

WHAT CHINESE READERS DO AS THEY READ
CHINESE AND ENGLISH: A STUDY
OF READING STRATEGIES

By

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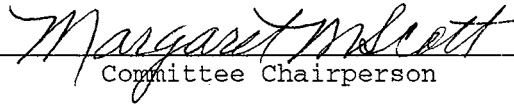
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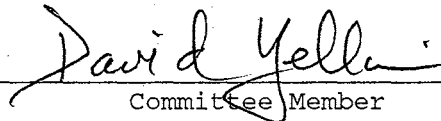
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CHAPTER I

INTRODUCTION

Reading is a complex process of constructing meaning through culturally determined cognitive frameworks or schemata. According to Goodman (1970), reading is an active process in which the reader makes efficient use of strategies to understand printed information. Research in reading English as a second language (ESL), (Alderson, 1984; Benedetto, 1984; Coady, 1979; Goodman, 1973; Hudson, 1982; Koda, 1990), indicates that the reading process is similar in all languages and that reading strategies transfer across languages. Reading strategies developed in a first language can be transferred to a second language, regardless of how similar or dissimilar the language is.

Reading strategies indicate how readers conceive a task, what textual cues they attend to, how they make sense of what they read, and what actions they take when comprehension is not successful. Strategies, therefore, reveal a reader's resources for understanding (Langer, 1982). Johnston (1983) identifies two types of strategies. The first type aids the reader in constructing meaning from text, a framework for understanding. The second type is used to monitor understanding and take action when necessary. Olshavsky

(1976-1977) classified strategies into word-related and clause-related strategies.

According to Block (1986, 1992), good readers are more capable of monitoring their comprehension, are more aware of the strategies they use, and are more flexible in using strategies than poor readers. Specifically, good readers adjust their strategies to the type of text and to the purpose for which they are reading. Good readers distinguish between important information and details as they read and are able to use clues in the text to anticipate and integrate new information.

While these studies provide information about certain types of readers, it is difficult to compare the results across studies since the age and grade level of participants, tasks, reading materials, and categories of strategies vary from study to study (Block, 1986).

In general, researchers investigating the strategy use of second language readers fall into two groups. One group (e.g., Carrell, 1989, 1991; Clarke, 1979; Cziko, 1980; Devine, 1988) argues that reading ability in a second language is largely a function of proficiency in that language. Thus, strategies develop in a linear progression, moving from lower level strategies to higher level ones. The second group (e.g., Benedetto, 1984; Coady, 1979; Goodman, 1973; Koda, 1990; Sarig, 1987) contends that higher level strategies developed in a first language can be transferred to a second language and can operate with lower processing

strategies. These researchers believe that as language proficiency develops, linguistic cues can be used more efficiently and that predictions and other cognitive processes will, therefore, operate more smoothly.

Studies on ESL comprehension monitoring and strategy use are available (Block, 1986, 1992; Hosenfeld, 1977; Koda, 1990; Sarig, 1987). One of the most extensive studies of reading completed by Sarig (1987), demonstrated that second language readers from different native language orthographic backgrounds utilize their native language strategies in reading English as a second language. These studies have provided information about the reading processes in a second language. There are very few studies, however, on the use of strategies in reading English as second language by native speakers of Chinese. Block (1986) studied comprehension strategies of second language readers by using think-aloud technique. The study included three Chinese ESL participants enrolled in remedial reading classes. In the most recent study on comprehension monitoring, Block (1992) used 16 subjects, including 4 Chinese. The results of the study show that proficient second language readers performed similarly to proficient native readers, while less proficient second language readers performed similarly to less proficient native readers. Information about comprehension strategies used by Chinese subjects in reading both languages, however, was not included.

The purpose of the present study was to examine the use of strategies by Chinese ESL readers when they read easy and difficult texts in English and Chinese. Think-aloud technique was used for collecting data. The subjects were asked to perform a set of reading tasks in Chinese and English and to report verbally what they were thinking while reading. Their verbal reports were recorded to be analyzed for evidence of strategy use in reading Chinese and English.

Statement of the Problem

Research in reading Chinese and English varies in orthographic processing (Tzeng and Hung, 1980; Lee, Wee, Tzeng, and Hung, 1992), word recognition process (Koda, 1987), and cognitive processing strategies (Tzeng and Wang, 1983; Leong, 1978). Studies in rhetorical organization (Alptekin, 1988; Mohan and Lo, 1985) have found that there are striking similarities between Chinese and English. There are also studies in linguistic and socio-cultural interference in ESL reading by the native speakers of Chinese (Barnitz, 1982; Field, 1984). Research has shown similarities and differences between reading in Chinese and reading in English. Accordingly, it is possible that reading strategies transfer from Chinese to English; however, apparent differences in the two writing systems make it difficult to determine the amount of transfer (Field, 1984). It still remains unclear what strategies Chinese ESL readers use when they read Chinese and English.

