	.021 ^a

a. Predictors: (constant), language sensitivity

b. Dependent variable: Chinese reading

Table 38: Regression of Chinese reading on language sensitivity

Hypothesis 2

Hypothesis 2 is supported by the results of L1R regressed on L1LK, see table 39. L1LK significantly influences L1R ($\beta=.792$, $t(53) = 9.432$, $p<.001$), indicating that the participants who have more linguistic knowledge comprehended the texts better, and 62.7% of the variance in L1R is explained by L1LK ($R^2 = .627$, $F (1, 53) = 88.955$, $p<.001$).

Model	Unstandardized coefficients		Std. β	t	Sig.	
	B	Std. Error				
1 (constant)	15.411	2.543		6.060	.000	
Linguistic knowledge	1.454	.154	.792	9.432	.000	
Model summary ^b		<u>Analysis of variance</u> ^b				
R	.792 ^a	Sum of squares	df	Mean square	F	
R ²	.627	Regression	1313.034	1	1313.034	88.955
Adjusted R ²	.620	Residual	782.312	53	14.761	.000 ^a

a. Predictors: (constant), linguistic knowledge

b. Dependent variable: Chinese reading

Table 39: Regression of Chinese reading on linguistic knowledge

Hypothesis 3

The results of the effect of McA on L1R are presented in table 40, which supports hypothesis 3 ($\beta=.327$, $t(51) = 2.475$, $p<.05$), and indicates that higher metacognitive awareness of L1R helps the comprehension of L1R. McA accounts for 10.7% of the variance in L1R, $R^2 = .107$, $F (1, 51) = 35.544$ with $p<.05$.

Model	Unstandardized coefficients		Std. β	t	Sig.	
	B	Std. Error				
1 (constant)	25.217	5.666		4.451	.000	
Metacognitive awareness	4.162	1.681	.327	2.475	.017	
Model summary ^b		<u>Analysis of variance</u> ^b				
R	.327 ^a	Sum of squares	df	Mean square	F	Sig.
R ²	.107	Regression	1	217.786	6.127	.017 ^a
Adjusted R ²	.090	Residual	51	35.544		

a. Predictors: (constant), metacognitive awareness

b. Dependent variable: Chinese reading

Table 40: Regression of Chinese reading on metacognitive awareness

7.3.2 Multiple regression analyses

A standard multiple regression analysis was conducted to see how well the variables together are able to predict an outcome (the dependent variable) and to determine which variable among them is the best predictor. Before testing hypotheses 1, 2, and 3 simultaneously, a multiple regression analyses of the sub-components of hypothesis 1, 2, and 3 was conducted, for

instance, the results of L1R weights on L1WR and L1SD; on L1VK and L1GK; and on GLOB, PROB, and SUP. First of all, the test assumption was calculated to see whether violations existed, such as outliers, and multicollinearity; however, no serious violations were noticed in the following analyses.

Sub-components of hypothesis 1

The results in table 41 reveal that R for the regression is significantly different from zero: $R=.371$, $F(2, 48) = 3.838$, $p<.05$, and the model explains 10.2% of the variance in L1R ($R^2=.102$). Between the two predictors, L1SD significantly predicts L1R, $\beta=.302$, $t(48) = 2.152$, $p<.05$, while L1WR does not meaningfully predict L1R, $\beta=.145$, $t(48) = 1.033$, $p>.05$. Apparently, L1SD is a stronger predictor for L1R.

Model	Unstandardized coefficients		Std. β	t	Sig.
	B	Std. Error			
1 (constant)	20.978	6.728		3.118	.003
Word recognition	.058	.056	.145	1.033	.307
Sentence decision	.264	.123	.302	2.152	.036
Model summary ^b			<u>Analysis of variance</u> ^b		
R	.371 ^a	Model	Sum of squares	Mean square	F
R²	.138		df		Sig.
Adjusted R²	.102	1 Regression	256.485	128.242	3.838
		Residual	1603.868	33.414	.028 ^a

a. Predictors: (constant), word recognition, sentence decision

b. Dependent variable: Chinese Reading

Table 41: Regression of Chinese reading on word recognition and sentence decision

Sub-components of hypothesis 2

How L1LK contributes to L1R was tested on L1VK and L1GK. L1R was regressed simultaneously on those two variables. Table 42 shows that 62.7% of the variance in L1R is explained by the model ($R^2=.627$, $F(2, 52) = 43.749$, $p<.001$). Both L1VK and L1GK significantly predict L1R, $\beta=.547$, $t(52) = 5.458$, $p<.001$, and $\beta=.350$, $t(52) = 3.496$, $p<.005$. Meanwhile, it shows that L1VK is a stronger indicator than L1GK for L1R ($\beta=.547>.350$).

Model	Unstandardized coefficients		Std. β	t	Sig.
	B	Std. Error			
1 (constant)	15.731	2.797		5.624	.000
Vocabulary knowledge	1.396	.256	.547	5.458	.000
Grammar knowledge	1.576	.451	.350	3.496	.001
Model summary ^b					
R	.792 ^a				
R ²	.627				
Adjusted R ²	.613				
			<u>Analysis of variance</u> ^b		
			Model	Sum of squares	Mean square
				df	
			1 Regression	1314.272	657.136
			Residual	781.074	15.021
				F	Sig.

a. Predictors: (constant), vocabulary knowledge, grammar knowledge

b. Dependent variable: Chinese Reading

Table 42: Regression of Chinese reading on vocabulary and grammar knowledge

Sub-components of hypothesis 3

The regression of L1R weights on GLOB, PROB, and SUP were simultaneously calculated to see which one contributes more to L1R. Table 43 shows that the R for the regression model is significantly different from zero: R=.383, F (3, 49) = 2.802, p=.050, and 14.6% of the variance in L1R is explained by GLOB, PROB, and SUP ($R^2=.146$). None of the variables significantly predict L1R, GLOB ($\beta=-.048$, $t(49) = -.228$, $p>.05$), PROB ($\beta=.272$, $t(49) = 1.565$, $p>.05$), and SUP ($\beta=.191$, $t(49) = 1.164$, $p>.05$). It seems that PROB is an insignificantly stronger predictor of L1R.

Model	Unstandardized coefficient		Std. β	t	Sig.
	B	Std. Error			
1 (constant)	25.808	5.699		4.529	.000
Global strategy	-.541	1.875	-.048	-.228	.774
Problem-solving strategy	2.730	1.744	.272	1.565	.124
Support strategy	1.935	1.662	.191	1.164	.250
Model summary ^b					
R	.383 ^a				
R ²	.146				
Adjusted R ²	.094				
			<u>Analysis of variance</u> ^b		
			Model	Sum of squares	Mean square
				df	
			1 Regression	297.292	99.097
			Residual	1733.236	35.372
				F	Sig.

a. Predictors: (constant), global strategy; problem-solving strategy; support strategy

b. Dependent variable: Chinese Reading

Table 43: Regression of Chinese reading on sub-categories of metacognitive awareness

Hypotheses 1, 2, and 3

As illustrated in figure 20, the results of L1R regressed on L1S, L1LK, and McA simultaneously are presented in table 44, which shows that R for the regression model is significantly different from zero ($R=.820$, $F(3, 46) = 31.424$, $p<.001$) and 67.2% of the variance in L1R can be explained by them together ($R^2=.672$). Among the predictors, L1LK was found to be the best predictor for L1R ($\beta=.782$, $t(46) = 8.386$, $p<.001$), followed by McA ($\beta=.154$, $t(46) = 1.735$, $p=.089$).

Model	Unstandardized coefficient		Std. β	t	Sig.
	B	Std. Error			
1 (constant)	12.163	4.520	.038	2.691	.010
L1 Sensitivity	-.013	.031	-.405	-.405	.687
L1 linguistic knowledge	1.387	.165	.782	8.386	.000
Metacognitive awareness	.076	.044	.154	1.735	.089
Model summary ^b		Analysis of variance ^b			
R	.820 ^a	Model	Sum of squares	Mean square	F Sig.
R²	.672	1 Regression	1236.940	3 412.313	31.424 .000 ^a
Adjusted R²	.651	Residual	603.560	46 13.121	

a. Predictors: (constant), L1 sensitivity, L1 linguistic knowledge, metacognitive awareness

b. Dependent variable: Chinese reading

Table 44: Regression of Chinese reading on L1S, L1LK, and McA

Meanwhile, a further analysis of the regression model on L1 reading was conducted across proficiency groups. The results in table 45 show the explained variance of L1R and the weights of the independent variables in each group. In both high and intermediate proficiency groups, the independent variables significantly predict 38.5% and 43.5% of the variance in L1R ($R^2=.385$, $p<.05$, and $R^2=.435$, $p<.01$), whereas no significant prediction was found for the low proficiency group. With the inspection of standard coefficients, L1Lk for the intermediate group is the only significant predictor of L1R ($\beta=.637$, $p<.01$).

Proficiency	R²	β		
		L1S	L1LK	McA
High	.385*	-.713	-.026	-.327
Inter-mediate	.435**	.059	.637**	.022
Low	.349	-.400	.530	.562

* $p<.05$; ** $p<.01$

Table 45: Regression of Chinese reading on L1S, L1LK, and McA across groups

7.3.3 Sequential multiple regression of L1 reading

The effects of the independent variables and the sub-components of the independent variables on Chinese reading were tested above. To examine the individual contribution to L1R within a componential model, sequential multiple regression analyses were conducted. Sequential multiple regression was applied to find out whether the sub-components of the variables had the same or different effects on L1R. To be precise, it was carried out to explore the indispensable components in predicting L1R; a componential model of Chinese readers' L1 reading. The sequential order of the indicators entering into the equation followed the effects found in the results of above. Those variables with stronger effects entered into the model first, for example, L1LK > McA > L1S; L1VK > L1GK; PROB > SUP > GLOB; and L1SD > L1WR. The correlations between L1R and the indicators are displayed in the table 46, and the results of the sequential regression model are presented in the table 47.

	L1R	L1VK	L1GK	RROB	SUP	GLOB	L1SD	L1WR
L1R	--							
L1VK	.749**	--						
L1GK	.678**	.573**	--					
PROB	.374**	.347**	.237*	--				
SUP	.344**	.288*	.208	.552**	--			
GLOB	.203	.184	-.144	.558**	.522**	--		
L1SD	.378**	.377**	.397**	.294*	.304*	.233*	--	
<u>L1WR</u>	<u>.242*</u>	<u>.241*</u>	<u>.385**</u>	<u>.059</u>	<u>.221</u>	<u>.204</u>	<u>.462*</u>	<u>--</u>

*p<.05; **p<.01

Table 46: Correlations between L1R and L1-indicators (N=50)

The model fit R², adjusted R², and R² change for each model, and the unstandardized coefficients (B) and standardized coefficients (β) are listed in table 47, and the coefficients shown here are the coefficients after bringing all the indicators into the model. With all the indicators in the equation, the regression R of model 3 is .831, F (7, 49) = 13.429, p<.001.

	R ²	Adjusted R ²	R ² Change	B	β
Model 1	.653***	.638	.653**		
L1VK				1.129	.459***
L1GK				2.196	.487***
Model 2	.682***	.646	.030		
PROB				-.576	-.059
SUP				.519	.051
GLOB				2.362	.214*
Model 3	.691***	.640	.009		
L1SD				.021	.017
L1WR				-.046	-.116

*p<.10; **p<.05; ***p<.01

Table 47: Sequential regression of L1- indicators on L1R

Model 1, with linguistic knowledge (L1VK and L1GK) as the only indicator, accounts for 65.3% of the variance in the L1R. In model 2, the inclusion of metacognitive awareness (another three indicators, PROB, SUP, and GLOB) to the prediction of L1R resulted in an insignificant increment in R² compared to model 1, and similarly, with two additional indicators (L1SD and L1WR) brought into the equation, model 3 did not reliably improve R² either. Although each model shows a significant explanation of L1R, the additional indicators do not significantly contribute to L1R. With further inspection of the standardized coefficients of each indicator, L1VK and L1GK make a significant contribution to L1R (p<.01), and GLOB is another significant contributor to L1R (p<.10). In summary, among seven indicators, only three of them significantly predict L1R: L1VK, L1GK, and GLOB. Of these, L1GK is the strongest predictor (β =.487), followed by L1VK(β =.459), and GLOB (β =.214), which means that the participants who have a bigger vocabulary knowledge, better grammar knowledge, and report frequent use of GLOB while reading, perform better in Chinese reading.

7.4 Results of L2 reading (EFL)

Similarly, the analysis of L2 reading follows the same steps as those of Chinese L1 reading. Hypotheses 4, 5, and 6 were first tested with simple regression analyses in section 7.4.1, and then the sub-component analyses of the variables were checked (see section 7.4.2). Finally, a

componental model of L2 reading was achieved by sequential regression analyses in section 7.4.3.

7.4.1 Simple regression analyses

Hypothesis 4

Hypothesis 4 is supported by the regression analysis of L2R weight on L2S ($\beta=.616$, $t(57) = 5.902$, $p<.001$); see table 48. L2 reading was found to be significantly influenced by sensitivity to L2; more accuracy in the sensitivity to L2 increases the comprehension of L2 reading. Also, L2S explains 37.9% of the variance in L2R, $R^2 = .379$, $F (1, 57) = 34.831$, $p<.001$.

Model	Unstandardized coefficients		Std. β	t	Sig.
	B	Std. Error			
1 (constant) Language sensitivity	5.046 .305	5.969 .052	.616	.845 5.902	.401 .000
Model summary ^b					
R	.616 ^a	Sum of squares	df	Mean square	F
R ²	.379	Regression	1	1756.742	34.831
Adjusted R ²	.368	Residual	57	2874.885	.000 ^a
				50.437	

a. Predictors: (constant), language sensitivity

b. Dependent variable: English reading

Table 48: Regression of English reading on language sensitivity

Hypothesis 5

Model	Unstandardized coefficients		Std. β	t	Sig.
	B	Std. Error			
1 (constant) Linguistic knowledge	7.494 .741	2.057 .046	.901	3.644 16.104	.001 .000
Model summary ^b					
R	.901 ^a	Sum of squares	df	Mean square	F
R ²	.812	Regression	1	3859.064	59.339
Adjusted R ²	.809	Residual	60	892.823	.000 ^a
				14.880	

a. Predictors: (constant), linguistic knowledge

b. Dependent variable: English reading

Table 49: Regression of English reading on linguistic knowledge

The results of L2R regressed on L2LK is presented in table 49, which supports hypothesis 5: L2LK successfully predicts L2R ($\beta=.901$, $t(60) = 16.104$, $p<.001$), indicating that better performance in L2LK can help comprehension in L2 reading. 81.2% of the variance in L2R is significantly accounted for by L2LK ($R^2 = .812$, $F (1, 60) = 59.339$, $p<.001$).

Hypothesis 6

The results of the effect of McA on L2R are shown in table 50, which supports hypothesis 6, and indicates that readers with a higher score for metacognitive awareness of L2R have better comprehension in L2 reading ($\beta=.481$, $t(56) = 4.108$, $p<.001$). The overall usage of the strategies accounts for 23.2% of the variance in L2R ($R^2 = .232$, $F (1, 56) = 16.875$, $p<.001$).

Model	Unstandardized coefficients		Std. β	t	Sig.
	B	Std. Error			
1 (constant) Metacognitive awareness	15.139 7.606	6.263 1.851	.481	2.417 4.108	.019 .000
Model summary ^b		<u>Analysis of variance</u> ^b			
R	.481 ^a	Sum of squares	df	Mean square	F
R ²	.232	Regression	1	879.990	16.875
Adjusted R ²	.218	Residual	56	52.147	.000 ^a

a. Predictors: (constant), metacognitive awareness

b. Dependent variable: English reading

Table 50: Regression of English reading on metacognitive awareness

7.4.2 Multiple regression analyses

L2S consists of L2WR and L2SD; L2LK includes L2VK and L2GK; and the McA survey is composed of three strategies: GLOB, PROB, and SUP. To see how the sub-components contribute to L2 reading, multiple regression analyses were carried out; their results are presented in the tables 51, 52, and 53. A multiple regression analysis of L2R weights on L2S, L2LK, and McA was also conducted, which is shown in table 54. The testing assumption was calculated, and there was no serious violation noted in the following analyses.

Sub-components of hypothesis 4

The results in table 51 reveal that L2WR and L2SD can significantly explain L2R ($R=.723$, $F (2, 56) = 30.631$, $p<.001$), and the model is able to explain 52.2% of the variance in L2R

($R^2=.552$). Between the two predictors, L2SD is a significant predictor of L2R ($\beta=.707$, $t(56) = 6.357$, $p<.001$), while L2WR does not meaningfully predict L2R ($\beta=.028$, $t(56) = .249$, $p>.05$). L2SD is apparently a stronger predictor of L2R.

Model	Unstandardized coefficients		Std. β	t	Sig.
	B	Std. Error			
1 (constant)	1.323	5.360		.247	.806
Word recognition	.021	.083	.028	.249	.804
Sentence decision	.751	.118	.707	6.357	.000
Model summary ^b					
R	.723 ^a				
R ²	.522				
Adjusted R ²	.505				
Model	<u>Analysis of variance</u> ^b				
	Sum of squares	df	Mean square	F	Sig.
1 Regression	2419.715	2	1209.858	30.631	.000 ^a
Residual	2211.912	56	39.498		

a. Predictors: (constant), word recognition, sentence decision

b. Dependent variable: English Reading

Table 51: Regression of English reading on word recognition and sentence decision

Sub-components of hypothesis 5

Model	Unstandardized coefficients		Std. β	t	Sig.
	B	Std. Error			
1 (constant)	7.108	2.139		3.324	.002
Vocabulary knowledge	.881	.206	.498	4.281	.000
Grammar knowledge	.628	.169	.433	3.727	.000
Model summary ^b					
R	.902 ^a				
R ²	.814				
Adjusted R ²	.807				
Model	<u>Analysis of variance</u> ^b				
	Sum of squares	df	Mean square	F	Sig.
1 Regression	3866.361	2	1933.180	128.802	.000 ^a
Residual	885..526	59	15.009		

a. Predictors: (constant), vocabulary knowledge, grammar knowledge

b. Dependent variable: English Reading

Table 52: Regression of English reading on vocabulary and grammar knowledge

L2VK and L2GK can significantly predict L2R ($R=.902$, $F (2, 59) = 128.802$, $p<.001$), and 81.4% of the variance in L2R can be explained by L2VK and L2GK ($R^2=814$), see table 52. Both predictors can significantly predict L2R, L2VK ($\beta=.498$, $t(59) = 4.282$, $p<.001$) and L2GK ($\beta=.433$, $t(59) = 3.737$, $p<.001$). L2VK is a stronger predictor in the model in comparison with L2GK ($0.498>0.433$).

Sub-components of hypothesis 6

The regression of L2R weights on GLOB, PROB, and SUP was simultaneously calculated, and the results are shown in table 53. This reveals that the R for the regression model is significantly different from zero: $R=.556$, $F(3, 54) = 8.039$, $p<.001$, and nearly one third of the variance in L2R can be significantly explained by the model ($R^2=.309$). Among the three indicators, PROB is the only significant predictor of L2R ($\beta=.433$, $t(54) = 3.164$, $p<.01$), while the other two are not ($\beta= .215$, $t(54) = 1.463$, $p>.05$; $\beta= -.060$, $t(54) = -.453$, $p>.05$). In this model, PROB is the strongest predictor of L2R.

Model	Unstandardized coefficients		Std. β	t	Sig.
	B	Std. Error			
1 1 (constant) Global strategy Problem-solving strategy Support strategy	14.732	6.079	.215 .433 .433 -.060	2.424	.019
	2.832	1.936		1.463	.149
	5.158	1.630		3.164	.003
	-.810	1.787		-.453	.652
Model summary ^b		<u>Analysis of variance</u> ^b			
R	.556 ^a	Model	Sum of squares	Mean square	F Sig.
R ²	.309	1 Regression	1173.196	3 391.065	8.039 .000 ^a
Adjusted R ²	.270	Residual	2627.029	54 48.649	

a. Predictors: (constant), global strategy; problem-solving strategy; support strategy

b. Dependent variable: English Reading

Table 53: Regression of English reading on sub-categories of metacognitive awareness

Sub-components of hypothesis 4, 5, & 6

L2R was assumed to be influenced by L2S, L2LK, and McA (see figure 20). Thus, they were simultaneously tested in the multiple regression model of L2R. Table 54 shows that these factors do influence L2R ($R=.904$, $F(3, 50) = 74.699$, $p<.001$), and the model significantly explains 81.8% of the variance in L2R ($R^2=.818$). Among the predictors, L2LK was shown to be the best predictor of L2R ($\beta=.859$, $t(50) = 10.162$, $p<.001$), followed by McA ($\beta=.108$, $t(50) = 1.565$, $p=.124$), and L2S seems to be the weakest one.

Model	Unstandardized coefficient		Std. β	t	Sig.
	B	Std. Error			
1 (constant)	5.388	3.859		1.396	.169
L2 Sensitivity	-.006	.038	-.013	-.154	.879
L2 linguistic knowledge	.679	.067	.859	10.162	.000
Metacognitive awareness	.064	.041	.108	1.565	.124
Model summary ^b		<u>Analysis of variance</u> ^b			
R	.904 ^a	Model	Sum of squares	Mean square	F Sig.
R ²	.818	1 Regression	2986.482	3 995.494	74.699 .000 ^a
Adjusted R ²	.807	Residual	666.333	50 13.327	

a. Predictors: (constant), L2 sensitivity, L2 linguistic knowledge, metacognitive awareness

b. Dependent variable: English reading

Table 54: Regression of English reading on L2S, L2LK, and McA

The model was further analyzed across proficiency groups. A significant explanation of L2R was found only for the readers in the intermediate proficiency group ($R^2=.584$, $p<.01$), while no meaningful prediction was found for the high- and low-proficiency groups; see table 55. Among the indicators for the three groups, L2LK in the inter-mediate proficiency group is the only significant contributor to L2R ($\beta=.669$, $p<.01$).

Proficiency	R ²	β		
		L2S	L2LK	McA
High	.507	.764	.021	-.319
Inter-mediate	.584**	.054	.669**	.143
Low	.368	-1.301	1.802	1.026

* $p<.05$; ** $p<.01$

Table 55: Regression of English reading on L2S, L2LK, and McA across groups

7.4.3 Sequential multiple regression of L2 reading

L2 reading was tested for the effects of independent variables and the sub-components of the independent variables. To examine the individual contribution to L2R within a componential model, sequential multiple regression analyses were conducted. Similar to the analysis of L1 reading, this was carried out to explore the indispensable components in predicting L2R: a componential model of L2 reading by Chinese EFL readers. The sequential order of the indicators entering into the equation followed the effects found in the results (see 7.4.1, and 7.4.2). Those variables with stronger effects entered into the model first, for example, L2LK> McA>

L2S; L2VK > L2GK; PROB > GLOB > SUP; and L2SD > L2WR. Table 56 displays the correlations between L2R and L2-indicators, and table 57 presents the results of the sequential regression model of the sub-components of L2LK, McA, and L2S on L2R.