Direct observation of the reading process of Chinese ESL readers has not been included in these studies, with the exception of Block (1986, 1992). Yet no research has ever been done in investigating reading strategies by native speakers of Chinese reading English in comparison with reading their native language. Two questions still remain. Will Chinese readers utilize similar strategies when reading Chinese and English? Will the text difficulty affect the use of reading strategies? Responding to these questions would enhance our understanding of how native speakers of Chinese read in both languages and what strategies are needed in order to become effective readers. Think-aloud has been found to be a useful method in the field of reading research.

Significance of the Study

The present study examined the strategies of Chinese readers in reading English and Chinese texts. Think-alouds, or verbal reports by readers were used to identify strategies and to analyze the differences in strategy use when subjects read texts varying in difficulty in two languages. The findings can enhance our understanding of how native speakers of Chinese read in Chinese and English as well as methods for developing effective reading comprehension strategies within the classroom. This provides important implications for teaching reading to nonnative speakers of English in general, and Chinese in particular.

Definition of Terms

Chinese ESL readers: Native speakers of Chinese reading in English.

Reading: A complex process of constructing meaning from written texts, which requires the coordination of a number of interrelated sources of information (Anderson, Hiebert, Judith, and Wilkinson, 1985).

Think-aloud: A method of direct observation, developed by Newell and Simon (1972), to study cognitive problem-solving strategies. Readers report their thoughts and behaviors. Think-alouds provide a direct view of a reader's mental activity, a kind of window into which those processes are usually hidden (Block, 1986).

Reading Strategies: Mental processes that readers consciously choose to use in accomplishing reading tasks. Such strategies may contribute to successful or unsuccessful comprehension (Cohen, 1986).

Statement of Hypotheses

This study tested the following hypotheses:

1. Chinese readers use similar strategies when they read Chinese and English.
2. The text difficulty in both languages has no effect on the use of strategies by Chinese ESL readers.

Limitations of the Study

The following limitations apply to this study. First, a higher difficulty level of the Chinese texts may match up the difficulty level of the English passages: grade 7 for the easy level and grade 12 for the difficult level. The difficult passages used in this study were longer than the easy ones. The subjects might use more strategies in reading difficult passages because of the length.

Second, comprehension questions may have stimulated the subjects to focus on test-taking strategies rather than strategies normally used for reading.

Third, although think-alouds provided valuable data on reading strategy use, the quality of oral reports might be affected by the readers' abilities and willingness to talk in addition to their background knowledge, interests, and familiarity with the text.

Organization of the Study

This study is composed of five chapters. Chapter One introduces the study including a statement of the problem, significance of the study, a definition of terms, hypotheses, and limitations of the study. Chapter Two reviews relevant literature. Chapter Three discusses the methodology used with a description of the subjects, materials, design and procedures, and data coding. Chapter Four presents the results of the study, and Chapter Five provides a discussion of the findings.

CHAPTER II

REVIEW OF LITERATURE

The review of literature consists of four section titles. Section 1, Reading in a First and Second Language, starts with a discussion on reading in a native language and reading in a second language and then focuses on reading English as a second language. Section 2, the Use of Reading Strategies, reviews the research on strategy use and strategy transfer from a native language to a second language. Section 3, Chinese ESL Readers, discusses reading in Chinese and English by Chinese ESL readers. Section 4, Think-aloud, overviews think-aloud as one of the most effective techniques used in the study of strategy use.

Reading in a First and Second Language

Reading is a complex process of forming meaning through culturally determined cognitive frameworks or schemata. Readers construct meaning out of the interaction between text information and their activated schemata. This meaning embodies their background knowledge of both the subject matter and organizational structure of the text (Alptekin, 1988; Carrell, 1984; Garner, 1987). This is also true in second language reading. Reading is an active process in

which the reader makes efficient use of strategies to understand printed information (Goodman, 1970; Smith, 1973). Readers consciously choose to use strategies in accomplishing reading tasks (Cohen, 1986).

A primary goal for ESL reading theory is to understand what fluent native readers do, and then select the most appropriate instructional strategies to support them. As it is generally described, fluent reading is rapid, purposeful, interactive, comprehending, flexible, and gradually developing (Grabe, 1991). The reader needs to maintain the flow of information at a sufficient rate to make connections and inferences which are vital to comprehension. The reader has a purpose for reading, whether it is for entertainment, information, research, and so on. Reading for a purpose provides motivation, an important aspect to efficient reading. The reader makes use of information from his/her background knowledge in combination with the printed page as many skills work together simultaneously in the process. The reader typically expects to understand what he/she is reading. The reader employs a range of strategies to read efficiently. Becoming an efficient reader is the product of long-term effort and gradual improvement.