	L2R	L2VK	L2GK	RROB	GLOB	SUP	L2SD	L2WR
L2R	--							
L2VK	.889**	--						
L2GK	.855**	.874**	--					
PROB	.550**	.563**	.519**	--				
GLOB	.425**	.331**	.373**	.558**	--			
SUP	.204	.181	.163	.357**	.487**	--		
L2SD	.723**	.737**	.764**	.526**	.331**	.153	--	
<u>L2WR</u>	<u>.419**</u>	<u>.447**</u>	<u>.470**</u>	<u>.414**</u>	<u>.229*</u>	<u>.233*</u>	<u>.545**</u>	<u>--</u>

*p<.05; **p<.01

Table 56: Correlations between L2R and L2-indicators (N=54)

In table 57, the model fit R^2 , adjusted R^2 , and R^2 change for each model are presented, but the unstandardized coefficients (B) and standardized coefficients (β) are the coefficients after all the indicators entering into the equation, which are also the coefficients in model 3. It shows that the model can significantly predict L2R ($R=.911$, $F(7, 46) = 32.207$, $p<.001$).

	R ²	Adjusted R ²	R ² Change	B	β
Model 1	.816**	.809	.816**		
L2VK				.976	.588***
L2GK				.367	.259**
Model 2	.829**	.811	.013		
PROB				-.098	-.008
GLOB				1.646	.125
SUP				-.100	-.007
Model 3	.831**	.805	.002		
L2SD				.070	.071
L2WR				-.019	-.028

*p<.10; **p<.05; ***p<.01

Table 57: Sequential regression of L2- indicators on L2R

In model 1, 81.6% of the variance in L2R can be significantly explained by L2VK and L2GK. When they were controlled, model 2 with the addition of three indicators to the prediction of L2R did not show a reliable increment in R². In model 3, entering another two indicators in the equation did not lead to a significant improvement of R² either. Among the seven indicators, the value of the beta indicates that L2VK is the strongest predictor of L2R ($\beta=.588$, p<.01), followed by L2GK ($\beta=.259$, p<.05), and GLOB would be the third one ($\beta=.125$, p<.13). In summary, the readers who performed better on vocabulary and grammar tasks and reported that they use global reading strategies often performed better in English reading, too.

7.5 Cross-language effect

As analyzed in sections 7.3 and 7.4, there were no cross language effects concerned. However, L2R was assumed to be influenced by L2S, L2LK, McA, and L1R as shown in figure 20. Therefore, the following analyses bring L1R as a predictor into the L2R model. First, a standard multiple regression analysis of L2R was conducted with weights on L2S, L2LK, McA, and L1R simultaneously. The results in table 58 show that they do significantly affect L2R ($R=.918$, $F(4, 44) = 58.755$, p<.001); and the model succeeds in explaining 84.2% of the variance in L2R ($R^2=.842$). Among the four predictors, L2LK was shown to be the strongest predictor of L2R ($\beta=.753$, $t(44) = 6.933$, p<.001), followed by L1R ($\beta=.146$, $t(44) = 1.438$, p=.158), then McA ($\beta=.094$, $t(44) = 1.307$, p=.198), and L2S ($\beta=-.005$, $t(44) = -.064$, p=.890).

Model	Unstandardized coefficient		Std. β	t	Sig.
	B	Std. Error			
1 (constant)	.607	4.373		.139	.890
L2 Sensitivity	-.002	.037	-.005	-.064	.949
L2 linguistic knowledge	.605	.087	.753	6.933	.000
Metacognitive awareness	.059	.045	.094	1.307	.198
L1 reading	.202	.141	.146	1.438	.158
Model summary ^b			Analysis of variance ^b		
R	.918 ^a		Model	Sum of squares	Mean square
R²	.842		1 Regression	2971.755	742.939
Adjusted R²	.828		Residual	556.368	12.645
			df	F	Sig.

a. Predictors: (constant), L2 sensitivity, L2 linguistic knowledge, metacognitive awareness, L1 reading

b. Dependent variable: English reading

Table 58: Regression of English reading on L2S, L2LK, McA, and L1R

To achieve a final componential model of Chinese EFL-learners, the sequential regression model was conducted again with the order of predictors entering the equation as (see the results in section 7.4 and table 55), L2LK > L1R > McA > L2S; L2VK > L2GK; PROB > GLOB > SUP; and L2SD > L2WR. The correlations between L2R and the variables are displayed in table 59, and table 60 includes the information of the model fit R², adjusted R², and R² change. The unstandardized coefficients (B) and standardized coefficients (β) for each independent variable are after the entry of all the predictors into the equation. R is significantly different from zero in each model, and in model 4 with all the indicators in the equation, R=.924, F (8, 40) = 29.164, p<.001.

	L2R	L2VK	L2GK	L1R	RROB	GLOB	SUP	L2SD	L2WR
L2R	--								
L2VK	.890**	--							
L2GK	.869**	.876**	--						
L1R	.784**	.807**	.723**	--					
PROB	.590**	.598**	.578**	.539**	--				
GLOB	.423**	.229*	.343**	.413**	.579**	--			
SUP	.208	.161	.174	.308*	.338**	.440**	--		
L2SD	.723**	.741**	.762**	.612**	.572**	.319*	.162	--	
L2WR	.396**	.419**	.443**	.380**	.452**	.199	.244*	.540**	--

*p<.05, **p<.01

Table 59: Correlations between L2R and the indicators (N=49)

	R²	Adjusted R ²	R ² change	B	β
Model 1	.826***	.819	.826***		
L2VK L2GK				.752	.450***
				.431	.296**
Model 2	.837***	.826	.010*		
L1R				.166	.120
Model 3	.849***	.828	.012		
PROB GLOB SUP				-.453	-.037
				1.835	.134*
				-.121	-.008
Model 4	.854***	.824	.005		
L2SD L2WR				.114	.114
				-.026	-.038

*p<.10; **p<.05; ***p<.01

Table 60: Sequential regression of L2- indicators on L2R

In model 2, adding the variable of L1R to the equation with model 1 (L2VK and L2GK) leads to a significant increment in R² (p<.10). Further inspection of the standardized coefficients shows that the additional variable results in a significant increment in R² but without a unique significant contribution to the prediction of L2R. In model 3, the inclusion of three more variables do not result in a reliable improvement of R², but the standardized coefficients reveal that GLOB makes a significant unique contribution to the prediction of L2R. Neither on R² nor on the coefficients, does model 4 show any significant influence. In summary, among the 8 variables, L2VK was proven to be the strongest predictor of L2R ($\beta=.450$, p<.01), followed by L2GK ($\beta=.296$, p<.01), GLOB ($\beta=.134$, p<.10), L1R ($\beta=.120$, p>.10), L2SD ($\beta=.114$, p>.10). The readers with better performance on vocabulary and grammar tasks and more frequent use of global reading strategies, and meanwhile better performance in L1R and greater sensitivity to the meaning of sentences might statistically perform better in English reading.

Finally, the results of the hypothesized model of Chinese EFL readers are shown in figure 21. A solid line indicates a significantly stronger predictor of the dependent variable, a dashed line demonstrates a strong but not necessarily significant predictor, and a dot line stands for a weak predictor of the dependent variable.

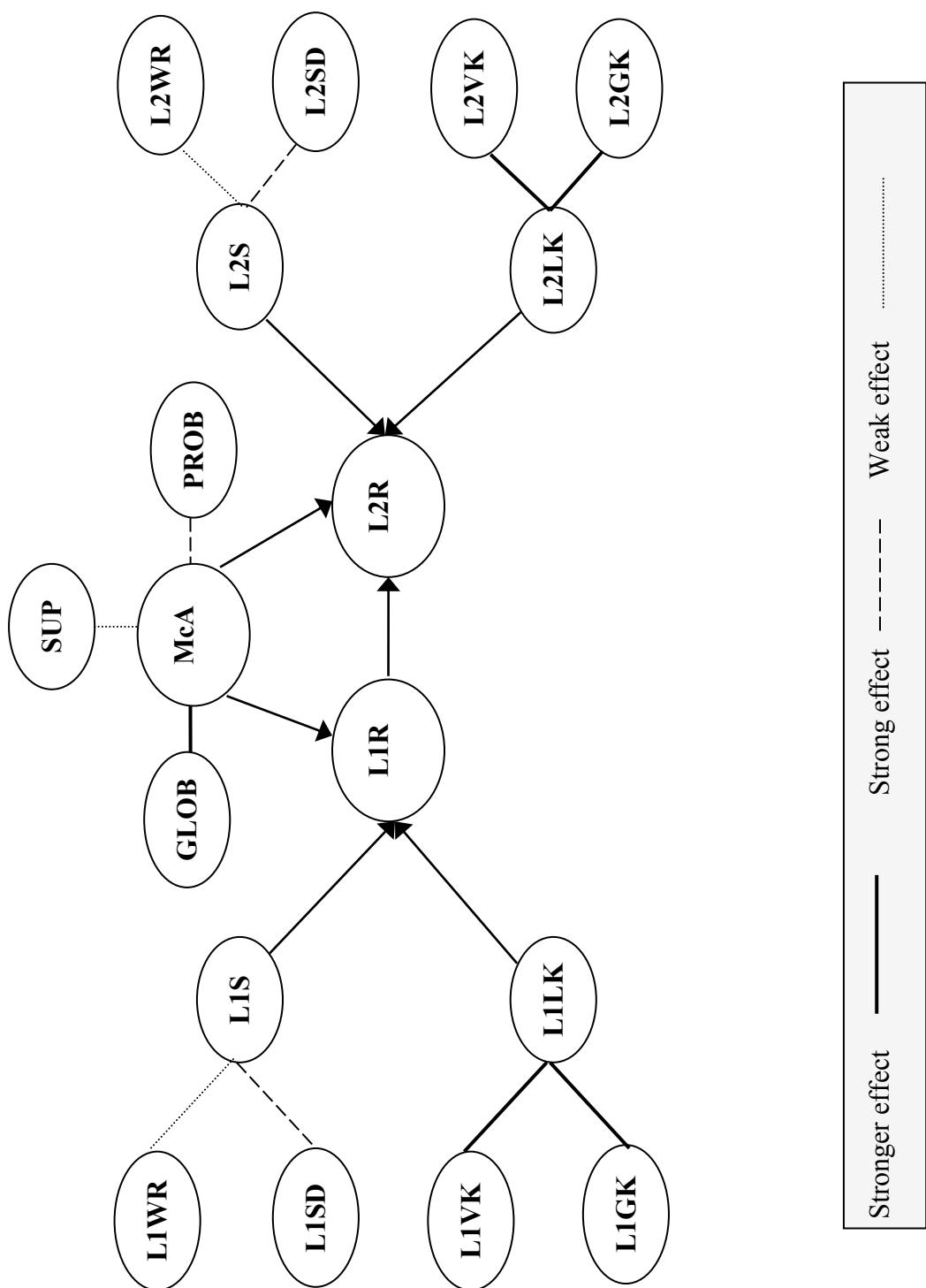


Figure 21: Result of the hypothesized componential model of Chinese EFL readers

7.6 Summary

This chapter presented the results of the hypothesized models of Chinese EFL-learners both in Chinese reading and in EFL reading. The results revealed that they have similarities and also differences in the process of L1 reading and L2 reading. The hypotheses were supported by data-testing that language sensitivity, linguistic knowledge and metacognitive awareness influence reading comprehension, both in L1 and in L2. They were proven individually that they could significantly contribute to explaining both L1 and L2 reading comprehension. Also, hypothesis 7 was confirmed that L1 reading is another significant predictor of L2 reading; that is to say, L2 reading ability is significantly directly proportional to the ability of L1 reading.

In the process of Chinese reading, when only linguistic knowledge is concerned, vocabulary knowledge was found to contribute more than grammar knowledge in explaining the process of reading. Taking language sensitivity for instance, sentence decision is significantly more capable of predicting Chinese reading ability than word recognition is. As for metacognitive awareness of Chinese reading, the model significantly explains the variance in Chinese reading, but none of the strategies are significant factors; and problem-solving strategies are insignificantly more powerful for inferring reading ability in Chinese, assisted by support strategies. When three factors were taken simultaneously into the model, the variance in Chinese reading could be significantly explained, and Chinese linguistic knowledge had the largest weight, followed by metacognitive awareness of Chinese reading, which unfortunately does not apply to the proficiency groups. However, when linguistic knowledge was controlled, we found global strategy to be the third strongest factor to influence the process of Chinese reading. Language sensitivity does not show any influence on Chinese reading when both linguistic knowledge and metacognitive awareness are controlled. Grammar knowledge, vocabulary knowledge, and global strategy are significantly stronger predictors of Chinese reading, followed by the strong factor of sentence decision. The others do not show any strong effect on L1 reading in the componential model.

In the process of English reading, vocabulary knowledge was also identified to have a stronger effect than grammar knowledge, when the linguistic knowledge was the only predictor brought into the model. Similarly, sentence decision was shown to have a significantly greater weight on English reading than word recognition has, as far as language sensitivity is concerned. Regarding the process of English reading, it was determined that problem-solving strategy and global strategy are significant factors in the explanation and, moreover, the model is able to significantly explain the variance. When three factors were simultaneously

brought into the model, they could significantly explain the variance in English reading, and linguistic knowledge was found to have the largest weight, which also applies to the intermediate proficiency group. On the other hand, when linguistic knowledge is controlled, the extra inclusion of metacognitive awareness does not show any significant improvement in explaining the process of English reading, but global strategy displayed a positive effect on English reading. The inclusion of the additional factor of language sensitivity is again an insignificant contributor to the explanation of English reading. In contrast to Chinese reading, the order of the stronger indicators is: vocabulary knowledge and grammar knowledge, and global strategy. Sentence decision is again a strong indicator, and the others are only weak indicators of the process of English reading.

Finally, when Chinese reading ability, as another variable, was brought into the model of English reading, it was found that L1 reading ability is a significant predictor in the explanation of L2 reading ability, when L2 linguistic knowledge is controlled. Similarly, global strategy, as one of the additional variables, again shows a significant contribution to predicting English reading ability. The inclusion of the other variables does not present a convincing improvement. Thus, the indispensable components of the model for Chinese EFL learners, in decreasing order, are: L2 linguistic knowledge, the level of L1 reading ability, metacognitive awareness of English reading, especially global strategy followed by problem-solving strategy, and sentence sensitivity of L2.

8 Discussion and conclusion

8.1 Introduction

The results of the data analysis have been presented in chapters 5, 6 and 7. This chapter discusses the main findings of the study concerning the componential model of Chinese EFL readers. The study intended to address four research questions (see chapter 4):

1. *How do language sensitivity and linguistic knowledge contribute to reading comprehension, either in L1 reading or in L2 reading?*
2. *How does metacognitive awareness differ in L1 reading and L2 reading?*
3. *Do linguistic knowledge, language sensitivity and metacognitive knowledge contribute to the explanation of L1 and L2 reading comprehension? Can L1 reading proficiency be another component in explaining L2 reading ability?*
4. *Is there a specific cognitive reading style held by Chinese-English speakers, compared to other bilinguals?*

In section 8.2, the conclusions on the reading ability of Chinese EFL learners, both in L1 and in L2, will be drawn from three aspects: the findings of the sample in L1 reading and in L2 reading; the factors in the process of L1 and L2 reading; and the comparison of the factors across proficiency groups. This study is based on a correlational analysis instead of causative analysis. Therefore, in section 8.3, the implications of the study are summarized following the findings and discussion deduced from and generated by the correlational analysis. In addition, this section contains an outlook on directions of future research.

8.2 Conclusion on reading ability of Chinese EFL learners

8.2.1 Main findings of two language samples

The tests in this study were able to reflect the ability of the participants, who showed a similar tendency on each part of the tests. On average, the participants got 79.8%, 75.9%, and 81.5% correct in the reading tests; 76%, 82.3%, and 87.7% correct in vocabulary knowledge; and 70.6%, 79%, and 80.8% correct in grammar knowledge; respectively, on Test 1, Test 2, and Test 3. Most of the students could correctly answer the questions, and the range of correctness on the tests concerning reading comprehension ran from 70% to 80%, which shows that the difficulty of the tests was still acceptable. Similarly, the participants also got a high rate of

correctness in language decoding: 79.8% of the word recognition items and 84.9% of the sentence decision items. Meanwhile, the correlation tests between the independent variables and dependent variable have proven that word recognition, sentence decision, vocabulary and grammar, respectively, are significantly correlated with reading comprehension. Therefore, English reading is not only related to linguistic knowledge, but is also related to language sensitivity. In EFL reading, the more sensitive to the language the readers are, the better their comprehension is.

In contrast, the tests on Chinese reading seem a little more difficult. The average score of the tests was lower than those of the English tests. There was a big variance from item to item on Test 1, Test 2 and Test 3, ranging from 55% to 95%, which is partially due to the unbalanced nature of the tests, in terms of the number of items they contained. To native speakers, the difficulty of the tests is moderate in order to distinguish the language ability of the participants. On the task of language decoding, they got a considerably higher percentage correct in Chinese than in English, 86.2% in word recognition and 93.3% in sentence decision, which is understandable because L1 as the mother tongue is much easier to be recognized than L2. However, the correlation tests do not show a significant relationship between Chinese reading and word sensitivity, and show a lower correlation to sentence sensitivity. Generally, it is natural for native speakers to judge whether a word is a true word or a pseudo-word and whether a sentence is meaningful or meaningless, but it seems that this natural reaction has nothing to do with the ability to read. For Chinese readers, sensitivity to their native language is not necessarily helpful to their L1 reading comprehension.

In this study, a survey of reading strategies was used to measure metacognitive awareness of reading comprehension. As for reading strategies used in EFL reading comprehension, Chinese EFL readers reported that they are not highly frequent strategy-users while reading in English. Regarding strategy categories, they are frequent users of problem-solving strategies, moderate users of global strategies, and less frequent users of support strategies, such as using reference materials, or reading forth and back. Moreover, an overall medium correlation was found between the use of strategies and English reading comprehension. English reading is meaningfully correlated to global and problem solving strategies, but not to support strategies.

Similarly, the participants have the same tendency in Chinese reading as in EFL reading. They are frequent users of problem solving strategies and of global strategies, but rather less frequent users of support strategies. To this extent, the process of EFL reading shares the same cognition pattern with L1 reading. L2 reading comprehension is supported by the reading skills accumulated in L1 reading, which agrees with the transfer hypothesis of Goodman

(1971), that higher order ability globally guides the processes of reading. The more frequent use of support strategies such as the use of dictionary or other reference materials, paraphrasing or translation in L2 reading might result from language obstacles, which do not or seldom take place in L1 reading. On the other hand, Chinese reading is significantly correlated to problem solving strategies and support strategies, instead of global strategies as in EFL reading. The participants might transfer their reading strategies from L1 to L2, but the reading strategies do not have the same functions in L1 reading as in L2 reading.

The componential analysis of reading comprehension is explained by the performance on the tasks/components that are assumed to influence reading comprehension. In this study, the indicators are meaningfully related and predict reading comprehension, both in L1 and in L2, whereas, the contributions vary with the specific language, or when the other variables are not controlled. L1 reading and L2 reading share the same metacognitive awareness of reading, but the functions of the strategies are also unbalanced. The detailed contributions of the indicators and how they perform differently in the process of Chinese reading as well as of English reading are presented in the following section.

8.2.2 Factors in the process of reading

It is undeniable that the reading process starts from decoding, which is also termed as graphic information or visual input (see chapter 3). The simple view of reading considers reading as two parts - decoding and language comprehension. Therefore, the order of the factors in the reading process also starts from decoding, followed by language comprehension, and ends with reading strategies.

Decoding

Usually, decoding is tested to check the reaction time, which in turn indicates the load of the working memory, and further influences the process of reading. Also, it is mostly believed that higher efficiency in language decoding makes it easier to read, and saves more capacity for reading comprehension. Sensitivity to language successfully explains around 10% of the variance in L1 reading, and nearly 38% of the variance in L2 reading. Sensitivity to the word recognition was found to have no meaningful impact on reading comprehension either in L1 or in L2, whereas sensitivity to sentence decision strongly influences reading comprehension. If word recognition and sentence decision are the only variables, language sensitivity can explain more than half of the variance in L2 reading, which is much higher than in L1 reading.

The results are in line with the efficiency of processing hypothesis that decoding is fundamental to L2 reading (Koda, 1996; Segalowitz, 2000). Meanwhile, Chinese EFL readers who are more sensitive to English also show better comprehension in English reading. This also applies to Chinese reading, but the effect of language sensitivity on Chinese reading is not as strong that on English reading, which might result from language distance effect, because English is a word-dependent language and Chinese is a context-dependent language.

It is believed that if lower order processing is efficient, there is more capacity to devote to higher order processing, and vice versa. Similarly, a higher sensitivity to language would theoretically lead to a less stressful higher order process. In Chinese reading, the sensitivity to word recognition and sentence decision do not result in a higher score in linguistic knowledge on vocabulary and grammar; and it also does not show a positive effect on the strategy use in reading. However, in English reading, the sensitivity to language has a strong effect on linguistic knowledge, but little influence on reading strategy use. The participants who are poor at decoding adopt higher order processing as well, which is in accordance with the discussion of Stanovich (1980). In summary, L1 decoding does not have a strong effect on L1 reading, but L2 decoding is a fundamental step in L2 reading.

Taking language sensitivity as the only predictor, sensitivity to sentence decision presents a stronger contribution than sensitivity to word recognition in explaining reading comprehension in both languages. We can also interpret this to mean that those students who are faster in getting the meaning of a sentence have better comprehension.

Linguistic knowledge

Both in Chinese reading and in English reading, linguistic knowledge is again proven to be the strongest factor, which confirms what has been found by many other studies (Stanovich, 1986; Carr & Levy, 1990; Just & Carpenter, 1992; Perfetti, 1999; Van Gelderen, Schoonen, de Groot & Hulsijn, 2004, 2007; Segalowitz, 2000; Koda, 1996). In L1 reading, vocabulary knowledge is a stronger indicator of reading comprehension, and grammar knowledge is relatively weak. When they predict the variance in Chinese reading together, they can account for more than three fifths of the variance. In English reading, vocabulary knowledge and grammar knowledge seemed to have a similar contribution to reading comprehension, and together they can explain more than 80% of the variance. The students who have a higher score on vocabulary and grammar tasks also have a higher score on reading comprehension in English, while there is a relatively weaker relationship in Chinese, which has been examined by the

study of Palij and Aaronson (1992), indicating that the Chinese language is a more context-dependent and less word-dependent language than English. Accordingly, lower order ability is comparably more important to the reading process in English than in Chinese. In addition, the students who have a better proficiency in lower level processing, both in Chinese and in English, do not show a more frequent use of higher level processes, such as reading strategies. Whether they are poor or good at linguistic tasks, they perform the same on the survey. Therefore, the threshold hypothesis is not applicable to this study because the students can still apply reading strategies even if they have a poor proficiency in language-specific knowledge, which is against the proposal of Alderson (1984).

When only linguistic knowledge is considered, vocabulary knowledge and grammar knowledge have equivalent effects on English reading; whereas vocabulary knowledge contributes more than grammar knowledge to explain the variance in Chinese reading, which might result from the language distance (see 3.6).

Metacognitive awareness

Chinese EFL learners do not show a dramatic difference in using strategies between languages, specifically in Chinese and in English. The metacognitive awareness they reported in reading comprehension shows that students in junior middle school have a medium-frequency level of reading strategies. Among 27 strategies in English reading, 48.2% fell into a high frequency level, 7.4% fell into a low frequency level, and the other 44.4% fell into the medium level. Among 25 strategies in Chinese reading, 40% fell into a high usage level, 4% fell into a low usage level, and the other 56% fell into the medium level. Relatively more variation was reported in dealing with English reading than Chinese reading among students; but they reported similar preferences in usage of strategies in both languages: a high usage level of problem solving strategies and of global strategies, and a medium usage level of support strategies. The students are reluctant to activate the awareness of supportive strategies, but they are more willing to face and solve problems or to use global strategies, which does not change with the switch of languages.