√Studies on cross-cultural schemata have demonstrated the importance of cultural variables in the reading process. Readers' knowledge of cultural content, represented in culturally variant texts, can influence their construction of meaning. Research provides insights into the types of

elaboration and inferences made by readers as they construct meaning by utilizing their own prior knowledge (Barnitz, 1986).

Goodman (1985) and Smith (1971, 1979, 1982) describe a psycholinguistic model of reading in which reading is viewed as an active process of comprehending. Students need to be taught strategies to read more efficiently. Coady (1979) interprets this psycholinguistic model specifically to second language readers. He views reading as an interaction among three factors: high-level conceptual abilities, background knowledge, and process strategies. Comprehension is the result of this interaction.

Conceptual abilities are important in reading acquisition, although adult foreign students may fail to achieve the competence necessary for instruction. Background knowledge becomes an important variable in foreign language learning. Students with a Western background learn English more easily than those without such a background. Process strategies are, in essence, paths to comprehension which readers must travel but not necessarily in the same manner or to the same degree.

Yorio (1971) claims that difficulty in learning to read in a foreign language can basically be traced to lack of knowledge in the target language and interference of the native language. This may occur at all levels and at all times. The prediction of future cues is restricted by the reader's imperfect knowledge of the language. Because he/she

has to recall unfamiliar cues, memory span is very short. As a result, the reader may forget cues which have already been stored. These two factors make associations slow and difficult. Success in reading a second language is directly related to the degree of proficiency in that language.

On the other hand, many students have a great deal of proficiency in English and yet read very slowly and with poor comprehension (Coady, 1979). This would lead us to infer that these students are using a poor combination of process strategies in their reading. Coady (1979) concludes that there are two ways in which learning to read a second language differs from learning to read a first language. First, there is the obvious need to learn the target language and avoid the pitfalls of the native language. Second, a great deal of the ability to read transfers automatically.

Reading in a second language is influenced by factors which are normally not considered in native language reading research according to Grabe (1991). These factors include second language acquisition and training background differences, language processing differences, and social context differences. Second language students begin the second language reading process with very different knowledge from native readers. Second language learners typically have not already learned a large store of oral language vocabulary or developed a fairly complete sense of the grammar of the language. Second language students also have certain advantages. Being older than native learners, most

academically oriented ESL learners have a more well-developed conceptual sense of the world, with a greater store of factual knowledge. They are able to make elaborate logical inferences from the text and tend to make more use of metacognitive strategies in their learning. The instrumental and integrative goals of ESL students tend to motivate them. Yet ESL students have many disadvantages in learning a second language. There are transfer effects from language processing differences and orthographic differences between a student's native language and English. For example, logographic writing systems seem to favor lexical access through direct recognition of word forms, though phonological activation appears to play an important role in word recognition among fluent native readers of Japanese and Chinese (Grabe, 1991).

Alderson (1984) has questioned whether reading in a foreign language is a reading problem or a language problem. Some researchers (Benedetto, 1984; Coady, 1979; Hudson, 1982; Koda, 1990; Sarig, 1987) believe that reading in a second language depends crucially upon the reading ability in one's first language rather than upon his/her level of ability in the second language. In this view, students who read poorly in a second language do so either because they do not possess good reading strategies in their native language, or because they fail to transfer them. Other researchers (Carrell, 1991; Clarke, 1979; Cummins, 1979; Cziko, 1980; Devine, 1987), however, argue that reading ability in a second

language appears to be largely a function of proficiency in that language. Some minimal threshold of proficiency needs to be attained in that language before good readers' first language reading strategies can be transferred to the second language.

Clarke's well-known study (1979) compares the reading done by the same subjects in their first and foreign languages, Spanish and English, respectively. Clarke has found that some good first language reading strategies failed to transfer to a second language, and suggested that this was due to limitations of proficiency in readers' second language. But because he used subjects at approximately the same level of proficiency, one cannot tell precisely what role proficiency in the second language plays.

Carrell (1991) attempted to investigate the effects on second language reading of the first language reading ability and level of the second language proficiency. Two groups of subjects participated in the study. Group 1 consisted of 45 native speakers of Spanish from various countries. These subjects were studying in the United States and had different English proficiency levels. Group 2 consisted of 75 native speakers of English studying Spanish at a university. They were at three different proficiency levels of study, including first, second, and third year Spanish classes. The results showed that both first language reading ability and second language proficiency had significant effects on second language reading ability. For the group with Spanish as

their native language and English as their second language, reading ability in the first language accounted for a greater proportion of the variance in second language reading ability than did proficiency in the second language. For the group with English as their native language and Spanish as their foreign language, proficiency in the foreign language accounted for a greater proportion of the variance in second language reading ability than did reading ability in the first language. What this suggests is that, while both factors may be significant in second language reading, the relative importance may be due to other factors about the learner and the learning environment.