Within the category of global strategies, both in Chinese reading and in English reading, the students reported that they consciously use tables, figures and pictures, and typographical features in the text to identify key information and to increase their understanding; whereas, the students seldom make a choice of what to read closely and what to ignore, critically analyze and evaluate the information in the text, and double check whether their guesses are

wrong or right. The overall usage of global strategies is still of a high frequency among the students, and they are more homogeneous in their use of strategies in Chinese reading than in English, and no big fluctuation was noted in Chinese reading. In general, the students can monitor their reading on a macro-level, and make use of the information presented in the text to increase their understanding. When they directly work with a text, the students adapt themselves to the problems. Among the three categories of metacognitive awareness, the likelihood of using problem solving strategies is the highest in both languages, and the students show a high agreement on which strategies they adopt in the category of problem solving. Supportive strategies, either in English reading or in Chinese reading, fell into a medium usage level. Less interest was shown in using supportive strategies in both languages, and thinking in two languages was reported more often than translation from L2 into L1 while reading in English.

When the other factors were controlled, problem-solving strategy was found to be the most powerful indicator for both Chinese and English reading. Global strategy contributes more than support strategy in English reading, but it explains less variance in Chinese reading than support strategy. In conclusion, Chinese EFL readers show a similar tendency of metacognitive awareness of reading in both languages.

Summary

When three factors; language sensitivity, linguistic knowledge and metacognitive awareness; were brought into the model simultaneously, the model could significantly explain the variance both in English reading and in Chinese reading. However, the weight of the factors is different in reading comprehension of both languages.

In the process of Chinese reading, Chinese linguistic knowledge has the largest weight, followed by metacognitive awareness of Chinese reading and language sensitivity. Specific to the sub-factors, Chinese vocabulary knowledge contributes more in explaining Chinese reading; problem solving strategy is more powerful to explain Chinese reading than support strategy and global strategy; and sensitivity to sentence decision is stronger than word recognition in predicting Chinese reading. However, when linguistic knowledge was controlled, the additional input of metacognitive awareness was found to indicate more variance in Chinese reading and furthermore showed that global strategy is another meaningful stronger factor to influence the process of Chinese reading, besides vocabulary and grammar knowledge. When

both linguistic knowledge and metacognitive awareness were controlled at the same time, the extra inclusion of language sensitivity into the model improved the explanation.

Similar to the process of Chinese reading, English linguistic knowledge took the largest weight in the process of English reading, and metacognitive awareness was found to be a stronger influence than language sensitivity. As for the sub-factors, vocabulary knowledge and grammar knowledge, more or less, have a balanced contribution to account for variance in English reading; problem-solving strategy is again the best indicator within the category of metacognitive awareness of English reading; global strategy contributes more than support strategy; and sensitivity to sentence decision is again stronger than word recognition in influencing English reading. When linguistic knowledge was controlled, the extra inclusion of metacognitive awareness could explain more variance in English reading but without any specific effect of inter-factor on English reading. The inclusion of the additional factor of language sensitivity increased the model's capability to explain English reading. In addition, when cross language effect was taken into consideration, it was found that L1 reading ability is another strong indicator of L2 reading, after linguistic knowledge. Thus, reading ability in L2 depends firstly on language proficiency - linguistic knowledge, to be specific, then on L1 reading proficiency, metacognitive awareness of reading, and sensitivity to L2.

In conclusion, Chinese EFL readers share the same reading cognition in both L1 and L2 reading, and there is no threshold for the readers to appeal to higher order processing when the lower one is defective; and L2 reading ability is strongly affected by L1 reading capability, which might be caused by higher order processing, such as reading strategies, accumulated in L1 reading.

8.2.3 Reading processes across proficiency groups

Besides finding out the overall reading style of Chinese EFL learners, another question is to see how the factors contribute to the explanation of reading ability, which might also be decided by the language proficiency groups. The overall reading process in L1 and in L2 was compared in section 8.2.2, and the difference in performance among the proficiency groups on the factors tested and on reading comprehension are discussed in section 8.2.3.

In chapter 5 and chapter 6, we found that those who have a higher language proficiency also have higher proficiency on the task of reading comprehension, linguistic knowledge and sentence decision, both in L1 and in L2. However, the tendency that those who have higher proficiency use more strategies in the process of reading is not detectable.

High-proficiency group

The students who have a high proficiency also have a higher reading ability, which partially results from the test components: reading takes a big weight in the test, both in L1 and in L2. Similarly, the students in the high proficiency group also got a higher score on linguistic knowledge and on sentence decision. However, in the high proficiency group, English reading is not meaningfully correlated with any of the factors; and Chinese reading is inversely proportional to sentence decision. As for metacognitive awareness, the students of the higher proficiency group show a more frequent use of problem-solving strategy and global strategy, but there is no meaningful correlation between English reading and the strategies. Similarly, in Chinese reading, those who have a higher proficiency in L1 use problem-solving strategy and support strategy more often, and no particular pattern was observed on the use of strategies in Chinese reading, either.

Intermediate-proficiency group

Besides that commonality as in the other groups, it was found that those persons with a high score on linguistic knowledge also had a high score on Chinese reading in the intermediate-proficiency group, and this positive correlation is even stronger with English reading. There was no particular pattern observed in language sensitivity with Chinese reading, whereas, English reading was found to be meaningfully correlated with word recognition. The students of the intermediate-proficiency group tend to use global and support strategies to help increase their English comprehension, but not in Chinese reading.

Low-proficiency group

Similar to the other groups, the students of the low-proficiency group had a lower score on reading comprehension tasks, linguistic knowledge tasks, and sentence decision tasks, in both languages; L1 and L2. In this group, there was no correlation observed between Chinese reading and the factors tested, but English reading was found to be highly correlated with sentence decision and vocabulary knowledge. To a certain extent, their reading ability is more dependent on the lower-order skills, just as the threshold hypothesis stressed. On the other hand, no group difference was found in terms of support strategy, which indicates that the students who have lower language proficiency can also adopt higher-order skills while reading. Therefore, for the readers with lower language proficiency, there might be a language threshold in L2

reading, but they are willing to use support strategies to compensate for their language problem in L2 reading.

In sum, the multiple regression model of proficiency groups shows that three factors together; language sensitivity, linguistic knowledge and metacognitive awareness; can significantly explain 38.5% of the variance in Chinese reading in the high-proficiency group, and 43.5% of the variance in Chinese reading in the intermediate-proficiency group; and 54.8% of the variance in English reading in the intermediate-proficiency group. This model has successfully explained more than half of the variance in both L1 and L2 reading.

Students who are at the high-, intermediate-, and low-proficiency levels, show a corresponding ability on the tasks of reading comprehension, linguistic knowledge and sensitivity to sentence decision, but differ in their use of reading strategies. The effective use of global strategies and problem solving strategies was found to be related to their language proficiency, which is consistent with the study of Zhang & Wu (2009). Whether reading in L2 is a language problem or a reading problem is still a contentious question.

8.3 Implications of the study

The data of this study have been gathered from tests over the course of one year, decoding tests, and questionnaires, which were guided by my interest in the role of language sensitivity, language-specific knowledge, and metacognitive awareness in reading comprehension of Chinese and English. Due to the short duration, one decoding test and one reported metacognitive awareness questionnaire of reading comprehension, the study cannot give a full-sided picture of the reading development of Chinese EFL-learners. The above results can only present the impression of reading development at a certain moment, from which we can see what ability the readers still need to improve, and in what aspects the teachers can improve their teaching. Furthermore, the study is based on a correlational analysis, so there is no evidence of causality. Thus, in this section, the implications of the study are summarized following the findings and discussions deduced from and generated by the correlational analysis, and a direction for future research is also identified.

Firstly, language decoding was tested based on accuracy instead of speed. The speed test makes it more a measure of reaction time, which sometimes leads to an unavoidable random choice to accelerate speed. The speed of L2 word recognition and sentence verification have been tested by Van Geldern, Schoonen, de Gloppe, Hulstijn, Simis, Snelling, and Stevenson (2004), and they did not find the speed of L2 word recognition and sentence verification to

contribute to the explanation of L2 reading ability. In the basic model, accuracy in sentence verification (decision) contributes significantly in accounting for both L1 and L2 reading, and no contribution was found from the accuracy in word recognition. However, the contribution of sentence verification fades when the other factors are simultaneously brought into the model, so in the final sequential regression model the contribution of language decoding is weak, but significant. The training of language sensitivity would not have a negative effect on reading comprehension, and an increase in the accuracy of lower order processing would not be harmful or useless for improving their reading comprehension, especially in L2 reading. Of course, it is also undeniable that this casual contribution needs to be examined again in a future study. An analysis of the speed of language decoding also needs to be tested along with accuracy. The practice and effectiveness of this sort of training in education needs systematic experimental trials. Further examination cannot be separated from the educators, and it is nearly impossible to be carried out without the support and sponsorship of the government. Additionally, the students who have high language proficiency performed better at reading comprehension and sentence verification than those with low language proficiency. Therefore, we can presume that training in the judgment of sentence verification might help their comprehension; that is to say, the training of a higher order skill, like syntactic and semantic knowledge, could be helpful.

Comparing the basic model of language-specific knowledge, the models of L1 and L2 reading are identical. Both vocabulary knowledge and grammar knowledge contribute in explaining L1 and L2 reading. The only difference is that vocabulary knowledge and grammar knowledge contribute similarly in accounting for L2 reading, but vocabulary knowledge contributes dramatically more than grammar knowledge in explaining L1 reading. This unbalanced effect of language-specific phenomena might be caused by the study design, language proficiency, and language characteristics. To a great extent, the results confirm that successful comprehension heavily depends on vocabulary knowledge (Stanovich, 1986; Carr & Levy, 1990; Just & Carpenter, 1992; Perfetti, 1999; Segalowitz, 2000; Koda, 1996). The role of grammar knowledge shows a weaker role in comprehending a Chinese text, as it is thought that Chinese has a less strict grammar. The lower effect of vocabulary knowledge on Chinese reading than on English reading confirms again the assumption that Chinese is a context-dependent language and Chinese with a large vocabulary may not comprehend more (Palij & Aaronson, 1992). Accordingly, the role of language-specificity in reading comprehension reflects the teaching emphasis at school. Also, good readers who have high language proficiency are also better at reading comprehension and linguistic knowledge than poor readers.

Thus, it can be hypothesized that the training of vocabulary and grammar knowledge can promote the reading comprehension of poor readers, and the language problem is critical to the poor readers, as threshold hypothesis assumes (Alderson, 1984; Cummins, 1976, 1979; Clark, 1979).

The basic model of metacognitive awareness of L1 reading is different from L2 reading. It can explain only 14.6% variance in L1 reading, but 30.9% variance in L2 reading. It is obvious that it takes a bigger weight in L2 reading. In L1 reading, there are unfortunately no significant factors observed, but problem-solving strategy contributes significantly in explaining L2 reading. Also, students with higher language proficiency seem to be distinguished from students with lower language proficiency on the whole by their frequent use of strategies, which also happens to the students at senior middle school (Zhang & Wu, 2009). The difference of strategies used in L1 and L2 reading might be caused by the measurement. The instrument of metacognitive awareness was measured based on questionnaires, which were adapted from the survey of reading strategies (SORS) by Mokhtari and Sheorey (2002). The instrument SORS was developed to measure adolescent and adult ESL students' metacognitive awareness and perceived use of reading strategies while reading academic materials. To see whether the readers transfer their reading strategies from L1 to L2, the survey was adapted to measure L1 reading in this study too. It is suitable to measure Chinese EFL learners reading in English, but it has not been examined whether it is applicable to L1 reading as well. Thus, to get a relatively objective result, a survey to measure metacognitive awareness of Chinese reading needs to be developed, and a corresponding metacognitive assessment of English reading for Chinese EFL learners is also called for with regard to language distance. In addition, good readers are better than poor readers at metacognitive knowledge of planning, monitoring and revising (Schmitt, 2005). So we can assume that poor readers can benefit from explicit instruction in class or training of metacognitive strategies that boost their thinking about the reading process, help them recognize their strengths and weaknesses, and encourage them to find remedial measures, as many researchers have proposed (Carrell, Pharis, & Liberto, 1989; paris, Wasik, & Turner, 1991; Pressly & Afflerbach, 1995; Schmitt, 1990).

From the sequential regression models of L1 and L2, it can be concluded that the componential structures of L1 and L2 reading comprehension are not identical. It turned out that the combined components explained substantial variance, 69.1% in L1 reading and 83.1% in L2 reading. The main difference is that language-specific knowledge (vocabulary and grammar knowledge) is the only significant contributor in L2 reading, whereas global strategy is another significant contributor in L1 reading besides language-specific knowledge. None of the

other components has a significant weight in the explanation of either L1 or L2 reading comprehension. Additionally, the correlations show a different pattern for L1 and L2 reading comprehension. For L1 reading: high correlations of vocabulary knowledge and grammar knowledge; moderate correlations of problem-solving strategy, support strategy and sentence decision, relatively low correlation of word recognition; and no significant correlation of global strategy. For L2 reading: high correlations of vocabulary knowledge, grammar knowledge, sentence decision, and problem-solving strategy; moderate correlations of global strategy, and word recognition; and no significant correlation of support strategy.

Although there is no significant contribution of language sensitivity to the explanation of reading comprehension, the correlation of L2 reading with word recognition and sentence decision has supported the idea of processing efficiency that automatic processing on both lower and higher order skills are important for L2 readers (Koda, 1996; Segolawitz, 2000; Bernhardt, 1991; Fender, 2001; Grabe, 1991), which is also consistent with the criteria of good readers (Cain, 2010), although that is apparently not suitable for good L1 readers because of the low correlation of L1 reading with L1 word recognition.

Regarding the discussion of transfer from L1 to L2 (Goodman, 1971; Alderson, 1984; Bernhardt & Kamil, 1995), the role of L1 reading ability is also an important issue in explaining L2 reading, which is supported by the final sequential multiple regression model of L2 reading. Besides the factor of language-specific knowledge, the sequential input factor of L1 reading significantly increases the variance explanation of L2 reading, but without a significant weight of beta. The results are in line with the studies of threshold hypothesis, indicating that before the L1 higher order skills transfer to the L2 reading, there is a linguistic threshold (vocabulary & grammar). However, analyses of high-, intermediate- and low- proficiency groups indicate that the low proficiency group performs accordingly low in all tasks except the use of reading strategies. Although they did not go beyond the linguistic threshold and the deficiency in word recognition, they apply higher level reading strategies that they acquired in L1 reading to compensate for the lack of comprehension in reading, as the interactive-compensate model posited (Stanovich, 1982, 1984). Therefore, we cannot say that there is a L2 threshold below which readers are prevented from using strategies from L1 to L2, and we cannot say, either, that there is an L1-L2 transfer due to the less significant contribution of L1. Considering that this is a correlational analysis, a causative conclusion can not be drawn, although the results show a tendency of a large role of L1-L2 transfer. A causative analysis of L2 reading is required in future research.

To sum up, the study did not make it clear whether higher-order or lower-order processes are more important. Both processes are necessary and might help each other when one is impaired. As the researchers of the interactive model of reading promote, reading is a combination and integration of various sources including both higher- and lower-level processes (Bernhardt, 1991; Fender, 2001; Grabe, 1991; Stanovich, 1982, 1984; Sharkey, 1990).

To Chinese EFL learners, it is useful and helpful to recognize what problems they have and what their strengths are in reading comprehension, both in Chinese and in English. The conscious attention is an impetus to maintain and improve their reading ability. I hope that the study can help Chinese EFL learners to bring more resources into their reading comprehension and make use of these resources to improve their EFL proficiency. To the educators, the present study is an experiment to stimulate them to start thinking about the reading process, and about how to further improve their teaching methods to help and train students to become strategic readers. However, we need to consider that this study could cover only three aspects – language decoding, linguistic knowledge, and metacognitive awareness. As mentioned in chapter one, the background of the readers is not included, owing to the lack of a control group, like a group of English native speakers. Reading purposes, text type and reader variation, are not involved either, so a systematical and possibly full-sided further study is required, such as including the social status of readers, attitude and motivation, reading preference, purposes, genes, memory, and so on. Longitudinal studies are expected to investigate whether the roles of indicators change over the years from the perspective of reading development.

References

- (1) **Alderson, J. C. (1984)**
Reading in a foreign language: a reading problem or a language problem? In J. C. Alderson, and A. Urquhart, (eds.) *Reading in a Foreign Language*, (pp1-14). London: Longman.
- (2) **Alderson, J. C., & Urquhart, A. (1984)**
Reading in a foreign language. London: Longman.
- (3) **Akamatsu, N. (1999)**
The effects of first language orthographic features on word recognition processing in English as a second language. *Reading and Writing*, 11(4), 381-403.
- (4) **Anderson, J. R. (1980)**
Cognitive psychology and its implications. San francisco: Freeman.
- (5) **Anderson, J. R. (1983)**
The architecture of cognition. Cambridge, Mass: Harvard University Press
- (6) **Anderson, J. R. (1985)**
Cognitive psychology and its implications. 2nd ed. New York: Freeman.
- (7) **Anderson, R. C. (1977)**
The notion of schemata and the educational enterprise: general discussion of the conference. In R. C. Anderson, R. J. Spiro, & W. E. Montague (eds.), *Schooling and the acquisition of knowledge* (pp.415-431). Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- (8) **Anonymous (2003)**
Daxue yingyu jiaoxue gaige: tiaozhan yu qiwang—daxue yingyu jiaoxue gaige zoutanhui jiayao [Reform on college English teaching: challenges and expectations – Symposium minutes on college English teaching reform]. *Journal of foreign languages*, (3), 30-34.
- (9) **Arden-Close, C. (1999)**
Taiwanese university freshmen's difficulties with reading in English. *Reading in a Foreign Language*, 12(2), 325-354.
- (10) **Auerbach, E. R., & Paxton, D. (1997)**
“It’s not the English thing”: Bringing reading research into the ESL classroom. *TESOL Quarterly*, 31(2), 237-261.
- (11) **August, D., Francis, D. J., Hsu, H. A., & Snow, C. E. (2006)**
Assessing reading comprehension in bilinguals. *The Elementary School Journal*, 107, 221-248.
- (12) **Baker, L. (2005)**
Developmental differences in metacognition: implications for metacognitively oriented reading instruction. In S. E. Isreal, C. C. Block, K. L. Bauserman & K. Kathryn-Welsch (eds.), *Metacognition in literacy learning: theory, assessment, instruction and professional development* (pp. 61-79). Mahwah, New Jersey: Lawrence Erlbaum Associates.

- (13) **Baker, L., & Beall, L. C. (2009)**
Metacognitive processes and reading comprehension. . In S. E. Isreal, & G. G. Duffy (eds.), *Handbook of research on reading comprehension* (pp.3-31). New York: Routledge.
- (14) **Baker, L., & Brown, A. L. (1984)**
Metacognitive skills and reading. In P. D. Pearson, R. Barr, M. L. Kamil, & P. B. Mosenthal (eds.), *Handbook of Reading Research* (Vol. 1, pp. 353-394). New York: Longman.
- (15) **Baker, L., & Cerro, L. (2000)**
Assessing metacognition in children and adults. In G. Schraw & J. Impara (eds.), *Issues in the Measurement of Metacognition* (pp. 99-145). Lincoln, NE: Buros Institute of Mental measurements, University of Nebraska.
- (16) **Barnett, M. A. (1986)**
Syntactic and lexical/semantic skill in foreign language reading: importance and interaction. *The Modern Language Journal*, 70, 343-349.
- (17) **Bast, J. (1995)**
The development of individual differences in reading ability. Amsterdam/Duivendrecht: PI.
- (18) **Bernhardt, E. B. (1991)**
Reading development in a second language. Norwood, NJ:Ablex.
- (19) **Bernhardt, E. B., & Kamil, M. L. (1995)**
Interpreting relationships between L1 and L2 reading: consolidating the linguistic threshold and the linguistic interdependence hypotheses. *Applied Linguistics*, 16 (1), 15-34.
- (20) **Block, C. C. (2005)**
What are metacognitive assessments? In S. E. Isreal, C. C. Block, K. L. Bauserman & K. Kathryn-Welsch (eds.), *Metacognition in literacy learning: theory, assessment, instruction and professional development* (pp. 83-100). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- (21) **Brantmeier, C. (2005)**
Effects of reader's knowledge, text type, and test type on L1 and L2 reading comprehension in Spanish. *The Modern Language Journal*, 89 (1), 37-53.
- (22) **Brantmeier, C. (2006)**
Toward a multicomponent model of interest and L2 reading: sources of interest, perceived situational interest, and comprehension. *Reading in a Foreign Language*, 18(2), 89-115.
- (23) **Brisbois, J. I. (1995)**
Connections between first- and second- language reading. *Journal of Reading Behavior* 27 (4), 565-584).

- (24) **Brown, A. L. (1985)**
 Metacognition: the development of selective attention strategies for learning from texts. In H. Singer & R. B. Ruddell (eds.), *Theoretical models and processes of reading* (3rd ed., pp. 501-526). Newark, DE: International Reading Association.
- (25) **Brown, A. L. (1987)**
 Metacognition, executive control, self-regulation, and other more mysterious mechanisms. In Weinert, F. & Kluwe, R. (eds.), *Metacognition, motivation, and understanding* (pp.65-116). Hillsdale, NJ: L. Erlbaum Associates.
- (26) **Brown, J. D. (2002)**
Understanding research in second language learning: a teacher's guide to statistics and research design. Cambridge: Cambridge University Press.
- (27) **Byrne, B. (1991)**
 Experimental analysis of the child's discovery of the alphabetic principle. In L. Rieben, & C. A. Perfetti (eds.), *Learning to read: Basic research and its implications* (pp.75-84). Hillsdale, NJ: Erlbaum.
- (28) **Cain, K. (2010)**
Reading development and difficulties: an introduction. Oxford: Wiley-Blackwell.
- (29) **Cain, K., Oakhill, J., & Bryant, P. (2004)**
 Children's reading comprehension ability: concurrent prediction by working memory, verbal ability, and component skills. *Journal of Educational Psychology*, 96, 31-42.
- (30) **Cambourne, B. (1977)**
 An analysis of the Goodman model of reading with some suggestions for evaluation. *Reading Research Quarterly*, 12(4), 605-636.
- (31) **Carr, T. H., Brown, T.L., Vavrus, L.G., & Evans, M.A. (1990)**
 Cognitive skill maps and cognitive skill profiles: componential analysis of individual differences in children's reading efficiency. In T. H. Carr & B. A. Levy (eds.), *Reading and its development: Component skills approaches* (pp.1-56). San Diego, CA: Academic Press.
- (32) **Carr, T. H., & Levy, B. A. (1986)**
 Syntactic and lexical/semantic skill in foreign language reading: importance and interaction. *The Modern Language Journal*, 70, 343-349.
- (33) **Carr, T. H., & Levy, B. A. (1990)**
Reading and its development: Component skills approaches. San Diego, CA: Academic Press.
- (34) **Castles, A., & Nation, K. (2006)**
 How does orthographic learning happen? In S. Andrews (ed.), *From inkmarks to ideas: challenges and controversies about word recognition and reading* (pp.151-179). London: Psychology Press.
- (35) **Carrell, P. L. (1981)**
 The role of schemata in L2 comprehension. In R. Orem and J. Haskell (eds.), *Selected papers from the ninth Illinois TESOL/BE annual convention, the first Midwest TESOL conference*, 123-132. Chicago: Illinois TESOL/BE.