One of the most extensive studies of reading was completed by Sarig (1987). As part of a study of Hebrew native-language and English foreign-language reading among college-bound high school seniors in Israel, Sarig collected lengthy verbal reports from a sample of ten students representing three levels of proficiency. The Hebrew and English texts were equated for difficulty by means of a scale of pragmatic, textual, and linguistic variables assessed by expert readers (Sarig, 1987).

The findings of Sarig's study (1987) indicate that readers differed considerably regarding similarities between first-and foreign-language reading. Eight of the ten readers transferred their first-language reading style to reading in the foreign language. Sarig interpreted these findings as indicating that ability to transfer reading strategies from

first to foreign language is not dependent on foreign-language proficiency, but rather, is an individual cognitive trait. Likewise, she found that successful transfer of strategies to the foreign language did not necessarily promote comprehension. Both weak and strong readers were characterized by the transfer of strategies that promoted and deterred comprehension, and in almost all cases the readers differed from one another with regard to the extent of transfer and the degree to which it promoted comprehension.

Use of Reading Strategies

Reading comprehension is a complex behavior which involves conscious and unconscious use of various strategies to construct meaning. The meaning is constructed using schematic knowledge structures and the various cue systems. The writer provides these systems to generate hypotheses which are tested using various logical and pragmatic strategies (Johnston, 1983).

Reading strategies refer to those mental processes that readers consciously choose to use in accomplishing reading tasks (Cohen, 1986). Comprehension strategies indicate how readers conceive a task, what textual cues they attend to, how they make sense of what they read, and what they do when they do not understand (Block, 1986; Johnston, 1983). Strategies, therefore, reveal a reader's resources for understanding (Langer, 1982).

Readers employ a range of strategies in order to read efficiently. This includes such strategies as adjusting the reading speed, skimming ahead, previewing titles, headings, pictures and text structure information, and anticipating information to come. A proficient reader has knowledge about cognition, including language, which involves recognizing patterns of structure and organization and using appropriate strategies to achieve specific goals. The reader must also search for specific information and formulate questions (Grabe, 1991).

In second language contexts, better readers have also shown to be better strategy users (Carrell, 1989; Devine, 1987). Since various process strategies interact among themselves, the ESL student should take advantage of strengths in order to overcome weaknesses. For example, greater background knowledge of particular subject matter can compensate somewhat for a lack of syntactic control over the language. The proficient reader learns to utilize whatever cue systems render useful information and to put them together in a creative manner, always achieving at least some comprehension. Thus a weakness in one area can be overcome by a strength in another. The poor reader, on the other hand, does not make the necessary compensation and allows his weaknesses to prevent any significant comprehension (Coady, 1979).

Reading is a universal process and should be similar across languages (Alderson, 1984; Goodman, 1970). Strategies

developed in a first language can be transferred to a second language (Benedetto, 1984; Coady, 1979; Goodman, 1973; Kletzien, 1991; Koda, 1990). Hence, it is expected that reading abilities will transfer across languages.

Individuals proficient in their first language reading will also be proficient in their second language reading.

Although this transfer is generally accepted, there is considerable debate about how and when it does so.

Block (1986) argues that cognitive strategies, however, are applied throughout the process. Think-alouds were used in her study to examine comprehension strategies of 9 college-level students, both native and nonnative speakers of English, who were enrolled in remedial reading classes as they read material from a college textbook. The ESL participants selected had been in the United States similar amounts of time and were judged by their reading teachers to be fairly fluent in English. The subjects were given two cloze tasks using passages at a sixth-grade readability level, based on the Fry Readability Formula.

Among the nonproficient readers in Block's study (1986), there seemed to be two consistent and distinctive patterns of strategy use. These patterns were indicated by the extent to which the readers integrated, recognized aspects of text structure, and used personal experiences and associations. Language background did not seem to account for different patterns. The native speakers of Chinese in her study did not appear to employ strategies which were different from the

native speakers of Spanish. Moreover, ESL readers did not appear to use strategies or patterns of strategies that were different from those of native speakers of English. This suggests that strategy use is a stable phenomenon which is not tied to specific language features.

Learning to read in a second language may differ from learning to read in a first language. When people first learn to read, they must learn both how to read language in print and the appropriate strategies to use for comprehension. When learning to read a second language, they need only to be concerned with understanding specific language features in print. Second language learners bring with them their knowledge of language in general and then apply their knowledge to learning the specific features of another language. In the same way, readers of a second language seem to bring with them their knowledge of the reading process and approaches to tasks, and then apply these to specific language features in the text. Thus the development of strategy use does not seem to depend on language-specific features (Block, 1986).

This is supported by the findings of Benedetto (1984), Cummins (1980), and Hudson (1982), which indicate that some aspects of reading ability are readily transferred from one language to another. In particular, Hudson's contention that application of cognitive strategies is not dependent on the English language proficiency of the reader is supported by the data in Block's studies (1986, 1992).

Koda (1990) investigated first language orthographic influence on cognitive processing in second language reading. This study tested the possibility that the native language recoding strategies are transferred and utilized in second language reading. A cross-linguistic experiment was conducted involving adult second language learners of English with contrasting orthographic backgrounds of the native languages (Arabic, Japanese, Spanish, and English-for native control). The results indicate that reading among phonographic readers (Arabic, Spanish, and English) is seriously impaired when essential phonological information is inaccessible. Similar phonological inaccessibility apparently does not affect the reading performance of Japanese, or morphographic, readers. The study provides strong empirical evidence of the orthographic influence from the native language on cognitive strategies used in second language reading and demonstrates that cognitive transfer does indeed occur in the second language reading process.

Generally speaking, readers use linguistic and metalinguistic knowledge in order to comprehend the meaning of a text. While reading in a second language, the bilinguals usually bring a wealth of knowledge, strategies and processes from the native language (Durgunoglu and Hancin, 1992). As Cohen (1986) concludes, the strategies that a reader employs in both languages in many ways are the same because the reading strategies are transferred from one language to the other.

Reading in Chinese and in English

The writing systems in use today can be divided into two categories. In the first category, each symbol represents a single morpheme, and the written symbol is mapped directly onto meaning. The Chinese character is one example. In the second category, each symbol represents a speech sound and the relation of sign to meaning is mediated through the phonological system of the spoken language. English is representative of this category (Lee, Wee, Tzeng, and Hung, 1992).

A theoretical question is whether reading different types of scripts requires different information processing strategies. A positive answer would have important implications about how reading should be taught in different countries using alternate writing systems. It has been noted that in processing linguistic materials, the mode of presentation has a differential effect on memory in the two scripts. For English readers, the auditory presentation (listening) produces better recall performance than visual presentation (reading); however, the opposite is true for the Chinese readers (Tzeng and Wang, 1983).

The comparative analysis of phonological recoding strategies indicates that a major distinction between the two types of orthographies lies in the extent to which readers make use of phonological information in the graphemic representation. Phonographic readers rely heavily on what is

available in the graphemic representation, while morphographic readers may form a phonological code-whether or not phonological information is present in the graphemic representation (Koda, 1990).

Although there is a gap in the experimental research examining reading transfer to English from languages which do not have alphabets, it is interesting to speculate upon the literacy development of native Chinese or Japanese speakers. The transfer of literacy from Chinese or Japanese to English would be expected to be more challenging than from French or Persian, because of greater differences in the writing/language relationship. While alphabets have more direct relationship to phonemes, generally, Chinese has more direct relationship to meaning. Thus, learning a very different print code is crucial to reading the new alphabetic language (Barnitz, 1982).

Furthermore, scripts such as Chinese require different cognitive processing strategies than alphabets because information is presented in different formats. For native readers of texts written in Chinese, the transfer of literacy would involve a reorientation of decoding strategies, in addition to more obvious shifts in the direction of reading. Different writing systems would involve different processing in the brain (Tzeng and Hung, 1980).

There are such apparent differences in Chinese and English writing systems that it is difficult to determine the amount of transfer, especially for beginning readers (Field,

1984). For example, there is no grapheme-phoneme recognition process in reading Chinese characters. But the Chinese beginning reader of English must learn those correspondences, a strategy never needed in Chinese. Most Chinese characters consist of two elements: a radical, which provides a cue to meaning (e.g., 纟 means "silk", 言 means "words", 氵 means "water"), and phonemic, which provides information about pronunciation (e.g., 方 *fang*; 平 *ping*; 羊 *yang*). The combination of these elements make up characters (e.g., 纟 + 方 = 紡 "*fang*" means "to spin"; 言 + 平 = 評 "*ping*" means "to comment"; 氵 + 羊 = 洋 "*yang*" means "ocean"). The existence of these parts sets up a possible transfer from reading characters to reading words. The frequent repetition of about two hundred radicals in Chinese may necessarily relate to morphological and spelling constraints that are analogous to English. On the level of syllable-morpheme, there is even more possibility of transfer since this process strategy is heavily used by Chinese students in their native language (Field, 1984).

Research on different strategies used by readers of alphabets and those used by the readers of logographic script challenges the idea that Chinese characters are arbitrary and demand unreasonable powers of memorization. Instead, they stress certain similarities between ideographic and alphabetic writing. It is argued that the radicals and phonetics composing a character constitute the critical units and resemble morphophonemics in English (Field, 1984).