- (36) **Carrell, P. L. (1983)**
Some issues in studying the role of schemata, or background knowledge, in second language comprehension. Paper presented at the 1983 TESOL convention, Toronto, Ontario, Canada.
- (37) **Carrell, P. L. (1984)**
Schema theory and ESL reading: classroom implications and applications. *The Modern Language Journal*, 68, 332-343.
- (38) **Carrell, P. L. (1985)**
Facilitating ESL reading by teaching text structure. *TESOL Quarterly*, 19(4), 727-752.
- (39) **Carrell, P. L. (1987)**
Content and formal schemata in ESL reading. *TESOL Quarterly*, 21(3), 461-481.
- (40) **Carrell, P. L. (1991)**
Second language reading: reading ability or language proficiency. *Applied Linguistics*, 12, 59-179.
- (41) **Carrell, P. L., & Eisterhold, J. C. (1983)**
Schema theory and ESL reading pedagogy. *TESOL Quarterly*, 17(4), 553-573.
- (42) **Carrell, P. L., Gajdusek, L., & Wise, T. (1998)**
Metacognition and EFL/ESL reading. *Instructional Science*, 26, 97-112.
- (43) **Chen, H (1998)**
Yingyu shuiping dui Zhongguo yingyu xuexizhe lijie Yingyu jufa qiyi de zhiyue zuoyong [Constrains of English proficiency on understanding English ambiguous sentences in Chinese EFL learners]. *Modern Foreign Languages*, 2, 1-16.
- (44) **Chen, H. C. (1992)**
Lexical processing in bilingual or multilingual speakers. In R. J. Harris (ed.), *Cognitive Processing in Bilinguals* (pp. 253- 264). North Holland: Elsevier Science Publishers.
- (45) **Chen, H. C. (1996)**
Chinese reading and comprehension: A cognitive psychology perspective. In M. Bond (ed.), *The handbook of Chinese psychology* (pp. 43-62). Oxford: Oxford University Press..
- (46) **Chen, H. C. & Graves, M. F. (1995)**
Effects of previewing and providing background knowledge on Taiwanese college students' comprehension of American short stories. *TESOL Quarterly*, 29, 663-686.
- (47) **Chen, H. C. & Tzeng, O. J. L. (1992)**
Language processing in Chinese. Amsterdam: Elsevier
- (48) **Chen, L. (2008)**
Primary school English education in China. Presented on 2008 international conference on primary English. <http://www.fltrp.com/newsdetail.cfm?icntno=87222>
- (49) **Chitiri, H. F., Sun, Y. L., & Willows, D. M. (1992)**
Word Recognition in Second-language Reading. In R. J. Harris (ed.), *Cognitive Processing in Bilinguals* (pp. 283- 297). North Holland: Elsevier Science Publishers.

- (50) **Clark, M. A. (1979)**
Reading in Spanish and English: evidence from adult ESL students. *Language Learning*, 29, 121-150.
- (51) **Clark, M. A. (1980)**
The short circuit hypothesis of ESL reading – or when language competence interferes with reading performance. *Modern Language Journal*, 64, 203-209.
- (52) **Clark, M. A., & Silberstein, S. (1977)**
Towards a realization of psycholinguistic principles in the ESL classroom. *Language Learning*, 27(1): 135-154.
- (53) **Coady, J. (1979)**
A psycholinguistic model of the ESL reader. In R. Mackay, B. Barkman, & R. R. Jordan (eds.), *Reading in a second language* (pp. 5-12). Rowley, MA: Newbury House.
- (54) **Cook, V. (1993)**
Modern linguistics and second language acquisition. Chatham, Kent: Mackays of Chatham PLC.
- (55) **Cowan, J. R., Light, R. L., Mathews, B. M., & Tucker, G. R. (1979)**
English teaching in China: a recent survey. *TESOL Quarterly* 13, 465-482.
- (56) **Cummins, J. (1976)**
The influence of bilingualism on cognitive growth: a synthesis of research findings and explanatory hypotheses. *Working Paper on Bilingualism*, 9, 1-43.
- (57) **Cummins, J. (1979)**
Cognitive/Academic language proficiency, linguistic interdependence, the optimum age question and some other matters. *Working Papers on Bilingualism*, 19, 197-205.
- (58) **Cummings, L. (2008)**
Clinical linguistics. Edinburgh: Edinburgh University Press.
- (59) **Daneman, M., & Carpenter, P. A. (1980)**
Individual differences in working memory and reading. *Journal of Verbal Learning and Verbal Behavior*, 19, 450-466.
- (60) **De Francis, J. (1984)**
The Chinese language: fact and fantasy. Honolulu: University of Hawaii press.
- (61) **Denis, M. (1982)**
Imagining while reading text: a study of individual differences. *Memory and Cognition*, 10, 540-545.
- (62) **Dole, J., Nokes, J., & Drits, D. (2009)**
Cognitive strategy instruction. In S. E. Israel & G. G. Duffy (eds.), *Handbook of research on reading comprehension* (pp. 347-372). New York: Routledge.
- (63) **Durgunoglu, A.Y., Hancin, B. J. (1992)**
An overview of cross-language transfer in bilingual reading. In R. J. Harris (ed.), *Cognitive Processing in Bilinguals* (pp 561- 571). North Holland: Elsevier Science Publishers.

- (64) **Ehri, L. C. (2002)**
Phases of acquisition in learning to read words and implications for teaching. *British Journal of Educational Psychology: Monograph Series*, 1, 7-28.
- (65) **Ehri, L. C. (2005)**
Development of sight word reading: phrases and findings. In M. J. Snowling & C. Hulme (eds.), *The science of reading: a handbook* (pp.135-154). Oxford: Blackwell.
- (66) **Fecteau, M. L. (1999)**
First- and second- language reading comprehension of literary texts. *The Modern Language Journal*, 83(4), 475-493.
- (67) **Fender, M. (2001)**
A review of L1 and L2/ESL word integration skills and the nature of L2/ESL word integration development involved in lower-level text processing. *Language Learning*, 51, 319-396.
- (68) **Fender, M. (2008)**
Spelling knowledge and reading development: insights from Arab ESL learners. *Reading in a Foreign Language*, 20(1), 19-42.
- (69) **Feng, A. (2009)**
English in China. *AILA Review*, 22, 85-102.
- (70) **Field, A. P. (2009)**
Discovering statistics using SPSS. London: SAGE publications.
- (71) **Flavell, J. H. (1979)**
Metacognition and cognitive monitoring: a new area of cognitive developmental inquiry. *American Psychologist*, 34, 906-911.
- (72) **Flavell, J. H. (1987)**
Speculations about the nature and development of metacognition. In F. E. Weinert & R. H. Kluwe (eds.), *Metacognition, motivation, and understanding* (pp.21-29). Hillside, NJ: Lawrence Erlbaum.
- (73) **Goodman, K. S. (1965)**
A linguistic study of cues and miscues in reading. *Elementary English*, 42, 639-643.
- (74) **Goodman, K. S. (1967)**
Reading: a psycholinguistic guessing game. *Journal of the Reading Specialist*, 6, 126-135.
- (75) **Goodman, K. S. (1969)**
Analysis of oral reading miscues: applied psycholinguistics. *Reading Research Quarterly*, 5(1), 9-30.
- (76) **Goodman, K. S. (1971)**
Psycholinguistic universals in the reading process. In P. Pimsleur & T. Quinn (eds.) *The psychology of second language learning* (pp. 135-142). Cambridge: Cambridge University Press.

(77) **Goodman, K. S. (1973)**

Miscues: windows on the reading process. In K. S. Goodman (ed.) *Miscue analysis: application to reading instruction*. Champaign, Urbana, Illinois: ERIC clearinghouse on reading and communication.

(78) **Goodman, K. S. (1975)**

Do you have to be smart to read; do you have to read to be smart? *The Reading Teacher*, 28(7), 625-632.

(79) **Goldman, S., Golden, R., & van den Broek, P. (2007)**

Why are computational models of text comprehension useful? In F. Schmalhofer & C. Perfetti (eds.), *Higher level language process in the brain* (pp. 27-57). Mahwah, NJ: L. Erlbaum.

(80) **Gough, P. B. (1972)**

One second of reading. In J. F. Kavanagh & I. G. Mattingly (eds.), *Language by ear and eye* (pp.331-358). Cambridge, MA: MIT Press.

(81) **Grabe, W. (1991)**

Current developments in second language reading research. *TESOL Quarterly*, 26(3), 375-406.

(82) **Grabe, W. (1999)**

Developments in reading research and their implications for computer adaptive reading assessment. In M. Chaloub-DeVille (ed.), *Issues in computer adaptive testing of reading proficiency* (pp. 11-47). Cambridge: Cambridge University Press.

(83) **Grabe, W. (2000)**

Reading research and its implications for reading assessment. In A. Kunan (ed.), *Fairness and validation in language assessment* (pp. 226-262). Cambridge: Cambridge University Press.

(84) **Grabe, W. (2001)**

Reading-writing relations: theoretical perspectives and instructional practices. In D. Belcher and A. Hirvela (eds.) *Proceedings of the Ohio State Conference on second language reading/writing connections* (pp. 15-47). Ann Arbor: University of Michigan Press.

(85) **Grabe, W. (2002)**

Reading in a second language. In R. B. Kaplan (ed.), *The Oxford Handbook of Applied Linguistics* (pp. 49-59). Oxford: Oxford University.

(86) **Grabe, W. (2009)**

Reading in a second language: moving from theory to practice. NY: Cambridge University Press.

(87) **Griffith, P. L., & Ruan, J. (2005)**

What is metacognition and what should be its role in literacy instruction? In S. E. Isreal, C. C. Block, K. L. Bauserman & K. Kathryn-Welsch (eds.), *Metacognition in literacy learning: theory, assessment, instruction and professional development* (pp. 3-18). Mahwah, New Jersey: Lawrence Erlbaum Associates.

- (88) **Harrington, M. (2002)**
Cognitive perspectives on second language acquisition. In R. B. Kaplan (ed.), *The Oxford Handbook of Applied Linguistics* (pp. 124-140). Oxford: Oxford University Press.
- (89) **Hoover, W. A., & Gough, P. B. (1990)**
The simple view of reading. *Reading and writing : A Interdisciplinary Journal*, 2, 127-160.
- (90) **Howard, D. (1985)**
Cognitive psychology. New York: Macmillan.
- (91) **Hu, G. W. (2004)**
English language education in China: policies, progress and problems. *Language Policy* 4, 5-24.
- (92) **Hsueh-chao, M. Hu., & Nation, P. (2000)**
Unknown vocabulary density and reading comprehension. *Reading in a Foreign Language*, 13(1), 403-430.
- (93) **Ingram, J. C. L. (Ed.) (2007)**
Neurolingusitics: an introduction to spoken language processing and its disorders. Cambridge: Cambridge University Press.
- (94) **Isreal, S. E., Block, C.C., & Bauserman, K. L. , & Kathryn-Welsch, K. (Eds.) (2005)**
Metacognition in literacy learning: theory, assessment, instruction and professional development. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- (95) **Isreal, S. E., & Duffy, G. G. (Eds.) (2009)**
Handbook of research on reading comprehension. New York: Routledge.
- (96) **Jakobs, J., & Paris, S. G. (1987)**
Children's metacognition about reading: issues in definition, measurement, and instruction. *Educational Psychologist*, 22, 255-278.
- (97) **Johnson, P. (1982)**
Effects on reading comprehension of building background knowledge. *TESOL Quarterly*, 16, 503-516.
- (98) **Just, M. A., & Carpenter, P. A. (1992)**
A capacity theory of comprehension: Individual differences in working memory. *Psychological Review*, 99, 122-149.
- (99) **Kang, N. (2000)**
Lun jiaoyu juece yu zhidu chuangxin – yi 99 gaoxiao kuozhao zhengce wei anli de yan-jiu. *Journal of Higher Education* retrieved:
http://www.cbe21.com/public/jtzs/article.php?article_id=599
- (100) **Keshavarz, M. H., Atai, M., R., & Ahmadi, H. (2007)**
Content schemata, linguistic simplification, and EFL readers' comprehension and recall. *Reading in a Foreign Language*, 19(1), 19-33.

- (101) **Kieffer, M. J., & Lesaux, N. K. (2008)**
The role of derivational morphology in the reading comprehension of Spanish-speaking English language learners. *Read Writ*, 21, 783-804.
- (102) **Koda, K. (1996)**
L2 word recognition research: A critical review. *Modern Language Journal*, 80, 450-460.
- (103) **Koda, K. (2000)**
Cross-linguistic variations in L2 morphological awareness. *Applied Psycholinguistics*, 21(3), 297-320.
- (104) **Koda, K. (2002)**
Writing systems and learning to read in a second language. In W. Li, J. S. Gaffney, & J. L. Packard (eds.), *Chinese children's reading acquisition: theoretical and pedagogical issues* (pp.225-248). Boston: Kluwer Academic.
- (105) **Koda, K. (2005)**
Insights into second language reading: a cross-linguistic approach. New York: Cambridge University Press
- (106) **Koda, K. (2007)**
Reading and language learning: Crosslinguistic constraints on second language reading development. *Language Learning*, 57, 1-44.
- (107) **Koda, K. (2008)**
Impacts of prior literacy experience on second language learning to read. In K. Koda & A. M. Zehler (eds.), *Learning to read across languages: Cross-linguistic relationships in first- and second-language literacy development* (pp. 68-91). New York: Routledge.
- (108) **Koda, K., & Zehler, A. M. (Eds.), (2008)**
Learning to read across languages: Cross-linguistic relationships in first- and second-language literacy development. New York: Routledge.
- (109) **Law, Y. K. (2009)**
The role of attribution beliefs, motivation and strategy use in Chinese fifth-graders' reading comprehension. *Educational Research*, 51(1), 77-95.
- (110) **Lee, W. L., Wee, G. C., Tzeng, O. J. L., & Hung, D. L. (1992)**
A study of interlingual and intralingual stroop effect in three different scripts: Logograph, syllabary and alphabet. In R. J. Harris (ed.), *Cognitive Processing in Bilinguals* (pp. 427-442). North Holland: Elsevier Science Publishers.
- (111) **Liao, X. Q. (2004)**
Readers respond (2): the need for communicative language teaching in China. *ELT Journal*, 58/3, 270-273.
- (112) **Liu, D., & Gong, Y. (2000)**
Foreign language education in Chinese schools. Paper presented at the *International Symposium on 21st Century Foreign Language Education in Schools*, Beijing.

(113) Liu, Z., & Bever, T. G. (2002)

Jufa fenxi zai waiyu yuedu zhong de zuoyong [An experimental study of the function of syntactic analysis in reading comprehension]. *Foreign language teaching and research*, 34, 219-224.

(114) MacLaughlin, B., Rossman, T., & McLeod, B. (1983)

Second language learning: an information processing perspective. *Language Learning*, 33, 135-158.

(115) MacWhinney, B., & Anderson, J. (1986)

The acquisition of Grammar. In I. Gopnik and M. Gopnik (Eds.), *From models to modules* (pp. 3-23). Norwook, N. J.: Ablex

(116) MyersII, M., & Paris, S. G. (1978)

Children's metacognitive knowledge about reading. *Journal of Educational Psychology*, 70(5), 680-690.

(117) MOE (2001a)

Jiaoyubu guanyu jiji tuixing xiaoxue kaishe yingyu kecheng de zhidao yijian [Guidelines for promoting primary English language teaching] Beijing: Ministry of Education. Retrieved from <http://www.moe.edu.cn/edoas/website18/level3.jsp?tablename=23&infoid=8770>

(118) MOE (2001b)

Quanrizhi yiwu jiaoyu putong gaoji zhongxue yingyu kecheng biaozhun [English curriculum standards for compulsory education and senior secondary education.] Beijing: Ministry of Education.

Retrieved from <http://www.tefl-china.net/2003/ca13821.htm>

(119) MOE (2001)

Yingyu Kechen biaozhun [National English curriculum standards for general education]. Beijing: Beijing Normal University Press.

(120) MOE (2003)

New standards for high school English curricula. Beijing: People's Education Press.

(121) MOE (2010)

Promotion rates of graduates of primary and secondary education. Beijing: Ministry of Educaiton. Retrieved on July, 6, 2011 on the website of Chinese Ministry of Education, <http://www.moe.edu.cn/publicfiles/business/htmlfiles/moe/s4959/201012/113469.html>

(122) Mokhtari, K., & Reichard, C. (2002)

Assessing students' metacognitive awareness of reading strategies. *Journal of Educational Psychology*, 94(2), 249-259.

(123) Mokhtari, K., & Reichard, C. (2004)

Investigating the strategic reading processes of first and second language readers in two different cultural contexts. *System*, 32, 379-394.

(124) Mokhtari, K., & Sheorey, R. (2002)

Measuring ESL students' awareness of reading strategies. *Journal of Developmental Education*, 25 (3), 2-10.

- (125) **Muljani, D., Koda, K., & Moates, D. R. (1998)**
The development of word recognition in a second language. *Applied Psycholinguistics*, 19, 99-113.
- (126) **Nagy, W., Herman, P., & Anderson, R. C. (1985)**
Learning words from context. *Reading Research Quarterly*, 20, 233-253.
- (127) **Nassaji, H. (2003)**
Higher- level and lower- level text processing skills in advanced ESL reading comprehension. *The Modern Language Journal*, 87ii, 261-276.
- (128) **Nation, P., & Coady, J. (1988)**
Vocabulary and reading. In Ronald, C. & Michael, M (eds.), *Vocabulary and language teaching* (pp. 97-110). New York: Longman.
- (129) **Nuttall, C. (1982)**
Teaching reading skills in a foreign language. London: Heinemann Education Books
- (130) **O'Malley, J. M., & Chamot, A. U. (1990)**
Learning strategies in second language acquisition. Cambridge: Cambridge University Press.
- (131) **Pang, J. (2008)**
Research on good and poor reader characteristics: implications for L2 reading research in China. *Reading in a Foreign Language*, 20(1), 1-18.
- (132) **Paris, S. G. (1991)**
Assessing and remediation of metacognitive aspect of reading comprehension. *Topics in Language Disorders*, 12, 32-50.
- (133) **Paris, S. G., Cross, D. R., & Lipson, M. Y. (1984)**
Informed strategies for learning: a program to improve children's reading awareness and comprehension. *Journal of Educational Psychology*, 76(6), 1239-1252.
- (134) **Paris, S. G., & Flukes, J. (2005)**
Assessing children's metacognition about strategic reading. In S. E. Isreal, C. C. Block, K. L. Bauserman & K. Kathryn-Welsch (eds.), *Metacognition in literacy learning: theory, assessment, instruction and professional development* (pp. 121-140). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- (135) **Paris, S. G., & Hamilton, E., E. (2009)**
The development of children's reading comprehension. In S. E. Isreal & G. G. Duffy (Eds.), *Handbook of research on reading comprehension* (pp.32-53). New York: Routledge.
- (136) **Paris, S. G., Lipson, M. Y., & Wixson, K. K. (1983)**
Becoming a strategic reader. *Contemporary Educational Psychology*, 8, 293-316.
- (137) **Paris, S. G., & Myers, M. (1981)**
Comprehension monitoring, memory, and study strategies of good and poor readers. *Journal of Reading Behavior*, 23, 5-22.

- (138) **Paris, S. G., Wasik, B. A., & Turner, J. C. (1991)**
The development of strategic readers. In R. Barr, M. L. Kamil, P. Mosenthal, & P. D. Pearson (eds.), *Handbook of reading research*, vol ii, (pp. 609-640). NY: Longman Publishing Group.
- (139) **Palij, M., & Aaronson, D. (1992)**
The role of language background in cognitive processing. In R. J. Harris (ed.), *Cognitive processing in bilinguals* (pp, 63-87). North Holland: Elsevier Science Publishers.
- (140) **Perfetti, C. A. (1985)**
Reading ability. New York: Oxford University Press
- (141) **Perfetti, C. A. (1999)**
Comprehending written language: A blueprint of the reader. In C. M. Brown & P. Hagoort (eds.), *The neurocognition of language* (pp. 167-208). Oxford: Oxford University Press
- (142) **Perfetti, C. A., Landi, N., & Oakhill, J. (2005)**
The acquisition of reading comprehension skill. In M. J. Snowling & C. Hulme (eds.), *The science of reading: a handbook* (pp. 227-247). Blackwell Publishing.
- (143) **Pearson, P. D (2009)**
The roots of reading comprehension instruction. In S. E. Isreal & G. G. Duffy (eds.), *Handbook of research on reading comprehension* (pp.3-31). New York: Routledge.
- (144) **Pintrich, P. R. , & Zosh, A. (2002)**
The development of academic self-regulation: the role of cognitive and motivational factors. In A. Wigfield & J. S. Eccles (eds.), *Development of achievement motivation* (pp. 249-284). San Diego: Academic Press.
- (145) **Pressley, M. (2002)**
Metacognition and self-regulated comprehension. In A. E. Farstrup & S. J. Samuels (eds.), *What research has to say about reading instruction* (pp. 219-309). Newark, DE: International Reading Association.
- (146) **Pressley, M., & Afflerbach, P. (1995)**
Verbal protocols of reading: the nature of constructively responsive reading. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- (147) **Prichard, C. (2008)**
Evaluating L2 readers' vocabulary strategies and dictionary use. *Reading in a Foreign Language*, 20(2), 216-231.
- (148) **Qin, X., Jiang, J., Xiao, J., & Cui, L. (2010)**
Jiaqiang pipanxing yudu, tigao xuesheng de sibian nengli. *Foreign Language World*, 2, 83-94.
- (149) **Randall, M. (2007)**
Memory, psychology and second language learning. Amsterdam/Philadelphia: John Benjamins Publishing Company

- (150) **Ridgway, T. (1997)**
Threshold of the background knowledge effect in foreign language reading. *Reading in a Foreign Language*, 11(1), 151-175.
- (151) **Rigg, P. (1977)**
Getting the message, decoding the message. *Reading Teacher*, 30, 745-749.
- (152) **Roeschl-heils , A., Schneider, W., & van Kraayenoord, C. E. (2003)**
Reading, metacognition and motivation: a follow-up study of German students 7 and 8. *European Journal of Psychology of Education*, 18, 75-86.
- (153) **Royer, J. M., Bates, J. A., & Konold, C. E. (1984)**
Learning from text: methods of affecting reader intent. In J. C. Alderson, and A. Urquhart (eds.), *Reading in a foreign language*, (pp65-81). London: Longman.
- (154) **Rumelhart, D. E. (1977)**
Toward an interactive model of reading. In S. Dornic (ed.), *Attention and performance IV*, (pp 573-603). Hillsdale, NJ: Erlbaum.
- (155) **Samuels, S. J., Ediger, K. M., Willcutt, J. R., & Palumbo, T. J. (2005)**
Role of automaticity in metacognition and literacy instruction. In S. E. Israel, C. C. Block, K. L. Bauseran, & K. kinnucan-Welsch (eds.), *Metacognition in literacy learning: theory, assessment, instruction and professional development* (pp. 41-60). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- (156) **Schmitt, M. C. (2005)**
Measuring students' awareness and control of strategic processes. In S. E. Isreal, C. C. Block, K. L. Bauserman & K. Kathryn-Welsch (eds.), *Metacognition in literacy learning: theory, assessment, instruction and professional development* (pp. 101-120). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- (157) **Schmitt, M. C. (1990)**
A questionnaire to measure children's awareness of strategic reading processes. *The Reading Teacher*, 454-461.
- (158) **Schmitt, M. C., & Sha, S. (2009)**
The developmental nature of metacognition and the relationship between knowledge and control over time. *Journal of Research in Reading*, 32(2), 254-271.
- (159) **Schoonen, R., Hulstijn, J., & Bossers, B. (1998)**
Language-dependent and language-independent knowledge in native and foreign language reading comprehension: An empirical study among Dutch students in Grades 6, 8 and 10. *Language Learning*, 48, 71-106.
- (160) **Schraw, G., & Moshman, D. (1995)**
Metacognitive theories. *Educational Psychology Review*, 7(4), 351-371.
- (161) **Segalowitz, N. (2000)**
Automaticity and attentional skill in fluent performance. In H. Riggenbach (ed.), *Perspectives on fluency* (pp. 200-219). Ann Arbor, MI: University of Michigan Press.

- (162) **Sheorey, R., & Mokhtari, K. (2001)**
Differences in the metacognitive awareness of reading strategies among native and non-native readers. *System*, 29, 431-449.
- (163) **Shu, D. (2004)**
Waiyu jiaoxue gaige: wenti yu duice [FLT in China: problems and solutions]. Shanghai: Shanghai Foreign Language Education Press.
- (164) **Shu, H., Chen, X., Anderson, R.C., Wu, N., & Xuan, Y. (2002)**
Properties of school Chinese: Implications for learning to read. *Child Development*, 74, 27-47.
- (165) **Sharkey, N. E. (1990)**
A connectionist model of text comprehension. In D. A. Balota, G. B. Flores d'Arcais, and K. Rayner (eds.) *Comprehension processes in reading* (pp. 487-514). Hillsdale, New Jersey: Lawrence Erlbaum Association.
- (166) **Smith, F. (1971)**
Understanding reading: a psycholinguistic analysis of reading and learning to read. New York: Holt, Rinehart & Winston.
- (167) **Smith, F. (1979)**
Reading without nonsense. New York: Teachers College Press.
- (168) **Smith, F. (1994)**
Understanding reading: a psycholinguistic analysis of reading and learning to read (fifth edition). Hillsdale, NJ: Erlbaum.
- (169) **Smith, F. (2004)**
Understanding reading: a psycholinguistic analysis of reading and learning to read (sixth edition). Mahwah, New Jersey: Lawrence Erlbaum Association.
- (170) **Stanovich, K.E. (1980)**
Toward an interactive-compensatory model of individual differences in the development of reading fluency. *Reading Research Quarterly*, 16, 32-71.
- (171) **Stanovich, K.E. (1982)**
Individual differences in the cognitive processes of reading I: word decoding. *Journal of Learning Disabilities*, 15, 485-493.
- (172) **Stanovich, K.E. (1984)**
The interactive-compensatory model of reading: a confluence of developmental, experimental, and educational psychology. *RASE*, 5, 11-19.
- (173) **Stanovich, K.E. (1986)**
Matthew effects in reading: some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly*, 21, 360-406.
- (174) **Stanovich, K.E. (1991)**
Change models of reading and reading acquisition. In L. Rieben & C. Perfetti (eds.), *Learning to read: basic research and its implications* (pp. 19-31). Hillsdale, NJ: Erlbaum.

(175) Stanovich, K.E. (1993)

The language code: issues in word recognition. In S. R. Yussen & M. C. Smith (eds.), *Reading across the life span* (pp. 111-135). New York: Springer-Verlag.

(176) Stanovich, K.E. (2000)

Progress in understanding reading: scientific foundations and new frontiers. New York: Guilford.

(177) Steffensen, M. S., & Joag-Dev, C. (1984)

Cultural knowledge and reading. In J. C. Alderson, and A. Urquhart (eds.) *Reading in a foreign language*, (pp. 48-61). London: Longman

(178) Sternberg, R. J., Grigorenko, E. L. & Javin, L. (2005)

Improving reading instruction: the triarchic model. *Educational Leadership*, 58(6), 48-52.

(179) Swanborn, M. S. L., & de Groot, K. (1999)

Incidental word learning while reading: a meta-analysis. *Review of Educational Research*, 69(3), 261-285.

(180) Randi, J., Grigorenko, E. L., & Sternberg, R. J. (2005)

Revisiting definitions of reading comprehension: just what is reading comprehension anyway? In S. E. Isreal, C. C. Block, K. L. Bauserman & K. Kathryn-Welsch (eds.), *Metacognition in literacy learning: theory, assessment, instruction and professional development* (pp. 19-39). Mahwah, New Jersey: Lawrence Erlbaum Associates.

(181) Tabachnick, B. G., & Fidell, L. S. (2007)

Using multivariate statistics (5th ed.). Boston: Pearson Education, Inc..

(182) Taboada, A., Tonks, S. M., Wigfield, A., & Guthrie, J. T. (2009)

Effects of motivational and cognitive variables on reading comprehension. *Read Writ*, 22, 85-106.

(183) Taillefer, G. F. (1996)

Reading ability: further insight into the short-circuit hypothesis. *Modern Language Journal*, 80(4), 461-477.

(184) Taillefer, G. F. (2005)

Foreign language reading study abroad: cross-cultural and cross-linguistic questions. *The Modern Language Journal*, 89(4), 503-528.

(185) Takase, A. (2007)

Japanese high school students' motivation for extensive L2 reading. *Reading in a Foreign Language*, 19(1), 1-18.

(186) Tong, X. L., McBride-Chang, C., Shu, H., & Wong, A. (2009)

Morphological awareness, orthographic knowledge, and spelling errors: keys to understanding early Chinese literacy acquisition. *Scientific Studies of Reading*, 13(5), 426-452.

- (187) Urquhart, S., & Weir, C. (1998)
Reading in a second language: process, product and practice. London: Longman.
- (188) Van Gelderen, A., Schoonen, R., de Glopper, K., Hulstijn, J., Snellings, P., Simis, A., & Stevenson, M. (2003)
Roles of linguistic knowledge, metacognitive knowledge and processing speed in L3, L2 and L1 reading comprehension: a structural equation modeling approach. *The International Journal of Bilingualism*, 7(1), 7-25.
- (189) Van Gelderen, A., de Glopper, K., Hulstijn, J., Simis, A., Snellings, P., & Stevenson, M. (2004)
Linguistic knowledge, processing speed, and metacognitive knowledge in first- and second-language reading comprehension: a componential analysis. *Journal of Educational Psychology*, 96(1), 19-30.
- (190) Van Gelderen, A., de Glopper, K., & Hulstijn, J. (2007)
Development of adolescent reading comprehension in language 1 and language 2: a longitudinal analysis of constituent components. *Journal of Educational Psychology*, 99(3), 477-491.
- (191) Von Eye, A., & Schuster, C. (1998)
Regression analysis for social sciences. San Diego: Academic Press.
- (192) Wagner, D. A., Spratt, J. E., Gal, I., & Paris, S. G. (1989)
Reading and believing: beliefs, attributions, and reading achievement in Moroccan schoolchildren. *Journal of Educational Psychology*, 81(3), 283-293.
- (193) Walsh, A. (1990)
Statistics for the social sciences: with computer applications. New York: Harper & Row, Publisher, Inc.
- (194) Wang, M., Koda, K., & Perfetti, C. A. (2003)
Alphabetic and non-alphabetic L1 effects in English semantic processing: a comparison of Korean and Chinese English L2 learners. *Cognition*, 87, 129-149.
- (195) Weinstein, C. E., & Mayer, R. E. (1986)
The teaching of learning strategies. In M. C. Wittrock (ed.), *Handbook of research on teaching* (pp 315-327), 3rd ed. New York: Macmillan.
- (196) Widdowson, H.G. (1979)
Explorations in applied linguistics. Oxford: Oxford University Press
- (197) Wong Fillmore, L., & Swain, M. (1984)
Child second language development: views from the field on theory and research. Paper presented at the TESOL convention, Houston, Texas.
- (198) Wong Fillmore, L. (1985)
Second language learning in children: a proposed model. In R. Eshch, & J. Provinzano (eds.), *Issues in English language development.* Rosslyn, Va.: National Clearinghouse for Bilingual Education.

(199) **Wu, W. (2006)**

Language transfer in Chinese EFL Writing. *Sino-US English Teaching*, 3(5), 17-22.

(200) **Wu, Y. (2001)**

English language teaching in China: trends and challenges. *TESOL Quarterly*, 35 (1), 191-194.

(201) **Xiao, A. (1998)**

An academic or a more practical approach. *Forum*, 36(2), 28

(202) **Xu, X. Y. (2010)**

English language attrition and retention in Chinese and Dutch university students. Ph.D. Dissertation, University of Groningen, Groningen.

(203) **Yamashita, J. (1999)**

Reading in a first and a foreign language: a study of reading comprehension in Japanese (the L1) and English (the L2). Ph.D Dissertation. Lancaster University, UK.

(204) **Yang, X., & Zhang, W. (2002)**

Yuanrenzhi yu Zhongguo daxuesheng Yingyu yuedu lijie xiangguan yanjiu [the correlation between metacognition and EFL reading comprehension of Chinese college students]. *Foreign language teaching and research*, 34, 213-218.

(205) **Yu, L. (2001)**

Communicative language teaching in China: progress and resistance. *TESOL Quarterly*, 35 (1), 194-198.

(206) **Zhang, L. J., & Wu, A. (2009)**

Chinese senior high school EFL students' metacognitive awareness and reading-strategy use. *Reading in a Foreign Language*, 21(1), 37-59.

(207) **Zhou, Y. (2002)**

Yingyu jiaoshi peixun jidai jiaqiang [English teachers' training need to be strengthened]. *Foreign Language Teaching and Research*, 34(6), 408-409.

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Appendix 1a: English test at Time 1

Multiple-choice part: for each sentence, there are four choices marked A, B, C, and D. Choose the ONE that best completes the sentences, then write the corresponding letter on the answer sheet.

21. – Don't throw about your newspaper!
--Sorry. I'm busy now. They will ____ later.
A. collect B. be collect C. be collected D. collecting
22. Now more and more man-made satellites are ____ by humans.
A. sent for B. send up C. sent up D. sent into
23. – What a big simile on Mr. Lee's face!
-- Yeah. He is proud ____ his students' excellent performance.
A. of B. to C. with D. in
24. After hearing the funny joke, my father can't help _____.
A. laugh B. laughing C. to laugh D. laughs
25. – My parents don't allow me ____ computer games at school.
-- That's right. They are bad for your study.
A. paly B. plays C. playing D. to play
26. We find it ____ to do some reading every day.
A. easily B. enjoy C. helpful D. interested
27. – Will you go for a picnic with your parents this weekend?
-- It just ____ the weather.
A. because of B. decides by C. depends on D. thanks to
28. The report shows we have dreamed ____ exploring space for thousands of years.
A. in B. on C. of D. to
29. There is no ____ that phones play an important role in the modern life.
A. question B. problem C. answer D. doubt
30. If you want to read it, please click ____ the sign, a box will appear on the screen.
A. on B. at C. in D. with
31. The students are clever. They have no problems ____ out the math problem.
A. work B. working C. works D. to work
32. – Do you know where Tom is?
--Yes. He ____ his hometown.
A. went to B. goes to C. has gone to D. has been to
33. There are many kinds of bikes here. She can't decide _____.
A. where to buy B. which to buy C. how to go there D. when to go there
34. ____ you do, I will be on your side.
A. Whenever B. Whatever C. However D. Wherever
35. Mike will go abroad tomorrow. I am going to ____ at the airport.
A. sent him off B. saw him off C. see off D. see him off
36. How did the differences between them ____?
A. comes from B. be from C. come about D. be about
37. Although we have learned English for 3 years, we still have trouble ____ the new words.
A. learn B. to learn C. learning D. of learning
38. A cellphone ____ a camera by most young people in China.
A. is used by B. used for C. is used as D. is used to
39. In the past, the child labors ____ do a lot of hard work.
A. forced B. forced to C. was forced to D. were forced to
40. – Hi, Jane, tell you a piece of good news. I ____ America tomorrow.
-- Wow, have a good trip!
A. will leave to B. leaves for C. am leaving for D. going leaving for

Reading comprehension part: *there are 3 passages in this part. Each passage is followed by some questions. Please make the best choice to answer the questions.*

Passage A:

Mary lived in a small village. One early morning, her father took her to her uncle's home in town. She had a very good time there.

Before Mary left in the evening, her uncle gave her a bottle and said, "There is some candy in it. You may put your hand into it and take some out when you want to eat something."

Mary looked at the bottle when she was in the train. It had a long and small neck. She put her hand into the bottle and took five pieces. But she could not get her hand out. She turned her hand in some ways; still she couldn't get her hand out. Finally she let go of four pieces. Then she could pull her hand out of the bottle.

阅读短文，判断正 (T) 误 (F) .

- 51. One day Mary's father took her to her uncle's home.
- 52. Mary stayed in town for half a day.
- 53. Mary couldn't take the five pieces out together.
- 54. Mary did not take out any candy at all.
- 55. Mary's uncle wanted to make fun of her.

Passage B:

Mrs. Smith has a shop in the town. There are all kinds of fruit in her shop. She's friendly to the customers and never fools (愚弄) anyone. So the customers like to buy fruit in her shop, and she gets more and more money.

One day, the apples she sold were all fresh and nice. She remembered her son Steve liked them best, so she brought some home for her son. After lunch, she went out and left the apples on the table. That afternoon Steve came back from school, he felt very hungry. He looked for something to eat and found some apples on the table. "Great! They are my favorite." he cried and ate a lot. Mrs. Smith got home after she closed her fruit shop. When she saw Steve, she asked him, "Did you have the apples?" Her son answered, "Yes, and I ate lots of them." "Did you wash them?" "Oh, I forgot. I was too hungry. What should I do?"

A few minutes later, Mrs. Smith found her son kept on drinking water.

"Are you thirsty (口渴的)? Why are you drinking so much water?" asked the mother.

"No, Mom." answered the boy, "I want to wash the apples in my stomach with the water."

- 56. What shop does Mrs. Smith have?
A. A clothes shop. B. A food shop. C. A fruit shop. D. A book shop.
- 57. What's Steve's favorite fruit?
A. Oranges. B. Pears. C. Bananas. D. Apples.
- 58. Where did Steve find the fruit?
A. On the table. B. In the basketball. C. In the kitchen. D. In his bedroom.
- 59. Why did Steve keep on drinking water?
A. Because he was very thirsty.
B. Because he wanted to wash the apples in his stomach.
C. Because he liked drinking water.
D. Because he was very hungry.
- 60. Could he wash the apples in his stomach with the water?
A. Yes, he could. B. No, he couldn't. C. Sorry, I don't know. D. Yes, I think so.

Passage C:

Mr. White lived in the county. One day, he bought a second -class (二等的) train ticket and went to London to buy something. All the seats in the second-class carriages had been taken when Mr. White got on the train. 61.

Half an hour later, 62. So he went into one of them and took an empty seat. The other four men seemed to be rich people because they all wore fine clothes. But just before the train started, a different kind of person jumped in and sat down. 63 It was clear that he was very poor.

Everyone in the carriage looked unhappy with the young man. Mr. White thought that he would not be the only person to pay more. 64 If so, he was wrong. For when the train had traveled an hour, the door opened and the ticket-collector (检票员) came into the carriage. Of course, Mr. White had to pay more money for his ticket. 65 He was the only man who had the first-class ticket in the carriage.

根据上下文，选择正确的句子将短文补充完整。

- A. Only the young man sat quietly.
- B. He was a young man in old and dirty clothes.
- C. Maybe the young man hoped that the ticket-collector would never come.
- D. He found that there were some empty seats in the first-class carriage.
- E. He had to stand up all the way.

61. _____ 62. _____ 63. _____ 64. _____ 65. _____

Appendix 1b: English test at Time 2

Multiple-choice part: for each sentence, there are four choices marked A, B, C, and D. Choose the ONE that best completes the sentences, then write the corresponding letter on the answer sheet.

21. – How much did you ____ buying the new bike?
--Three hundred Yuan.
 A. pay B. cost C. take D. spend
22. The weather in Beijing is not ____ good ____ that in Hainan.
 A. as; than B. so; as C. than; as D. as; so
23. – Why does Jane feel so upset?
-- She failed the exam and she has no friends ____.
 A. talking B. talking with C. to talk D. to talk with
24. Jack wanted to get a ticket to *Titanic*, but there was _____ left.
 A. no B. not C. none D. one
25. The baby ____ cry ____ when he saw his mother come in.
 A. no; longer B. no; more C. didn't; any more D. didn't; any longer
26. Mr. Li is ill. Let Mr. Wang ____ us instead of him.
 A. to teach B. teach C. teaches D. taught
27. Tom didn't go hiking with his classmates ____ his illness.
 A. because B. because of C. as D. since
28. Judy failed in this exam. Since she is very strict ____ herself, she is sad.
 A. in B. for C. with D. at
29. – I am always afraid of giving a speech in front of the class.
-- ____ You can do it well.
 A. Not afraid. B. Take it easy. C. You are silly. D. Good luck.
30. It's impossible for us ____ there on foot in two hours.
 A. to get B. get C. getting D. got
31. – I'm sorry that John is out.
-- Please ask him to call me as soon as he _____.
 A. returned B. returns C. will return D. is returning
32. At last, the truck avoided ____ the tree.
 A. hit B. to hit C. hitting D. hiting
33. If you ____ the classroom, please turn off the light.
 A. left B. are leaving C. leave D. leaves
34. The teacher warns us ____ loudly in the classroom.
 A. not speak B. not speaking C. not to speak D. don't speak
35. Li Lei's legs were ____ in a traffic accident yesterday.
 A. badly hurt B. bad hurt C. hurted D. hurt bad
36. China is ____ the west of Japan and ____ the east of Asia.
 A. in; to B. to; in C. on; to D. at; in
37. Tom misses his brother very much and he is looking forward ____ him.
 A. to hear from B. hearing from C. to hearing from D. heard from
38. There are many trees on ____ sides of the river.
 A. every B. both C. each D. all
39. -- ____ is it from here?
-- It's about five minutes' walk.
 A. How long B. How soon C. How often D. How far
40. – Hi, Jim! What's your plan?
-- I will be on ____ holiday.
 A. a two-day B. a two day C. a two-day's D. a two-days

Reading comprehension part: *there are 3 passages in this part. Each passage is followed by some questions. Please make the best choice to answer the questions.*

Passage A:

During the day we work and play and at night we sleep. Our bodies rest while we sleep. In the morning we are ready to work and play again. It is while we are asleep that our bodies grow most. When children feel tired and angry, they usually need more sleep. We can get our lessons better, and we feel better, too, when we have had plenty of rest. Boys and girls, eight or nine years old, need ten hours of sleep every night. Our bodies need plenty of air when we sleep. If we do not get enough fresh air we wake up feeling tired. While in bed we must not cover our heads. If we do, our lungs (肺) will not get enough fresh air. If we open our windows at night we can have plenty of fresh air. Cool air is better than warm air. Boys and girls must get plenty of sleep if they want to grow and be strong.

31. Our bodies grow most while we are _____.
A. eating B. playing C. sleeping D. exercising
32. Which is the best air for us? _____.air.
A. Hot B. Cool C. Warm D. Dry
33. What often makes us feel tired in the morning?
A. Too much air. B. Not enough fresh air.
C. Too much cold air. D. Too much sleep.
34. How can you get plenty of fresh air at night? You can
A. open your window B. not sleep in bed
C. sleep ten hours D. go to bed late
35. The writer is trying to tell boys and girls
A. to get their lessons better B. not to cover their heads
C. how to go to bed D. to get plenty of sleep

Passage B:

Many teenagers (青少年) feel that the most important people in their lives are their friends. They believe that their family members, and in particular (尤其是) their parents, don't know them as well as their friends do. In large families, it is common for brothers and sisters to fight with each other and then they can only go to their friends for advice.

It is very important for teenagers to have one good friend or a circle of friends. Even when they are not with their friends, they usually spend a lot of time talking among themselves on the phone. This communication (交流) is very important in children's growing up because friends can discuss something difficult to say to their family members.

However, parents often try to choose their children's friends for them. Some parents may even stop their children from meeting their good friends. The question of "choice" is an interesting one. Have you ever thought of the following questions?

Who chooses your friends?

Do you choose your friends or do your friends choose you?

Have you got a good friend your parents don't like?

Your answers are welcome.

36. Many teenagers feel their _____ know them better than their parents do.
A. friends B. parents C. brothers and sisters D. family members
37. When the teenagers stay alone, the usual way of communication is _____.
A. to go to their friends B. to talk with their parents
C. to have a discussion with their family by phone D. to talk with their friends on the phone

38. Which of the following is different in meaning from the sentence “Some parents may even stop their children from meeting their good friends”?
- Some parents may even not allow their children to meet their good friends.
 - Some parents may even ask their children to stay away from their good friends.
 - Some parents may not even let their children meet their good friends.
 - Some parents may want their children to stop to meet their good friends.
39. Which of the following sentences is right according to the passage?
- Parents should like everything their children enjoy.
 - In all families children can choose everything they like.
 - Parents should try their best to understand their children better.
 - Teenagers can only go to their friends for help.
40. The sentence “Your answers are welcome” mean “_____”.
- You are welcome to have a discussion with us
 - We have no idea, so your answers are welcome
 - Your answers are always correct
 - You can give us all the right answers

Passage C:

In today's world many people seem to be hungry for money. Some of them even lose their lives for it. Money does have its most useful effect(影响) on the poor, but once a person has a rich life, a lot more money doesn't mean more happiness.

If money was everything, all millionaires (百万富翁) would have true love, true friendship, good health and a long life. However, this is not always true.

Nothing else is more pleasant than the three words which are “I love you”. But can love be bought? I am afraid not. Love means to give, not to take. To every person, health and long life are probably the most precious(宝贵的) things. Well, can health and long life be bought with money? The answer is “No”.

Of all the longest living people in the world, few of them are millionaires. True friendship can't be bought either. In a word, where money is worshiped (崇拜), money can cause brothers to quarrel, lovers to hate, strangers to fight and so on. No matter how much money you have, it is still not enough to make you a happy person if you have no one to laugh with, no one to cry for.

41. According to the passage, which of the following do you think is right?
- Money is everything.
 - Money isn't necessary.
 - Money is important, but not the most important.
 - With no money, with no success.
42. What's the most important thing for every person according to the writer's ideas?
- Only money.
 - Health and long life.
 - Only friendship.
 - A, B and C.
43. Which sentence of the following is TRUE according to the passage?
- If you haven't much money, you can't get more happiness.
 - You may live a long life even if you are poor.
 - Every year many people die in the world because their family is poor.
 - If you are rich, you will have less friendship.
44. In fact, all millionaires _____.
- have much money
 - die earlier
 - love their money
 - have true love
45. What does the sentence “Love means to give, not to take” mean in the passage?
- 爱意味着给你，而不能带走.
 - 爱是可以得到的，不要走开.
 - 爱意味着奉献，而不是索取.
 - 爱是可以索取的，而不必付出.