Studies of word recognition among Chinese and Japanese readers consistently demonstrate that logographic readers have a direct access to meaning from the visual configuration of a character and can consequently read without going through a phonological recoding process. The results of the study support the hypothesis that reading strategies specific to the native orthography are transferred to a second language reading involving a different orthography. More specifically, phonological recoding is not a common strategy among Chinese and Japanese readers in reading those languages. Other strategies, such as association, are more typically used to obtain lexical sounds in their first-language reading. Therefore, when they read English as a second language, they will not obtain lexical sounds through phonetic analysis as extensively as native speakers (Koda, 1987).

Organizational problems in academic writing by second language learners are often attributed to interference, or negative transfer, from the first language, but recent research suggests that developmental factors may be relevant (Mohan and Lo, 1985). In the case of Chinese, an examination of classical texts and modern works of Chinese composition has found no support for claims that the organizational pattern of Chinese writing differs markedly from that of English. In their study, Mohan and Lo (1985) have shown that the evidence does not reveal gross differences between Chinese and English organization. On the contrary, there

appear to be striking similarities, suggesting that the organization of academic writing is more universal than was previously thought. It appears that transfer of rhetorical organization is more likely to help than to interfere.

Coady (1979) argues that skilled reading depends more upon the abstract strategies and less upon the concrete, except in occasional moments of doubt or trouble. As readers become more proficient and read more fluently, the abstract strategies are the ones which they use most. Even though the skilled reader may occasionally revert to concrete strategies in difficult passages, the behavior which characterizes an advanced reader includes full use of syntactic and contextual cues.

Chinese readers use reading strategies just like the ones used by native English speakers when reading in their own language. Good Chinese readers certainly use skimming and scanning techniques when reading magazines or newspaper articles, as well as predicting strategies. Chinese readers use the strategy of guessing words from context in their native language. They recognize and use all types of context (Field, 1984).

Yet the transfer of those skills to reading in English seems difficult for the Chinese students according to Field (1984). Field's observations in China led her to conclude that Chinese students have particular difficulty using those more abstract strategies and attaining fluent levels of reading skill, in part because of a number of socio-cultural

factors and also because of adjustments which occur in the switch from reading an ideographic language to reading an alphabetic one. ✓ Yorio (1971) explains that ESL readers are at a great disadvantage because of a number of factors, including an imperfect knowledge of the language, unfamiliar cultural assumptions, and continuous interference from the native language. Added to those problems are the cultural assumptions which Chinese students also bring to the task. Both sets of problems delay the transfer of reading strategies from the advanced level of reading in Chinese to reading in English (Field, 1984).

Block (1986, 1992) studied comprehension strategies of second language readers by using think-aloud techniques. The results of both studies show that proficient second language readers performed similarly to proficient native readers while less proficient second language readers performed similarly to less proficient native readers. Block believes that language background did not seem to account for the different patterns. The native speakers of Chinese in the study did not appear to employ strategies different from the native speakers of Spanish. Moreover, ESL readers did not appear to use strategies or patterns of strategies that were different from those native speakers of English. Block's findings are in agreement with other research (Alderson, 1984; Coady, 1979; Goodman, 1973) in that reading process is the same or similar in all languages and strategies transfer across languages. Unfortunately, these studies have not

provided us with the information about comprehension strategies used by Chinese subjects in reading both languages.

Think-Aloud

Think-aloud was originated in cognitive psychology to study problem-solving behavior (Newell and Simon, 1972). Reading is a problem-solving activity, so researchers (Garner, 1987; Hosenfeld, 1984; Sarig, 1987) have used think-aloud as an important tool in reading research. The think-aloud method differs from miscue analysis in that the researcher does not tabulate and analyze oral miscues, rather analyzes the subject's comments about the content and problems of short segments of his reading.

The method of using think-aloud is considered the best to determine strategy usage for several reasons. The subjects report behavior rather than process with no delay between reading and responding. The data provide a record of ongoing behavior. The data are closely related to the text and are analyzed by the researcher for evidence of strategies. The method of think-aloud is limited by the necessity for objective analysis and by the fact that the procedure interrupts the reading process. The interference to the reading process can be minimized by giving the subject a practice session and by insuring that the researcher does not interrupt while the subject reads and verbalizes (Olshavsky, 1976-1977).

Think-alouds provide a chance to examine the comprehension-monitoring process in some depth and have been used to study the reading process by second language researchers (Block, 1986, 1992; Hosenfeld, 1977; Sarig, 1987). By using think-alouds to peer into minds of readers, one can see whether native and second language readers use similar processes and resources for solving the comprehension difficulties they perceive. When using think-alouds with second language readers, certain cautions must be added. Of special concern is that the reports may be incomplete due to lack of language proficiency or additional processing demands.