Appendix 1c: English test at Time 3

Multiple-choice part: *for each sentence, there are four choices marked A, B, C, and D. Choose the ONE that best completes the sentences, then write the corresponding letter on the answer sheet.*

21. – _____ is the population of China?
 --It's 1.3 billion.
 What a _____ population!
 A. What; large B. How many; large C. What; big D. how many; big
22. It is important _____ us _____ the traffic rules.
 A. for; obey B. of; obey C. for; to obey D. of; to obey
23. Mr. Smith _____ his office since two o'clock.
 A. left B. leave C. has been away from D. has left
24. – I went fishing last Sunday.
 -- _____. I like it very much.
 A. So I do. B. So I did. C. So do I. D. So did I.
25. Stand over there, _____ you will be able to see it better.
 A. and B. while C. or D. but
26. – Ann, could you make yourself _____ where you were in China?
 A. understand B. understood C. to understand D. understanding
27. – I hear Bill is ill in hospital. I'm thinking about _____.
 -- Don't worry. I can drive you to the hospital.
 A. when to see him B. how to get there C. how to help him D. what to buy for him
28. China has _____ the 2008 Olympic Games. How great!
 A. successful in host B. succeeded in hosting C. success in hosting D. succeed in host
29. _____ of the students in our class ____ seen the film Harry Potter.
 A. Three quarters; have B. Three fourths; have C. Three fourths; has D. Three quarters; has
30. – Mum, my foot hurts.
 -- Well, _____ your shoe and let me have a look.
 A. take down B. take out C. take up D. take off
31. – Did you go to Kate's birthday party?
 -- No, I _____.
 A. am not invited B. wasn't invited C. didn't invite D. haven't invited
32. _____ Mr. Black is very old, _____ he is still in good health.
 A. Though; but B. Because; so C. Though; / D. /; so
33. Now I have much difficulty _____ my math.
 A. improve B. to improve C. improving D. improved
34. The woman _____ lives next door is a doctor.
 A. which B. whom C. where D. who
35. – Will you go to the park with us?
 -- I beg your pardon?
 -- Oh, I asked you _____.
 A. that you will go to the park with us B. if you would go to the park with us
 C. that would you go to the park with us D. if will you go to the park with us

Reading comprehension part: *there are 4 passages in this part. Each passage is followed by some questions. Please make the best choice to answer the questions.*

Passage A: Questions 46 to 50 are based on the following passage.

Peter was seven. He lived with his grandparents in the countryside before he came to our class, because his parents had to work in the city. They also had no time to take care of him. So he was a new student in our class. And he knew nothing about the things that happened in big cities. Now he was standing in the front of the classroom because Mr. Smith, the teacher, was asking Peter a lot of questions. But Peter couldn't answer any of them. Mr. Smith then decided to ask him some easier questions so that he could answer a few.

"Who was Thomas Edison?" he asked.

Peter thought for some time and then answered in a very low voice, "A singer from America."

"No, Thomas Edison was a great American inventor," Mr. Smith said. He was getting a little angry now because everyone knows the great man, but he was trying not to let his students see that. Then he asked again. "Who was the first president (总统) of the United States?" Peter thought for a long time, but said nothing. Mr. Smith shouted, "George Washington!" Peter turned back and began to walk to his seat sadly.

"Come back!" Mr. Smith shouted. "I didn't tell you to go back!"

"I'm sorry," Peter said. "I thought you were calling the next student."

46. Peter lived with grandparents because _____ .
 A. His parents were busy working in the city B. He had no school to go to
 C. He loved the class D. He didn't study hard
47. Thomas Edison was _____ .
 A. a singer B. a doctor C. an inventor D. the president
48. Why did Peter answer in a low voice?
 A. He knew the question well. B. The question was too easy.
 C. He wasn't sure about his answer. D. He didn't want to answer.
49. Peter thought that George Washington was _____ .
 A. the name of a city B. the name of the president
 C. the name of the teacher D. the name of a student
50. How many right answers did Peter give?
 A. One. B. Two. C. Three D. None.

Passage B: Questions 51 to 55 are based on the following passage.

Happiness is for everyone. You don't need to care about those people who have beautiful houses with large gardens and swimming pools or those who have nice cars and a lot of money and a son. Why? Because those who have big houses may often feel lonely and those who have cars may want to walk on the country roads in their free time.

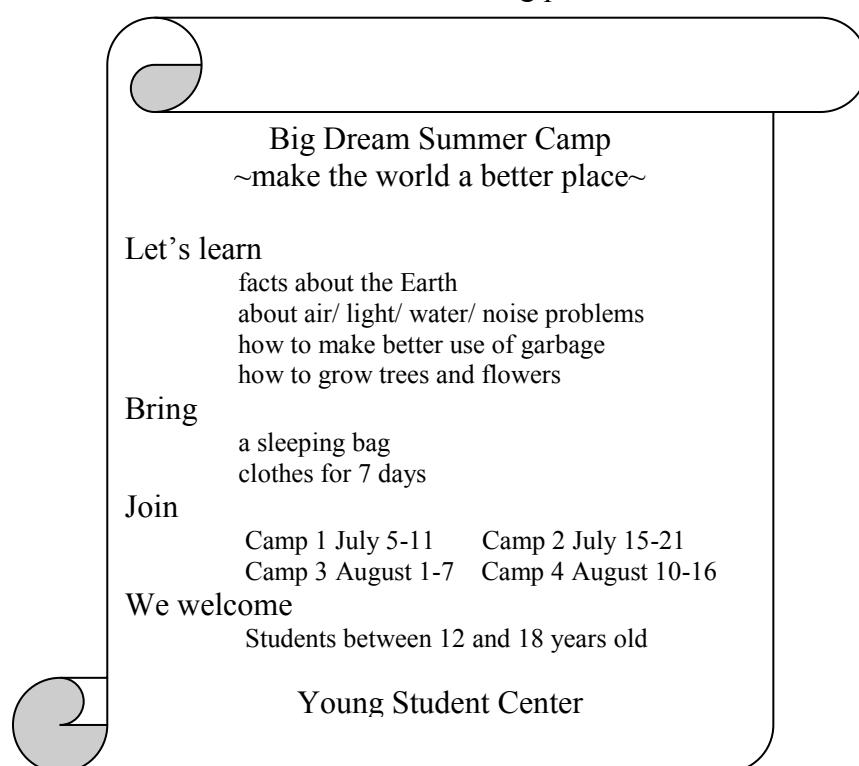
In fact, happiness is always around you if you put your heart into it. When you are in trouble at school, your friends will help you; when you study hard at your lessons, your parents are always taking good care of your life and your health; when you get success, your friends will say congratulations to you; when you do something wrong, people around you will help you correct it. And when you do something good to others, you will feel happy, too. All these are your happiness. If you notice a bit of them, you can see that happiness is always around you.

Happiness is not the same as money. It is a feeling of your heart. When you are poor, you can also be very happy, because you have something else that can't be bought with money. So you cannot always say you are poor and you have bad luck. As the saying goes, "Life is like a **revolving door**." When it closes, it also opens. If you take every chance you get, you can be a happy and lucky person.

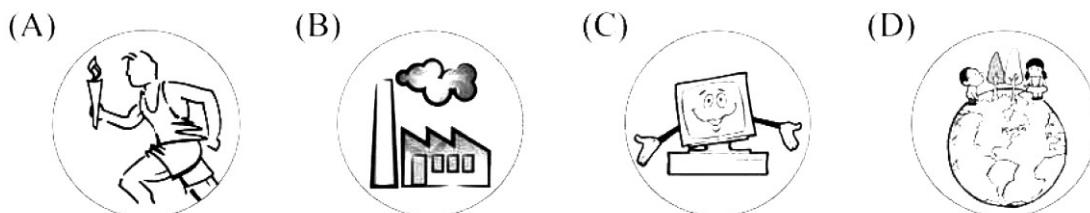
51. Those who have big houses may often feel _____ .
 A. happy B. lonely C. free D. excited

52. From the second paragraph, we learn that if you fall down in a PE class, both your teacher and your class will _____.
 A. laugh at you B. play jokes on you C. quarrel with you D. help you up
53. Which idea is NOT true according to the passage?
 A. You can get help from others when you make mistakes.
 B. You can still be a happy person even if you have little money.
 C. People who have cars would never like to walk in the open air.
 D. Happiness is always around you though difficulties come towards you.
54. What does the word “revolving” mean in the passage?
 A. 旋转的 B. 多彩的 C. 关闭的 D. 隐形的
55. What does the writer mainly talk about?
 A. How to grow up. B. How to be happy.
 C. How to help others D. How to make money.

Passage C: Questions 56 to 60 are based on the following poster.



56. Which is the best logo for the Big Dream Summer Camp?



57. We can learn many things **except** _____.
 A. something about the earth B. environmental problems
 C. making better use of everything D. growing trees and flowers
58. Which statement is true according to the poster?
 A. You need take nothing except some clothes.
 B. There are many kinds of indoor activities for you to do.

- C. You'll sleep outside for a week if you join the Summer Camp.
D. If your geography is poor, you'd better join the Summer Camp.
59. Sally wants to join the Summer Camp, but she has to take math classes from July 10 to 31, and her parents will take her for a trip on August 12. Which camp can she join?
A. Camp 1. B. Came 2. C. Camp 3 D. Camp 4.
60. Who can join the Summer Camp according to the poster?
A. Blake, a geography teacher, loves doing sports.
B. David, a college student, doesn't care for the environment.
C. Tom, a ten-year-old boy, wants to know more about the nature.
D. Kim, a student in Grade 9, likes taking part in all kinds of activities.

Passage D: Questions 61 to 65 are based on the following passage. Please choose the right order of the sentences marked A, B, C, and D and fill them into the blank of questions 61 to 64.

We often hear that children wish they were grown-ups, and that old people wish they were young. 61 The happiest people enjoy what each age gives them without wasting their time in useless regrets.

Childhood (童年) is a time when there are few duties; A child is fed, looked after and loved by grown-ups like parents or grandparents. 62 However, for older people they often lose their interest in those things.

On the other hand, a child may also have some pains with him. 63 He is often told not to do something. He will certainly be shouted at for doing something wrong.

When a child grows up, he can no longer expect others to pay for his food, clothes and many other things. 64 If he still spends most of his time playing as he used to in childhood, he will go hungry. If, however, he works hard and has no trouble, he can build up his own position in society with great happiness.

- A. What's more, life is always giving new things to him.
B. And he has to work if he wants to live comfortably.
C. He is not so free to do what he wishes to do.
D. Each age has its own pleasures and its own pains.

61 _____ 62 _____ 63 _____ 64 _____

65. What is the best title of the passage?

- A. Childhood Is a Happy Time B. No Pains at Any Age
C. Happy Position in Society D. Enjoy Your Whole Life

Appendix 2a: Chinese test at Time 1

第一部分 积累运用

i. 根据拼音写汉字。

枯 jí() 秀 qí () 以身 xùn () 职 狹 ài ()

ii. 默写。

1. 写出《宣州谢朓楼饯别校书叔云》中与“抽刀断水水更流”行成对仗一句。_____。

2. 一个人能力有大小，但只要有这点精神，就是一个高尚的人，_____，一个有道德的人，_____，一个有益于人民的人。

3. _____，欲上青天揽明月。

4. 浊酒一杯家万里，_____。

5. _____，小桥流水人家。

6. 故园渺何处？_____。

7. _____，群乱鸡里有风标。

8. 在你的阅读范围里，写两句含有“花”字的诗句。

(1) _____。

(2) _____。

三、阅读下面一段文字，完成后面的问题。

有个人在沙漠里迷失了方向，饥饿难耐，濒临死亡。可他仍然拖着沉重的脚步，一步一步地向前走，终于找到了一间废弃的小屋。这间屋子已很久无人居住，风吹日晒，摇摇欲坠。在屋前，他发现了一个吸水器，于是便用力抽水，可滴水全无。他气恼至极。忽又发现旁边有一个水壶，壶口被木塞塞住，壶上有一个纸条，上面写着：“你要先吧这壶水灌到吸水器中，然后才能打水。但是在你走之前一定要把水壶装满。”他小心翼翼地打开水壶，里面果然有一壶水。是不是该按纸条上说的，把这壶水倒进吸水器里？如果倒进去之后吸水器不出水，岂不是白白浪费了这救命之水？相反，要是把这壶水喝下去就会保住自己的生命。他（），经过艰难的抉择，他终于下决心照纸条上说的做，果然吸水器中涌出了泉水，他痛痛快快地喝了个够！休息一会，他把水壶装满水，塞上壶塞，深有感触地在纸条上加了一句话“_____”。

看了这个故事，使我仿佛变得聪明起来，变得豁达起来。故事中所蕴含的哲理，可使我终身受用。

(1) 文中的括号里应填上一个恰当的成语是_____。

(2) 修改划线处的句子的语病，把正确的句子写在下面。

(3) 根据文中提供的语境发挥想象，写出纸条上所加的话。（加上标点不超过 30 个字，注意语言的简明、连贯和得体）。

四、阅读下面这个真是的故事，然后回答问题。

1954 年，巴西足球队在世界杯上意外地输给了法国队，与冠军失之交臂。足球可是巴西的国魂。球员们沮丧、懊悔，他们准备承受球迷的嘲笑、辱骂。可是当飞机降落时，眼前却是另一种景象：总统和两万多名球迷默默地站在机场，人群中打着一条醒目的横幅：“这也会过去！”球员们顿时泪流满面。4 年后，巴西队不负众望，赢得了世界杯的冠军。在宏大而激动人心的欢迎场面上，人群中依然打着那条格外醒目的横幅：“这也会过去！”

(1) 前后两条同一内容的横幅各表达了什么意思？(2) 从故事中你得到了怎样的启示？

答 (1) 前一条_____；

后一条 _____。

(2) _____。

五. 通过专题《鸟》的学习， 我们对鸟的内涵有了更深的了解。某班同学利用黑板报出了一期“爱鸟”专刊。一下是其中一个栏目的内容， 读后按要求答题。

鸽子：不管天气多么恶劣， 也不管路途多么遥远， 都不会失去心中的方向。 它是为信念而飞的。

荆棘鸟：它不停地飞翔， 不停地寻找， 只是渴望站在荆棘树上让最尖最长的荆棘刺进胸口， 唱出生命里唯一一次最美妙的歌。 生命只为了那一声绝唱， 却足以让人惊心动魄。

- (1) 请根据以上内容， 为该栏目拟一个鲜明、恰当的主题（三至五个字）。
- (2) 根据这一主题， 仿照该栏目内容的写法， 为自己喜爱的一种鸟（题中涉及除外）写几句简短的话。

第二部分 阅读理解

(一) 阅读下面《白杨礼赞》一文节选。

它没有婆娑的姿态， 没有屈曲盘旋的虬枝， 也许你要说它不美。如果美是专指“婆娑”或“旁逸斜出”之类而言， 那么白杨树算不得树中的好女子。但是它伟岸，正直，朴质，严肃，也不缺乏温和，更不用提它的坚强不屈与挺拔，它是树中的伟丈夫。当你在积雪初融的高原上走过，看见平坦的大地上傲然挺立这么一株或一排白杨树，难道你就只觉得它是树？难道你就不想到它的朴质，严肃，坚强不屈，至少也象征了北方的农民？难道你竟一点也不联想到，在敌后的广大土地上，到处有坚强不屈，就象这白杨树一样傲然挺立的守卫他们家乡的哨兵？难道你又不更远一点想到，这样枝枝叶叶靠近团结，力求上进的白杨树，宛然象征了今天在华北平原纵横决荡，用血写出新中国历史的那种精神和意志？

白杨树是不平凡的树。它在西北极普遍，不被人重视，就跟北方的农民相似；它有极强的生命力，磨折不了，压迫不倒，也跟北方的农民相似。我赞美白杨树，就因为它不但象征了北方的农民，尤其象征了今天我们民族解放斗争中所不可或缺的朴质，坚强，力求上进的精神。

1. 用一句话概括两短位子的内容。
2. 你怎样理解文中加点词语“也许”的作用？
3. 文中划线语句描述白杨树与北方农民的共同点，两个分句能否前后调换顺序？两个分句分别从哪两个层面上揭示的？
4. 文章运用了四个反问句构成一组排比，逐层加深揭示了白杨树的象征意义。请仿照示例选一句作简要批注。

示例：第二个反问句肯定白杨树的不凡品质，肯定了白杨树和北方农民的联系。

批注：_____。

(二) 阅读《千年独舞》一文。

1405年7月11日，历史定格在这一天，这一天似乎离我们过于遥远，遥远得记不清船只的数量，水手的编制。然而又似乎离我们很近，近得我们可以看清郑和威武的身姿，抛锚起航的宏伟场面。这一天，明朝三宝太监郑和率领由百余艘大小船只，二万七千八百余人组成的庞大船队，从1405（永乐三年）至1433年（宣德八年），历时28年，七下西洋，远航至东南亚、印度之多，吨位之大；船员之众，组织之严密；造船和航海技术之先进，均为当时世界之最，远在欧洲人所谓“地理大发现”的大航海之先，是世界航海史之壮举。

郑和七下西洋，有五次在商贸繁盛的马六甲停留。为了纪念这位伟大的航海家，在马六甲有一座采用中国传统建筑形式，红墙配琉璃瓦，富有浓厚的中国建筑风格庙宇，三宝庙。庙顶飞檐描有彩龙戏珠；大门顶上，飞檐高翘；“国泰民安”、“风调雨顺”章显为民众生活祈福。走进大门，在右边四方的石墩上，有一尊青石雕像，背负宝剑，形象威武庄严，他便是我国明代著名航海家三宝太监郑和。

在喧哗的历史长河中，他是一位孤独的舞者。他以自己特殊的身份，带着“扬国威、示富强”的使命，在大西洋（按：此处疑为“印度洋”之误，下同）宽广无垠的海面上驰骋。以惊涛骇浪为乐，

以电闪雷鸣为伍，以飞鸟游鱼为伴，伫立于船头的身影，撕裂了大西洋千百年的孤独。曾几何，谁人能如此贴近的感受大洋的威力；谁人能如此幸运地享受大洋的安谧；谁人能横跨西洋留下足迹恩泽后世？我们不会了解也难以知道几百年前的三宝太监如何战胜寂寞和孤独，如何在大西洋宽广的洋面奏响这千年绝唱的舞曲。那是风的声音，风的祝福，雷的声威！他随波独舞，以大洋为章，用自己特有方式书写了一部巨篇史诗。也许我们很难理解，在中华五千年的历史长河中，一位身份特殊的人能独舞于大西洋几百年。在雄性统治的世界里，在充满暴力的世界里，在相信势力的世界里，却让一位剥夺了雄性权利的人传承文明，去树立帝国雄威。没有人会明白，为何是一位太监，能够克服诸多困难，七下西洋接受众多国家的顶礼膜拜。

中华自古多奇人，这与中华民族吃苦耐劳，勇于开拓的精神有着密切的关系。中华几千年历史文明的沉淀，造就了一代又一代敢为人先的开拓者。这位伟大的、孤独的舞者绝然不会想到自己七下西洋的艰难旅程会成为中华民族史上的一件盛事，也许他只是遵从帝国首领的命令。他也不会想到至此以后，中华民族却再也难以走出国门，更不会想到，几百年以后，西方列强用坚船利炮轰开了中国看似坚实的壁垒。他们传承的不是“扬国威，示富强”，而是野蛮的杀戮，疯狂的掠夺，中华民族经历了百年浩劫。

大西洋属于勇敢者的舞台，而令人欣慰的是舞台上的第一位舞者属于东方帝国。他是孤独的，大西洋千百年的孤寂需要他去安慰；他是幸运的，大西洋第一篇史诗记载了他的舞步；他是伟大的，大西洋的脊背上烙下了他的足迹；他是成功的，大西洋浮躁的脾性曾七次臣服于他的脚下。

前人给我们留下了宝贵的财富，它不是物质上的富有，而精神上的富足。民族复兴的伟业需要我们树立民族自豪感，增强民族自尊心，我们应沿着前人跋涉的足迹，继续传承中华文明，以我们自己的方式，完成新一代人历史使命，东方巨龙将会再次自由的驰骋于五洋七洲，畅想新的篇章！

- 根据文章有关内容，为下面对联拟一则称颂郑和功绩的下联（句式大体工整）。

毕升创活字印刷显我民族智慧，_____。

- 联系全文内容，说说《千年独舞》中的“独舞”有怎样的含义？
- 用简要的语言归纳，在郑和身上体现了哪些民族精神？
- 为什么说郑和下西洋是“世界航海史之壮举”？请摘录文中语句回答。
- 你喜欢这篇文章吗？请从文章的内容和表达两方面说出你喜欢或不喜欢的理由。
- 阅读下面材料，结合本文内容，写出胡锦涛总书记赠送礼品的用意。

材料一：2005年4月29日，中共中央总书记胡锦涛与中国国民党主席连战在北京进行历史性会见并互赠了礼品。“郑和七宝宝船”以中国共产党中央委员会总书记胡锦涛的名义，赠送中国国民党大陆访问团。

材料二：2005年5月12日，中共中央总书记胡锦涛与亲民党主席宋楚瑜在北京进行历史性会见并互赠了礼品。胡锦涛礼赠宋楚瑜率领的亲民党大陆访问团“郑和七宝宝船”。

Appendix 2b: Chinese test at Time 2

一. 基础知识与常识。

1. 根据拼音写汉字。

祭 sì ()	yān () 红	荡 yàng ()
quán () 骨	bèng () 裂	恣 suī ()

2. 改错别字

生意昂然	新陈带谢	分道扬镳	浮想连翩	心惊胆战
如愿以偿	消声匿迹	十拿九稳	郑重其事	狼狈不堪

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3. 选出下列划线成语使用恰当的一项 ()。

- A. 这家伙明知罪行严重，却在从容不迫地抹桌子，好像什么事也没有发生。
- B. 会议开始比较沉闷，多亏张教授抛砖引玉的一番话，才使大家发言积极起来。
- C. 五岁的小侄子戴着大檐帽，别着玩具枪，煞有介事地在房间里巡视，那模样真是让人忍俊不禁。
- D. 他当选了两年的局长，却没干过一件实事，这次被免职，实在是众望所归。

4. 选出下列说法有误的一项 ()。

- A 《故乡》和《多收了三五斗》虽然都反映了旧中国农民的贫困悲苦，但闰土和“旧毡帽朋友”却有很大区别：前者愚昧麻木，后者却逐步萌发出反抗意识。
- B 《格列佛游记》是由法国作家斯威夫特所写的一部小说，主要抨击了英国宫廷和大臣的昏庸无能，讽刺那些阿谀奉承的官员们的丑恶嘴脸。
- C 被誉为“史家之绝唱，无韵之离骚”的《史记》是东汉人司马迁写的，它是我国第一部纪传体史书。
- D 陶渊明在《桃花源记》中为我们虚构出一个人人安居乐业、彼此和睦相处的世外桃源，反衬出东晋末年社会的黑暗。

5. 修改病句。

- (1) 美国三大汽车公司的首席执行官对媒体日前先后表示将自动减薪。
- (2) 通过这次上岗前的集中培训，使他们的专业技能得到了很大的提升。

6. 默写。

- (1) 且壮士不死即已，死即举大名耳， _____。
- (2) ... 中无杂树，_____，_____。
- (3) _____，君子好逑。
- (4) _____，白露为霜。所谓伊人，在水一方。
- (5) 登斯楼也，则有_____，_____，满目萧然，感极而悲者矣。
- (6) “伛偻提携”与《桃花源记》中的_____用法与修辞完全相同。
- (7) 《陈涉世家》中点明起义根本原因的句子是：_____。
- (8) 《岳阳楼记》里“是进亦忧，退亦忧”中的“进”指的是_____，“退”指的是_____。
- (9) 前笛何须怨杨柳，_____。

(10) 在晏殊的《浣溪沙》一词中，将自然想象和人的感受巧妙结合的句子是 _____，_____。

7. 名著阅读。

如果你想向朋友推荐《格列佛游记》，你会怎样介绍？请写一段简要的推荐词。

二. 阅读理解。

(一) 文言文阅读。 略。

(二) 现代文阅读。

果然，10 年之久，于勒叔叔没再来信。可是父亲的希望却与日俱增。母亲也常常说：“只要这个好心的于勒一回来，我们的境况就不同了。他可真算得一个有办法的人。”

……后来我们终于动身了。我们上了轮船，离开栈桥，在一片平静的好似绿色大理石桌面的海上驶向远处。正如那些不常旅行的人们一样，我们感到快活而骄傲。

……我看了看他的手，那是一只满是皱痕的水手的手。我又看了看他的脸，那是一张又老又穷苦的脸，满脸的愁容，狼狈不堪。我心里默念道：“这是我的叔叔，父亲的弟弟，我的亲叔叔。”

我给了他 10 个铜子的小费。他赶紧谢我：“上帝保佑您，我的年轻的先生！”等我把 2 法郎交给父亲，母亲诧异起来，就问：“吃了 3 个法郎？这是不可能的。”

我说：“我给了他 10 个铜子的小费。”

我母亲吓了一跳，直望着我说：“你简直是疯了！拿 10 个铜子给这个人，给这个流氓！”她没再往下说，因为父亲指着女婿对她使了个眼色。

后来大家都不再说话。

在我们面前，天边远处仿佛有一片紫色的阴影从海里钻出来。那就是哲尔赛岛了。

1. “我”的母亲原先怎样称呼于勒，后来又是怎样称呼的？从称呼的变化上，可以看出她是什么样的一个人？

答：

2. “我”的全家人出发时是怎样的心情？后来又是怎样的心情？（用选文中的话作答）

答：

3. 选文中有两段景物描写。请分别说说这两段景物描写的作用。

答：

4. 于勒接到十个铜子的小费，就“赶紧”表示感谢，这个细节意在说明什么？

答：

5. “我”在心里默念的话属于什么描写。你怎样理解文中“我”心里默念的话。

答：

(三) 生命共同的泪（节选）

① 轻的泪，是人的泪，而动物的泪，却是有重量的泪。

② 那是一种发自生命深处的泪，是一种比金属还要重的泪。也许人的泪中还含有虚伪，也许人的泪里还有个人恩怨，而动物的泪里却只有真诚。也只有动物的泪，才更是震撼人们魂魄的泪。

③ 第一次看到动物的泪，几乎是被那泪水惊呆了，那是一头老牛的泪。我的一个远亲家里有一头老牛，这牛有灵性，它能听懂我们的语言。每当我们模仿牛的叫声唤它的时候，只要它不是在劳作，它就会一定走到我们身边，然后我们就一齐骑到它的背上，也不用任何指挥，它就把我们带到田间去了。这时，我们就在地里玩耍，它在一旁吃草，谁也不关心谁的事。而当我们之间因为矛盾动了拳脚，那头老牛就像一个朋友那样地走过来，在我们之间蹭来蹭去，就是不让我们任何一方的拳头落在对方的身上。

④传统的民间习惯，总是把失去劳力的老牛卖到“汤锅”里去。而所谓的“汤锅”就是屠宰场，也就是把失去劳力的老牛杀掉卖肉。对此，这头老牛已经是有所准备了，它似是早就有了一种预感。每当它回到家里之后，它就像是在用心听着什么，而门外一有动静，它就紧张地抬头张望。然而，终于这一天到来了，只听说是“汤锅”里的人来了，我们还没见到人影，就看见那头老牛哗哗地流下泪水。没多少时间，老牛就哭湿了脸颊。这时，它脸上的绒毛已经全湿成了一缕一缕的毛辫，而且泪水还从脸上流下来。不多时就哭湿了身下的土地。老牛知道它的寿限到了，无怨无恨，它只是叫了一声，也许是最后向自己的主人告别吧，然后，它就被“汤锅”的人拉走了。

⑤很久很久，我总是不能忘记那泪水，那是一种最真诚的眼泪，是一种留恋生命，又感知大限到来的泪水。而人类总是过于贪恋生命，给爱我们的人留下无尽的痛苦。动物只留下自己的情爱，含着永远的圣洁的泪水向人们告别，它不向人类索求回报。

⑥如果说牛的泪，是告别生命的泪；那么还有一种泪就是忍受生命的泪了。这种泪是骆驼的泪，也是我所见到的一种最沉重的泪。

⑦那是在大西北生活的日子。一次，我们要到远方去劳动，全农场许多人一起出发穿过大戈壁，没有汽车，没有道路，把我们送到那里去的只有几十峰骆驼。于是，就在一个阴晦的日子，我们无声无息地走进了荒漠。

⑧走啊，走啊，从早晨走到中午，又从中午走到黄昏，坐在驼背上的人们已是疲惫不堪了，而骆驼还在一步一步地走着，没有一点躁动，没有一点厌倦，就是那样地走着，默默地忍受着命运为它们安排的一切。此时，我们的心情比骆驼那脚步声还要沉重，也许是走得太累了，我们当中竟有人小声地唱了起来，是一支曲调极其简单的歌，没有激情，也没有悲伤，就是为了在这过于寂寞的戈壁上发出一点声音。果然，歌声带给了人们一点兴奋，立时，大家就有了一种精神；那一直在驼背上睡着的人们睁开了眼睛。但是，谁也不会相信，就在我一起向四周张望的时候，我们却发现，驮着我们前行的骆驼，也正被我们的歌声唤醒，它们没有四处张望，也没有嘶鸣，它们还是走着，走着，但同时却流下了泪水。

⑨这是一种发自生命深处的泪，这是一种生命与生命相互珍爱的泪，这是一种超出了一切世俗卑下情感的泪，这更是我们这个世界最高尚的泪。直到此时，我才彻悟到泪水何以会生命与生命之间相互沟通，人的泪和动物的泪，只要是真诚的泪，那就是生命共同的泪。

⑩我看到过动物的泪，那是一种比金属还要沉重的泪，那更是使我们这个世界变得辉煌的泪；那是沉重的泪，更是发自生命深处的泪，那是我终生不能忘记的泪啊！

1. 给文中加点的字注音，并结合具体语境，写出两处化纤的词的含义。

(1) A 脍颊 () B 阴晦 ()

(2) A 而动物的泪，却是有重量的泪。重量：_____。

B 那更是使我们这个世界变得辉煌的泪。辉煌：_____。

2. 为什么动物的泪会给作者乃至人们以巨大的震撼？

3. 第6段中的划线句子在文章中起什么作用？

4. 下列对文章与表达特点的概括分析不正确的一项是()。

A 这篇散文以动物有重量的泪为线索贯穿全文，在材料的组织上充分体现了“形散神聚”的特点。

B 文中主要赞颂了动物那发自生命深处感慨人心的泪，同时也以对比的手法表现出人的所有的泪都是虚伪的。

C 文章的语言表达质朴，情感真挚，综合性地运用了记叙、议论、抒情多种表达方式。

D 文中所说的“告别生命”意味着一个生命的结束，而“忍受生命”则意味着要承受生命旅程中的种种困苦和折磨。

5. 人的虚伪的泪，固然毫无价值，但人间亲情的泪，同样也是有重量的泪，请你仿照第9段划线句中的“这是。 . . . , 这是。 . . . , 这是。 . . . , 这更是。 . . . ”的句式，另写一组歌颂人间亲情的泪的句子。

6. 从文中选出你最喜欢的一句话抄下来，并谈谈你喜欢的理由。

句子：

理由：

Appendix 2c: Chinese test at Time 3

一、积累与运用

1. 下列词语中加点的字，每对读音不同的一项是（ ）
- A. 采撷 / 皱缬 逶迤 / 贻害 磋商 / 瞠瞪 闲暇 / 瑕疵
 B. 踌躇 / 惆怅 褴褛 / 斑斓 偏袒 / 忐忑 倨傲 / 盘踞
 C. 修葺 / 鹿茸 刹车 / 刹那 逃遁 / 敦厚 惺忪 / 诉讼
 D. 婆娑 / 摩挲 崛起 / 倔强 谛听 / 取缔 隐晦 / 教诲

2. 选出下列各句中加点的成语使用不恰当的一项。

- A. 城市绿化必须因地制宜，突出环境保护与人文景观和谐统一的发展观念。B. 今年以来，朝阳社区开展了许多为群众所喜闻乐见的“明荣知耻”专题文化活动。
 C. 《文明办网倡议书》为我国姹紫嫣红的精神文明园地奉上了一枝鲜花，增添了一叶新绿。
 D. 昨天下午的活动中，来自各班的同学推波助澜，使毕业联欢的气氛达到了高潮。

3. 阅读下面材料，按要求答题。

- (1) 下图漫画《这并不是胜利》是一则关于环境保护的公益广告，请你根据画面内容，自选角度加以欣赏。注意语言精练。



我的欣赏：

(2) 根据下面的情境，补写流水与树根的对话。

一天，流水遇到了树根。流水讽刺树根说：你永远处在黑暗中，瞧你丑陋的样子，只知道喝我的汁液，你一无是处。树根谦和地回答：_____。

到了春天，流水穿过山涧，走过草地，惊讶地看到树根滋养出的鲜花装点了大地。

4. 去年李文同学参加市作文大赛，名落孙山，他很沮丧。语文老师对他只说了一句话：“这会过去的。”今年，李文同学又参加了市作文大赛，获得一等奖，他可高兴了。这时语文老师还是对他只说一句话：“这会过去的。”请问：语文老师去年和今年说的“这会过去的”各表达了什么意思？

5. 文学常识简答。

许多文学作品往往用适当的夸张手法折射现实。《格列佛游记》中小人国根据“_____”的问题而分成了大端派与小端派，由此反映出英国统治集团的腐朽；鲁迅在《故乡》中通过对“圆规”杨二嫂令人憎恶的市侩形象的刻画，揭示了由旧社会压迫而造成苦涩严峻的现实生活；莫泊桑《我的叔叔于勒》通过_____对于勒态度前后变化的丑陋表演，嘲讽和批判了资本主义社会金钱至上的社会现实。

6. 下面文字中的画线句子有语病，请提出修改意见。

由国家外国专家局等主办的“国际人才高峰论坛”在深圳召开，全国人大常委会委员、民进中央副主席朱永新在论坛上指出，① 阅读能力直接决定着一个国家和民族的未来。但我们国家国民的阅读能力长期以来一直走低，导致国民素质下降。朱永新指出，现在连大学生基本上都不读书了。在阅读缺失的

情况下，满堂灌的教学体系出现了，它让学生失去了思考能力，学生“② 考试背笔记，上课记笔记，考后全忘记”，这成为大学教育的典型写照，中小学也是如此。

修改意见：第①句：_____ 第②句：_____。

7. 古诗文默写。

(1) 《桃花源记》中最能表现桃源人幸福生活的句子是：_____，_____。

(2) 分析家认为，美国对外武力干涉他国内政的战略已呈“_____”之势，而中国“和平崛起”的外交战略正呈“_____”之势。（用孟子《得道多助失道寡助》中两句话填写。）

(3) 王教授已退休多年，仍在勤奋著书。如果要送他一幅书法作品，用曹操《龟虽寿》的诗句“_____，_____”作为内容就很合适。

(4) 人生不可能平平淡淡，生活中的挫折与苦难常常折磨着我们的身心，愁绪就像《相见欢》词中所说的那样_____，_____，真是“别是一般滋味到心头”。

(5) 晏殊《浣溪沙》中“_____，_____”一句将自然现象与人的感受巧妙结合。

8. 探究下面材料内容，回答问题。

材料一：2009年，我利用双休日、节庆长假自驾车回故乡旅游，住农家屋，吃农家饭，赏田园风光，品民俗文化。“农家乐”旅游虽然辛苦①，但非常愉快。

材料二：然而我又不愿意他们因为要一气，都如我的辛苦展转而生活，也不愿意他们都如闰土的辛苦麻木而生活，也不愿意都如别人的辛苦② 恣睢而生活。

(1) 根据材料一内容，请你为“农家乐”接待方设计一条宣传标语。

(2) 解释二则材料中加点词“辛苦”的不同含义。

辛苦(1)_____。

辛苦(2)_____。

b. 现代文阅读。

(一) 阅读下面记叙文，完成9-13题。

给儿子一个骄傲的背影

戚祥浩

①他是那种连一阵风都能吹走的小老头。工地还没开工，他便三番五次地找到我，还打来了村里的特困证明，让我无论如何给他一样活儿干。我拗不过他，只好将负责看管搅拌机的差事交给他。

②他对我连声道谢，然后，扭头跑回村子。那时，我正打算向他介绍搅拌机的操作方法，他居然不听我一声解说，就走掉了。正在我气恼的时候，他又回来了，身后还拖着个脸蛋红红的小男孩。(A) 他老远便指着我身边的搅拌机大喊：“这是爸爸要开的机器！”

③小男孩不知什么时候蹿到搅拌机边，将整个脑袋探进搅拌机内。我惊出了一身冷汗，大声斥责孩子。孩子躲到一边后，我又开始训斥他，怎么将孩子带到工地上来，要知道工地上处处充满危险！他跟儿子一起低下了头，好半天，才嗫嚅道：“我只想让儿子开心一下，爸爸终于找到工作了！”

④他很快学会了怎样操作搅拌机。在搅拌机的轰鸣声中，他儿子挥舞着小手喊：“爸爸，好厉害！”他笑了，脸上的皱纹拧成一块块，还露出了蜡黄的牙齿。距离开工还有两三天，可他次日一大早就来到工地上了，拿着一块抹布，一点点地抹去搅拌机上的水泥灰；有些硬块抹不去，他就用指甲一点

点地抠掉。我说没有必要，反正一开工就又脏了。他却嘿嘿地笑着说，他要给儿子一个惊喜：昨天还是旧机器，今天就变新了。

⑤开工那天，他竟然穿了件崭新的衣服来。启动搅拌机没多久，四处飞扬的水泥灰，就在新衣服上厚厚地蒙了一层。一转眼，他就跟其他工友没啥区别了。他显然发现了这一点，赶紧腾出一只手拍打身上的水泥灰。

⑥紧挨着工地的是一所小学，校园里的嘈杂声可以清晰地传来。每当下课铃声响起，他都情不自禁地拍得更紧促。看管搅拌机，原本挺轻松的活，他却累得满头大汗。我知道他是被那只不停拍打的手累的。

⑦铃声又一次响起，工地外面传来孩子放学的嬉笑打闹声。（B）他忽然触电般脱下衣服，使劲地甩两下，然后迅速穿回身上。他那件抖落水泥灰的衣服，看起来又跟新的一样了。然后，我听见一个甜甜的童音传来：“那个穿最漂亮衣服的人，是我爸爸。”循声望去，围墙缝隙中，探着两个小脑袋，其中一个正是他的儿子。

⑧我看见笑意漾满了他的嘴角。原来他拍打了一个上午身上的水泥灰，只想留给儿子一个干净的后背，只想让他的儿子在小伙伴面前能多少拥有些骄傲！

⑨儿子哼着歌儿走远后，他才像忽然记起了什么似的，赶紧用另一只手去揉那只拍打衣服的手，边揉还边吁吁地喘气。我忍不住说，你儿子真可爱。他忽然间涨红了脸。他说儿子其实是抱养的，可小家伙一定要喊他爸爸，怎么教都改不了口。他又接着说：“我上了年纪，干不了重活，以后你这边负责看管搅拌机的活都交给我好不好，我多少要给儿子留些钱啊！”

⑩我使劲点头，那一刻，我的眼泪不可遏止地落下。

（选自《潮州日报》，文章有改动）

9. 文中的父亲做了哪几件曾令“我”不理解的事？请简要概括。（示例除外）

【示例】不听“我”解说操作方法就走掉了。

（1）

（2）

10. 文中第7段划线句子耐人寻味，请略作赏析。

11. 联系上下文，分析文章第⑨段中父亲“涨红了脸”的原因。

12. 从选文②③两段中摘录“我”对文中父亲做法极为不满的两个关键词： 、 。

13. 下面是对文中父亲行为的两种理解，你更认同哪一种？请联系文章具体事例（至少两件），说出你的理由。

第一种：表现了父亲对养子深深的爱。

第二种：表现了父亲对获得自身尊严的渴望。

（二）阅读下面说明文，完成14—16题。

① 美国加尼福尼亚州南旧金山新办的企业——索拉琪米公司，已经开发出利用水藻将生物质转化成燃料的技术，可以制造出价格更便宜的生物质燃料。

② 这种新方法是通过将水藻的遗传变异菌株进行特殊的养殖，以降低制造燃料的成本。与通常的把水藻放进池塘或封闭进暴露在太阳光下的塑料管中养殖的方法不同，索拉琪米公司是在巨大的不锈钢容器中的黑暗环境里养殖这种有机物（藻类）——用糖喂养水藻，然后把这些水藻再转化成各种油类，油提取出来后，再进一步加工成各类燃料。

③ 这一方法比那些利用微生物将糖转化成燃料的方法更胜一筹，当用来加工从纤维素原料中得到的糖类时，藻类与许多其他微生物相比具有特别的优势，尽管这些纤维素需要的能源、土地和水要比种植玉米的少，但是，当这些生物质的化学键被打断或转变成特时，它仍然含有像木质素那样的物质，会毒害其他的微生物。在大多数其他方法中，都必须把木质素从糖中分离出来，以使微生物能保持健康状态；而水藻对木质素具有耐受性，因此，可以省去这道工序，降低生产成本。

④ 通常的那些方法是使水藻利用阳光，通过光合作用生产出所需要的糖，而索拉琪米公司的方法中，研究人员将水藻置于黑暗之中而有意避开光合作用过程——与从阳光中获取能量不同，水藻是从给它们喂养的糖分中摄取能量的。

⑤ 这种在黑暗中用糖喂养水藻的方法，比利用池塘或生物反应器养殖的方法有许多优点。首先，将水藻置于黑暗之中，能使它们产生出比在阳光中更多的油，原因是当光合作用进行不活跃时，将糖转化成油的其他代谢过程会变得活跃起来。

⑥ 同样重要的是，给水藻喂糖，可使它们在远高于从阳光中摄取能量时的浓度下生长，其部分原因是糖提供了一种浓缩的能量来源。在这些更高浓度环境中生长的水藻，不仅可以减少养殖水藻所需的基础设施，而且还可以更容易从中收集和提取油类，便于降低生产成本。

（《世界科学》 2008 年第 5 期，有删改）

14. 请根据文段② 用简洁的语言概括用水藻制造燃料的三个步骤。

答：(1)：

(2)：

(3)：

。

15. 在黑暗中用糖养殖水藻有哪两个优点？请根据文意简要回答。

答：(1)

(2)

16. 品析画线句子的说明方法及作用，注意加点词语的表达效果。

答：

（四）阅读下面议论文，完成 17—20 题。

珍惜弱点

①人皆有弱点，但弱点不同缺点。缺点是行为道德上的不足之处，然而弱点大都是心理性格上的不如人处。若说缺点可以改正，可以克服，那么弱点不仅与生俱来，还要伴人一生。

②事物本身都有正反两个方面。据说海南岛的柏油路面很抗热，零上 40℃以上也不熔化；哈尔滨的柏油路面能抗寒，零下 30℃也不会裂开。反过来说，海南岛的柏油路最不抗寒；哈尔滨的柏油路最禁不得热。这个事例说明什么呢？事物的某方面愈强，它的反方面愈弱。

③同样，事物的某方面愈弱，它的反方面愈强。诸葛亮最大的弱点谁都知道，一生大谨小慎。当年大将魏延曾提出偷袭长安的奇计，但被诸葛亮所否定，致使魏延至死都认为这是诸葛亮的大失误。然而街亭失守，诸葛亮被迫摆空城计，司马懿之所以没敢贸然进城，是诸葛亮凭借一生用兵谨慎的“弱点”赢得了这步险棋。可以这么说，弱点也是强点，所以弱点也需珍惜。

④任何一个物种身上都存在弱点，但这并不影响“物竞天择，适者生存”的大规律。弱点在某种程度上是生存的保护色。善用“弱点”者不仅不弱，反而会成为强中强。以老鼠为例，其相貌卑琐，鬼鬼祟祟，无猫之乖，无牛羊之肉香，无鸟禽之美丽，正因为它的“弱点”，人不仅不驯化它，还要打杀而后快。兵法上说“置之死地而后生”，这老鼠在千百年的厄运中反而存活，鼠的家族绝对数量超过人的数量。

⑤世界万物无绝对的强点和弱点。弱点于人不是什么赘疣，生出来便是人的累赘。因为弱点在任何一个物种中，犹如物体与影子的关系，根本谁也离不开谁。性格急躁失之鲁莽但决断性强，慢性子的人稳重有余但反应迟缓，在世界上谁也没有一个绝对的优势，谁也不会没有一点儿优势。基于这一点，我们任何人不需自卑，更不用自暴自弃。

⑥金无足赤，人无完人。正视自己的弱点，进而利用自己的弱点，学业上事业上都能进取。譬如大画家黄宾虹，晚年双目失明，然而他凭借感觉绘画，反而开创另一境界，成一大家。

⑦珍惜弱点是人生的不气馁，是完善人格的进取，是在弱者上奏出强音的大手笔。利用自己的弱点是弥补，是反弹，可弱点一旦被他人利用便不是吉兆了。像吕布好色的弱点被人掌握，一个美女貂蝉便让他如木偶般任人摆布，最后英雄身首异处。珍惜自己的弱点，别让他人利用弱点，是缺憾之中的聪明。

17. 找出文中表明作者主要观点的句子。

18. 弱点与缺点有哪些不同之处？

19. 第⑤段画线句子运用的主要论证方法是_____，鲜明、深入地证明了“_____”的道理。

20. 第⑦段中“利用自己的弱点是弥补，是反弹”这句话如何理解？

Appendix 3a: Items of English word recognition

<u>Word</u>	<u>Non-word</u>	<u>Word</u>	<u>Non-word</u>
bat	ebe	angry	dake
lazy	beeg	yellow	recribe
good	hurf	kitchen	kimble
pants	jaker	money	plock
juice	lelly	tree	wodget
lemon	scoat	year	cudder
skirt	foost	watch	anvortise
circle	mocket	dark	mider
drawer	lermer	night	voluge
biscuit	blunger	cheese	bondle
knife	poulding	right	jillow
wrong	hetter	corner	swibe
afraid	pog	nothing	opple
beach	undrella	picture	lisk
today	trince	animal	cosp
window	robble	strong	cag
parent	orper	road	plar
spring	fid	mistake	mentury
eye	brendly	town	juker
flower	prial	return	sut

Appendix 3b: Items of Chinese word recognition

<u>Word</u>	<u>Non-word</u>	<u>Word</u>	<u>Non-word</u>
小	并	间	娜
当	趁	事	突
自	会	无	玄
应	配	产	杳
表	庄	者	补
大	表	也	找
只	夾	月	厘
明	忌	可	全
万	畱	民	黑
分	疬	军	议
本	汾	长	事
同	小	法	笼罩
社	淌	区	亥
我	箇	好	者
度	军	实	龟
全	张	么	月
里	咗	开	可
利	囝	去	民
作	勾	会	難
设	迺	国	迺适

Appendix 3c: Items of English sentence decision

1. A crocodile is an animal that can fly.
2. Summer is the hottest time of the year in China.
3. Tennis is a sport for two or four players.
4. The climate might be quite different according to where the man is.
5. Most bicycles have seven wheels.
6. The man went to bed because he wanted to sleep.
7. You use a telephone to write letters.
8. Most cars are made of wood.
9. It is a good idea to write down what your homework is, if you don't want to forget it.
10. You always put your socks on after your shoes.
11. Many people think that a bicycle is a good way to travel across the Atlantic Ocean.
12. Henan is a province with lots of tigers and desert.
13. Many people go on holidays, because they think it is relaxing.
14. If you work hard all year, it is a good idea to relax in your holiday.
15. If you want to buy a new car, you should call the ambulance.
16. There is no real chilly winter in Tibet.
17. The girl loves Coca Cola. She has bought a bottle and has eaten all the Coca Cola.
18. Students in China go to school seven days a week.
19. For many people in China, Sunday is a day to relax.
20. The boy wanted to be clean, so he had a shower.
21. If you need money, you can go to the bank.
22. My brother likes music. He has a lot of CDs.
23. The girl is going inside the house, because it is starting to rain.
24. Giraffes are tall animals with long necks.
25. A banana is a kind of machine.
26. A doctor helps sick people to get better.
27. It is a good idea to eat lots of fruit, because it is very healthy.
28. The stewardess gave the passenger a cup of coffee.
29. If you eat too much, you can get too thin.
30. The boy is going into the garden because he wants to stay inside of the house.
31. The last thing the girl does before she goes to sleep is to put on her shoes.
32. If you are tired, it is a good idea to go to bed.
33. After the fight, the policeman arrested the criminal.
34. If you listen to the weather report, you can find out the football results.