In spite of the concern, much useful information has been collected when using think-alouds to study the reading of second language speakers (Block, 1992). Block uses think-alouds to explore and compare the comprehension-monitoring processes of first and second language readers of English as they read a passage of expository text. Think-alouds were collected from 25 first-semester students attending an urban college. The data suggest that there is a regular process that operates similarly for native speakers of English and second language readers.

If readers are requested to indicate the strategies they use, it is likely that they would be able to describe even the ones that they are attending to the least, because these are, by definition, within the realm of conscious awareness. They would not, however, be able to describe certain

unconscious reading processes (Cohen, 1986). The readers are simply externalizing a process that might otherwise be subvocalized. In other words, they now mumble out loud, as well as adding any commentary that normally comes to mind while reading. The respondents report on their processing of both the text that they read and of the questions that accompany the texts. They also describe how they arrive at answers to questions (Cohen, 1986). Research in second language reading (Cohen, 1986; Hosenfeld, 1984) has demonstrated that the verbal reports obtained through tapping the mental processes of readers have produced key insights into the processes involved in reading comprehension tests.

Think-alouds contain many reports of readers' comprehension processes. There is evidence that readers initially seek a framework for interpreting the text they read (Afflerbach, 1990). Think-aloud differs from other forms of introspective report because readers report their thoughts and behaviors without theorizing. Thus, think-alouds provide a direct view of a reader's mental activity. Yet, they are most informative about the reading process when readers have problems understanding what they are reading. Those processes which are already automatic or are not easily verbalized may not readily be studied.

This method has been used to study the cognitive strategies used by competent native English speakers to compare the performance of good and poor readers (Block, 1986). Research (Olson, Duffy, and Mack, 1984; Afflerbach

and Johnston, 1984; Kletzien, 1991) indicates that these data (think-alouds) should reveal the kinds of strategies used by readers. They describe cognitive processes and allow access to the reasoning processes underlying higher level cognitive activity. It seems that think-alouds, although not perfect, provide more complete information in reading research than can be obtained through observation or performance scores alone.

Summary

Reading is a complex process of actively constructing meaning from written texts. Successful interaction among conceptual abilities, background knowledge, and process strategies results in comprehension. A primary goal for ESL reading theory is to relate our understanding of the reading process to instructional practice. Readers must select and use strategies, both conscious and unconscious, to understand printed information.

Chinese is a quite different language from English; however, Chinese readers use strategies just like the ones used by native English speakers when reading in their own language. Reading strategies specific to the native orthography are transferred to a second language reading involving a different orthography. Recent studies which focus on different strategies used by readers of alphabets and those used by the readers of logographic scripts examine

the way words are built and recognized. They stress certain similarities between ideographic and alphabetic writing.

Think-alouds provide a chance to examine the reading process. By using think-alouds to peer into minds of readers, we can begin to see whether native and second language readers use similar processes and resources for solving the comprehension difficulties they perceive. Thus, think-alouds provide a direct view of a reader's mental activity.

There are similarities and differences between the processes of reading in Chinese and in English. Reading strategies transfer from reading Chinese to reading English. However, there are apparent differences in the two writing systems that it is difficult to determine the amount of transfer. This study examined strategies used by Chinese ESL readers in reading Chinese as a native language and English as a second language varying in level of difficulty. It was an attempt to contribute to the current knowledge base regarding reading instruction for adult ESL learners by investigating differences and similarities in reading a first and a second language.

CHAPTER III

METHODOLOGY

Subjects

Twenty subjects were selected for this study, including 15 males and 5 females. The subjects were randomly selected from a pool of approximately 200 potential participants. All subjects selected were Chinese ESL readers who were either studying or working in the United States at the time of the study. They ranged in age from 25 to 48 years old (mean age =35.75) and held at least a Bachelor or Masters degree from China. Fourteen subjects had completed a doctoral degree and 6 were in the process of completing a doctoral degree at one of the universities in the southwestern United States. Fields ranged from physics, mathematics, chemistry, engineering, business, and liberal arts. Subjects had lived in the United States for a period of time ranging from 2 to 8 years with a mean of 4.85 years. Years of English language experience ranged from 6 to 18 years with a mean of 13.5 years (see Table 3.1 for a detailed description of the subjects).