35. The girl picked up the phone when it rang.
36. Everybody knows that the winter is the hottest time of the year.
37. He's going swimming. He will need his tennis racket.
38. She is very happy. She has just won the lottery.
39. Fire is dangerous. If you get burnt you should go to the cigarette shop.
40. In the supermarket, the man paid for everything at the cash register, and then did the shopping.
41. The girl loves sport. Her favorite sport is tennis.
42. When the traffic lights are red, cars must stop.
43. He went to the post office to buy some bread.
44. The man ate lunch because he was hungry.
45. Many people think that flying by plane is a fast way to travel.
46. The man and the woman have three children: two boys and a girl.
47. The mother is going to cook dinner for the whole family, because they have all eaten already.
48. All students have to go to school in the holidays.
49. When she comes home from work in the evening she has breakfast.
50. Women in China never wear jeans.
51. I like my friend a lot. He is a nice person.
52. Mothers are always older than their babies.
53. If you want to open a bottle, a telephone is very helpful.
54. If you're thirsty, it is a good idea to drink something.
55. He went on holidays to Spain. He stayed in a hotel.
56. Most cinemas have only one chair.
57. People slept with the light on.
58. There is no mountain at all in China

Appendix 3d: Items of Chinese sentence decision

在下列符合逻辑常理的句子后面打对号，反之打错号。

- 1 鳄鱼是一种能飞的动物。
- 2 夏天在中国是一年中最热的季节。
- 3 网球是一项两个人或四个人参与的运动。
- 4 很多自行车有 7 个轮子。
- 5 他上床了因为他想睡觉。
- 6 你用电话写信。
- 7 许多汽车是用木头造的。
- 8 以防忘记作业是什么，最好写到本子上记下来。
- 9 你总是穿上鞋以后再穿袜子。
- 10 许多人认为骑自行车穿越大西洋是个好主意。
- 11 河南是个有许多老虎和沙漠的省份。
- 12 许多人去度假，因为他们认为度假是很放松的。
- 13 如果你一年中工作都很紧张，在假期期间放松一下是个好主意。
- 14 如果你想买辆新车，你应该打电话给急救中心。
- 15 中国根本没山。
- 16 在中国，学生一周七天上学。
- 17 在中国对于很多人来说，周日是放松的。
- 18 那个男孩想干净，所以他洗了个澡。
- 19 如果你需要现金，你要去银行。
- 20 我哥哥很喜欢音乐，并且有很多唱片。
- 21 女孩走进屋，因为外面开始下雨了。
- 22 根据你处的地方的不同，天气也有可能不同。
- 23 西藏没有真正寒冷的冬天。
- 24 长颈鹿是个子高高并且脖子长长的动物。
- 25 香蕉是一种机器。
- 26 医生是帮助病人恢复的人。
- 27 多吃水果很好，因为水果很有营养。
- 28 空姐给乘客一杯咖啡。

- 29 你吃的越多，就会越苗条。
- 30 男孩走近花园，因为他想呆在房内。
- 31 睡觉前她做的最后一件事情是穿鞋。
- 32 如果你累了， 就上床休息一下。
- 33 交火之后， 警察终于逮到了罪犯。
- 34 如果你听天气预报的话， 你就知道球赛的结果了。
- 35 电话响了， 她拿起电话。
- 36 每个人都知道冬天是一年中最热的季节。
- 37 他要去游泳， 将会用到他的网球球拍。
- 38 她很高兴， 因为她中了头彩。
- 39 火是危险的。如果你被烧伤了， 你应该去香烟店。
- 40 在超市， 他先付款再挑东西。
- 41 她喜欢运动， 最喜欢的项目是网球。
- 42 红灯的时候， 车辆就要停下来。
- 43 他去邮局买面包。
- 44 他吃午饭因为他很饿。
- 45 人们普遍认为飞机是最快的交通方式。
- 46 他们有三个孩子：两个男孩， 一个女孩。
- 47 妈妈给全家做晚饭因为他们都已经吃过了。
- 48 所有学生放假的时候必须上课。
- 49 她晚上回到家后开始吃早饭。
- 50 中国女人从来不穿牛仔裤。
- 51 我很喜欢我的朋友， 因为她人很好。
- 52 通常母亲比她们的孩子要大。
- 53 如果你想开瓶子的话， 电话会很有帮助的。
- 54 如果你很渴的话， 最好喝点什么。
- 55 他去西班牙度假的时候， 他住在一个宾馆里。
- 56 许多电影院只有一张椅子。
- 57 人们睡觉的时候不关灯。
- 58 那个女孩喜欢可口可乐。 她刚买了一瓶然后吃了所有的可口可乐。

Appendix 4a: Survey of reading strategies (SORS)

The purpose of this survey is to collect information about the various techniques you use when you read academic materials in English (e.g., reading textbooks for homework or examinations, reading journal articles, etc.) (Mokhtari & Sheorey, 2002:10).

All the items below refer to your reading of college-related academic materials (such as textbooks, not newspapers or magazines). English statement is followed by five numbers, 1, 2, 3, 4 and 5, and each number means the following:

“1” means that ‘I **never or almost never** do this’

“2” means that ‘I do this only **occasionally**’

“3” means that ‘I **sometimes** do this’ (about 50% of the time)

“4” means that ‘I **usually** do this’

“5” means that ‘I **always** or almost always do this’

After reading each statement, **circle the number** (1, 2, 3, 4 or 5) which applies to you. Note that there are **no right or wrong responses** to any of the items on this survey.

Category		Statement	Never					Always	
			1	2	3	4	5		
GLOB	1	I have a purpose in mind when I read.	1	2	3	4	5		
SUP	2	I take notes while reading to help me understand what I read.	1	2	3	4	5		
GLOB	3	I think about what I know to help me understand what I read.	1	2	3	4	5		
GLOB	4	I take an overall view of the text to see what it is about before reading it.	1	2	3	4	5		
SUP	5	When the text becomes difficult, I read aloud to help me understand what I read.	1	2	3	4	5		
GLOB	6	I think about whether the content of the text fits my reading purpose.	1	2	3	4	5		
PROB	7	I read slowly and carefully to make sure I understand what I am reading.	1	2	3	4	5		
GLOB	8	I review the text first by noting its characteristics like length and organization.	1	2	3	4	5		
PROB	9	I try to get back on track when I lose concentration.	1	2	3	4	5		
SUP	10	I underline or circle information in the text to help me remember it.	1	2	3	4	5		
PROB	11	I adjust my reading speed according to what I am reading.	1	2	3	4	5		
GLOB	12	When reading, I decide what to read closely and what to ignore.	1	2	3	4	5		
SUP	13	I use reference materials (e.g., a dictionary) to help me understand what I read.	1	2	3	4	5		

PROB	14	When the text becomes difficult, I pay closer attention to what I am reading.	1	2	3	4	5
GLOB	15	I use tables, figures, and pictures in the text to increase my understanding.	1	2	3	4	5
PROB	16	I stop from time to time and think about what I am reading.	1	2	3	4	5
GLOB	17	I use context clues to help me better understand what I am reading.	1	2	3	4	5
SUP	18	I paraphrase (restate ideas in my own words) to better understand what I read.	1	2	3	4	5
PROB	19	I try to picture or visualize information to help remember what I read.	1	2	3	4	5
GLOB	20	I use typographical features like bold face and italics to identify key information.	1	2	3	4	5
GLOB	21	I critically analyze and evaluate the information presented in the text.	1	2	3	4	5
SUP	22	I go back and forth in the text to find relationships among ideas in it.	1	2	3	4	5
GLOB	23	I check my understanding when I come across new information.	1	2	3	4	5
GLOB	24	I try to guess what the content of the text is about when I read.	1	2	3	4	5
PROB	25	When the text becomes difficult, I re-read it to increase my understanding.	1	2	3	4	5
SUP	26	I ask myself questions I like to have answered in the text.	1	2	3	4	5
GLOB	27	I check to see if my guesses about the text are right or wrong.	1	2	3	4	5
PROB	28	When I read, I guess the meaning of unknown words or phrases.	1	2	3	4	5
SUP	29	When reading, I translate from English into my native language.	1	2	3	4	5
SUP	30	When reading, I think about information in both English and my mother tongue.	1	2	3	4	5

Appendix 4b: Survey of metacognitive awareness of English reading (in Chinese)

英语阅读策略调查问卷

姓名: _____ 性别: _____ 年龄: _____

我从_____年级开始学英语。 (1, 2, 3, 4, 5, 6, 或 7)

问卷说明:

以下是关于英语阅读中的一些技巧和策略。每个句子后面有五个数字表示不同的程度。

- 1 表示 “我从来不这样做” (几乎为 0)
- 2 表示 “我偶尔这么做”
- 3 表示 “我有时这么做” (大概 50%)
- 4 表示 “我大多数时候这样做”
- 5 表示 “我总是这样做” (几乎 100%)

请仔细阅读每个句子，做出适合自己的选择，在相符的数字上打勾。

注意：这些问题并没有统一的标准答案，请根据自己的实际阅读情况做出选择。

		从 不 1	偶 尔 2	有 时 3	通 常 4	总 是 5
1	英语阅读时，我有明确的阅读目的（如为了回答问题）。					
2	英语阅读时，我会意识到利用已有的知识或常识来帮助理解所读的内容。					
3	英语阅读时，我会首先对文章的内容、结构、长短有个大概的了解。					
4	英语阅读时，我会考虑文章的内容是否和阅读目的相符。					
5	英语阅读过程中，我会选择性的阅读。如：哪些要精读，哪些可以略读。					
6	英语阅读时，我会利用文中的图表和插图来加强理解。					
7	英语阅读时，我会利用文章上下文线索来帮助我更好的理解所读的内容。					
8	英语阅读时，我会利用字体印刷特征（如加粗、斜体）来识别文中重要信息。					
9	英语阅读时，我会以批判性的眼光来分析评价文中的信息，而不是一味的被动接受。					
10	英语阅读时，我会用文中出现的新信息来检测我的理解。					

11	英语阅读时， 我会尝试着去猜测文章的内容。				
12	英语阅读中， 我会检验自己的猜测是否正确。				
13	英语阅读时， 我读得很慢很仔细以确保我理解所读内容。				
14	英语阅读时， 当我注意力不集中，我会设法再次集中精力。				
15	英语阅读时， 根据文章内容我会调整阅读速度。				
16	英语阅读时， 我会不时的停下来琢磨一下我读的内容。				
17	英语阅读时， 我会试图把文中的内容在脑子里图片化，形象化以帮助记住所的内容。				
18	英语阅读时， 当文章变难，我会更加集中注意力重读来提高我的理解。				
19	英语阅读时， 当文章中出现我不认识的单词或短语，我会通过上下文来猜测他们的意思。				
20	英语阅读时， 我会边读边做笔记（如圈一下重要的词汇，在重点句子下划线等）来帮助我理解和记忆所读内容。				
21	英语阅读时， 当文章变难，我会大声朗读来帮助理解。				
22	英语阅读时， 我会使用工具书（如，字典）来帮助自己理所读内容。				
23	英语阅读时， 我会用自己的话来解释文中内容以期更好地理解所读内容。				
24	英语阅读时， 我会反复从文章上下文中找出各段落层次之间的关系。				
25	英语阅读时， 我会带着自己的问题去阅读，并在文中找到答案。				
26	英语阅读时， 我会逐字逐句的把内容翻译成中文。				
27	英语阅读中，我有时会用中文， 有时会用英文来思考问题。				

感谢您的合作！

Appendix 4c: Survey of metacognitive awareness of English reading (in English)

Metacognitive awareness of EFL reading

(English version, adapted from Mokhtari and Sheorey, 2002)

Name: _____

Gender: _____

Age: _____

I started learning English at _____ Grade. (1, 2, 3, 4, 5, 6, or 7)

The purpose of this survey is to collect information about the various techniques you use when you read **academic materials** in English (e.g., reading textbooks for homework or examinations, reading stories, etc.).

All the items below refer to your reading of **school-related** academic materials (such as textbooks, reading exercises for homework or examinations, not newspapers or magazines). An English statement is followed by five numbers, 1, 2, 3, 4 and 5, and each number means the following:

“1” means that ‘I never or almost never do this’ (about 0% of the time)

“2” means that ‘I do this only **occasionally**’

“3” means that ‘I **sometimes** do this’ (about 50% of the time)

“4” means that ‘I **usually** do this’

“5” means that ‘I always or almost always do this’ (about 100% of the time)

After reading each statement, **circle the number** (1, 2, 3, 4 or 5) which applies to you. Note that there are **no right or wrong responses** to any of the items on this survey.

Category		Statement	Never		Always	
			1	2	3	4
GLOB	1	I have a purpose in mind when I read.				5
GLOB	2	I remind myself of my prior or common knowledge consciously to help me understand what I read.				5
GLOB	3	I take an overall view of the text first to see the content of the text, the length and the organization.				5
GLOB	4	I think about whether the content of the text fits my reading purpose.				5
GLOB	5	When reading, I decide what to read closely and what to ignore.				5
GLOB	6	I use tables, figures, and pictures in the text to increase my understanding.				5
GLOB	7	I use context clues to help me better understand what I am reading.				5
GLOB	8	I use typographical features like bold face and italics to iden-				5

		tify key information.					
GLOB	9	I critically analyze and evaluate the information presented in the text.	1	2	3	4	5
GLOB	10	I check my understanding when I come across new information.	1	2	3	4	5
GLOB	11	I try to guess what the content of the text is about when I read.	1	2	3	4	5
GLOB	12	I check to see if my guesses about the text are right or wrong.	1	2	3	4	5
PROB	13	I read slowly and carefully to make sure I understand what I am reading.	1	2	3	4	5
PROB	14	I try to get back on track when I lose concentration.	1	2	3	4	5
PROB	15	I adjust my reading speed according to what I am reading.	1	2	3	4	5
PROB	16	I stop from time to time and think about what I am reading.	1	2	3	4	5
PROB	17	I try to picture or visualize information to help remember what I read.	1	2	3	4	5
PROB	18	When text becomes difficult, I pay closer attention and re-read what I am reading to increase my understanding.	1	2	3	4	5
PROB	19	When I read, I guess the meaning of unknown words or phrases.	1	2	3	4	5
SUP	20	I take notes (e.g. underline or circle information) while reading to help me remember and understand what I read.	1	2	3	4	5
SUP	21	When the text becomes difficult, I read aloud to help me understand what I read.	1	2	3	4	5
SUP	22	I use reference materials (e.g., a dictionary) to help me understand what I read.	1	2	3	4	5
SUP	23	I paraphrase (restate ideas in my own words) to better understand what I read.	1	2	3	4	5
SUP	24	I go back and forth in the text to find relationships among ideas in it.	1	2	3	4	5
SUP	25	I ask myself questions I like to have answered in the text.	1	2	3	4	5
SUP	26	When reading, I translate from English into my native language.	1	2	3	4	5
SUP	27	When reading, I think about information in both English and my mother tongue.	1	2	3	4	5

Thanks!

Appendix 4d: Survey of metacognitive awareness of Chinese reading (in Chinese)**中文阅读策略调查问卷**

姓名:

性别:

年龄:

问卷说明:

以下是关于中文阅读中的一些技巧和策略。每个句子后面有五个数字表示不同的程度。

- 1 表示 “我从来不这样做”（几乎为 0）
- 2 表示 “我偶尔这么做”
- 3 表示 “我有时这么做”（大概 50%）
- 4 表示 “我大多数时候这样做”
- 5 表示 “我总是这样做”（几乎 100%）

请仔细阅读每个句子，做出适合自己的选择，在相符的数字上打勾。

注意：这些问题并没有统一的标准答案，请根据自己的实际阅读情况做出选择。

		从 不 1	偶 尔 2	有 时 3	通 常 4	总 是 5
1	中文阅读时，我有明确的阅读目的（如回答问题）。					
2	中文阅读时，我会意识到利用已有的知识或常识来帮助理解所读的内容。					
3	中文阅读时，我会首先对文章的内容、结构、长短有个大概的了解。					
4	中文阅读时，我会考虑文章的内容是否和阅读目的相符。					
5	中文阅读过程中，我会选择性的阅读。如：哪些要精读，哪些可以略读。					
6	中文阅读时，我会利用文中的图表和插图来加强理解。					
7	中文阅读时，我会利用文章上下文线索来帮助我更好的理解所读的内容。					
8	中文阅读时，我会利用字体印刷特征（如加粗、斜体）来识别文中重要信息。					
9	中文阅读时，我会以批判性的眼光来分析评价文中的信息，而不是一味的被动接受。					
10	中文阅读时，我会用文中出现的新信息来检测我的理解。					
11	中文阅读时，我会尝试着去猜测文章的内容。					
12	中文阅读中，我会检验自己的猜测是否正确。					

13	中文阅读时， 我读得很慢很仔细以确保我理解所读内容。				
14	中文阅读时， 当我注意力不集中， 我会设法再次集中精力。				
15	中文阅读时， 根据文章内容我会调整阅读速度。				
16	中文阅读时， 我会不时的停下来琢磨一下我读的内容。				
17	中文语阅读时， 我会试图把文中的内容在脑子里图片化， 形象化以帮助记住所的内容。				
18	中文阅读时， 当文章变难， 我会更加集中注意力重读来提高我的理解。				
19	中文阅读时， 当文章中出现我不认识的单词或短语， 我会通过上下文来猜测他们的意思。				
20	中文阅读时， 我会边读边做笔记（如圈一下重要的词汇，在重点句子下划线等）来帮助我理解和记忆所读内容。				
21	中文阅读时， 当文章变难， 我会大声朗读来帮助理解。				
22	中文阅读时， 我会使用工具书（如，字典）来帮助自己理所读内容。				
23	中文阅读时， 我会用自己的话来解释文中内容以期更好地理解所读内容。				
24	中文阅读时， 我会反复从文章上下文中找出各段落层次之间的关系。				
25	中文阅读时， 我会带着自己的问题去阅读，并在文中找到答案。				

感谢您的合作！

Appendix 4e: Survey of metacognitive awareness of Chinese reading (in English)

Metacognitive awareness of Chinese reading

Name: _____

Gender: _____

Age: _____

The purpose of this survey is to collect information about the various techniques you use when you read **academic materials** in Chinese (e.g., reading textbooks for homework or examinations, reading stories, etc.).

All the items below refer to your reading of **school-related** academic materials (such as textbooks, reading exercises for homework or examinations, not newspapers or magazines). English statement is followed by five numbers, 1, 2, 3, 4 and 5, and each number means the following:

“1” means that ‘I **never or almost never** do this’ (about 0% of the time)

“2” means that ‘I do this only **occasionally**’

“3” means that ‘I **sometimes** do this’ (about 50% of the time)

“4” means that ‘I **usually** do this’

“5” means that ‘I **always** or almost always do this’ (about 100% of the time)

After reading each statement, **circle the number** (1, 2, 3, 4 or 5) which applies to you. Note that there are **no right or wrong responses** to any of the items on this survey.

Category		Statement	Never					Always	
			1	2	3	4	5	1	2
GLOB	1	I have a purpose in mind when I read.							
GLOB	2	I remind myself of my prior or common knowledge consciously to help me understand what I read.							
GLOB	3	I take an overall view of the text first to see the content of the text, the length and the organization.							
GLOB	4	I think about whether the content of the text fits my reading purpose.							
GLOB	5	When reading, I decide what to read closely and what to ignore.							
GLOB	6	I use tables, figures, and pictures in text to increase my understanding.							
GLOB	7	I use context clues to help me better understand what I am reading.							
GLOB	8	I use typographical features like bold face and italics to identify key information.							
GLOB	9	I critically analyze and evaluate the information presented in	1	2	3	4	5	1	2

		the text.					
GLOB	10	I check my understanding when I come across new information.	1	2	3	4	5
GLOB	11	I try to guess what the content of the text is about when I read.	1	2	3	4	5
GLOB	12	I check to see if my guesses about the text are right or wrong.	1	2	3	4	5
PROB	13	I read slowly and carefully to make sure I understand what I am reading.	1	2	3	4	5
PROB	14	I try to get back on track when I lose concentration.	1	2	3	4	5
PROB	15	I adjust my reading speed according to what I am reading.	1	2	3	4	5
PROB	16	I stop from time to time and think about what I am reading.	1	2	3	4	5
PROB	17	I try to picture or visualize information to help remember what I read.	1	2	3	4	5
PROB	18	When the text becomes difficult, I pay closer attention and re-read what I am reading to increase my understanding.	1	2	3	4	5
PROB	19	When I read, I guess the meaning of unknown words or phrases.	1	2	3	4	5
SUP	20	I take notes (e.g. underline or circle information) while reading to help me remember and understand what I read.	1	2	3	4	5
SUP	21	When the text becomes difficult, I read aloud to help me understand what I read.	1	2	3	4	5
SUP	22	I use reference materials (e.g., a dictionary) to help me understand what I read.	1	2	3	4	5
SUP	23	I paraphrase (restate ideas in my own words) to better understand what I read.	1	2	3	4	5
SUP	24	I go back and forth in the text to find relationships among ideas in it.	1	2	3	4	5
SUP	25	I ask myself questions I like to have answered in the text.	1	2	3	4	5

Thanks!