The subjects' English language proficiency was assessed using their TOEFL (Test of English as a Foreign Language) scores. Each subject had satisfied the university's

TABLE 3.1

GENERAL INFORMATION ABOUT THE SUBJECTS
(AGE, SEX, MAJOR, DEGREES, YEARS OF ENGLISH,
YEARS IN U.S., AND TOEFL SCORE)

Subject	Age	Sex	Major	Degree in China	Degree in U.S.	Years of English	Years in U.S.	TOEFL
LSF	36	m	chemistry	B. S.	Ph. D	10	4	580
TXS	39	m	history	M. A.	Ph. D	15	6	610
TXJ	35	m	engineering	M. S.	Ph. D	16	7	630
JZW	39	m	engineering	M. S.	Ph. D	16	4	580
WCL	38	m	marketing	B. A	Ed. S	16	7	610
QZB	28	m	math	B. S	Ph. D	13	8	600
CXG	35	m	medicine	M. S	M. D	16	5	607
LLS	35	f	engineering	M. S	M. S	16	2	617
LQ	33	m	statistics	B. S	Ph. D	15	6	596
ZWM	44	m	math	M. S	Ph. D	16	5	570
CDD	38	m	engineering	B. S	M. S	15	4	557
CJ	30	f	agronomy	B. S	M. S	15	5	560
GXF	36	m	engineering	M. S	Ph. D	6	3	580
GJ	38	f	sociology	M. A	Ph. D	12	3	567
QM	30	m	microbiology	B. S	Ph. D	18	4	610
ZMC	47	m	physics	B. S	M. S	8	5	570
QSN	32	m	engineering	Ass.S	M. S	8	5	563
XC	29	f	TESOL	M. A	M. A	15	2	633
MZY	25	m	math	B. S	Ph. D	15	5	643
LJ	48	f	management	M. S	Ph. D	9	7	580
MEAN	35.75					13.5	4.85	593.15

requirement for submission of a minimum TOEFL of 550 with a mean score of 593.15. The TOEFL purports to measure the English proficiency of college-bound nonnative speakers of English and is widely used by American universities in evaluating the English proficiency of prospective students for whom English is a second language (Loyd, 1985).

Adequate proficiency in both languages was a requirement of this study. According to Block (1986, 1992) and Olshavsky (1976-77), subjects must demonstrate proficiency in the language and be trained to perform verbal reports in order for the think-alouds to be successfully conducted. Therefore, subjects were selected based on their TOEFL score for English proficiency and educational experience for Chinese proficiency.

Materials

Two sets of passages including easy and difficult levels were provided in English and Chinese (See Appendix A). Each passage was followed by comprehension questions. This included both explicit and implicit questions with 5 to 6 questions for each easy text and 7 to 9 for each difficult text. The grade level of all passages selected was indicated by the authors. The easy text was rated at grade 7, with a grade 12 rating for the difficult text. Grade 7 is considered to be an average grade placement while the difficult level starts with grade 12 according to the research (see Klare,

1963). In addition, grade 7 starts with middle school while grade 12 ends high school education in both educational systems. The easy texts contained approximately 250 words, with approximately 400 words for the difficult texts. All the passages were self-contained expository texts, including an introduction, a main idea, supporting details, and a conclusion. The English passages were selected from SRA Reading Laboratory III (Parker, 1963) which are similar in structure to the American basal reader. The Chinese passages were selected from a Chinese text, A Study Guide to the TOEFL and GRE Tests (Xie, 1991).

The topics of the passages used were general in nature in order to control for topic familiarity. Familiar topics were those generally considered fairly frequently used in most print media including newspapers, magazines, and leisure reading materials. A group of judges consisting of 3 reading specialists was selected to rate the level of familiarity. Following initial discussions about topic familiarity, a list of topics was generated and prioritized by the judges. Topics were selected, including "culture", "arts", "famous people", "animals", and "popular science". After the topics had been identified, passages were selected which met the criteria for length and readability described previously. One passage was selected for each topic at each level of difficulty.

Each text was marked by the researcher with intermittent red dots in order to remind the subject to think aloud as specified in Afflerbach's study (1990). Markings were placed

after one to two sentences. The subjects could think aloud at any time during reading and were not required to think aloud when they came to a marker, however, this provided a visual reminder to verbalize their thoughts.

Design and Procedures

A single group of subjects was used in this study which was conducted over a period of five months on several college campuses. The design involved two levels of language and two levels of text difficulty. The focus was to determine if there would be differences in strategy use when Chinese subjects read texts in English and Chinese varying in level of difficulty. The participants were asked to read two passages in Chinese and two in English and to verbalize their thoughts in the same language while reading. This process was tape recorded for the purpose of precise transcription of their think-alouds.

Prior to conducting the present study, a pilot study with three subjects was completed using the same procedures as the study. This allowed the researcher to ensure that the instructions were clear and the procedures easy to follow.

The subjects participated in this study on a voluntary basis. They were contacted by phone one week prior to the study. At that time, the research project was explained and a meeting date arranged.

Practice Session. The day before the study, each subject was given a short orientation which lasted

approximately one hour. The orientation began with an informal conversation in order for the researcher to establish rapport with the subjects. During this orientation, the researcher described the procedure and demonstrated think-aloud by modeling. The subject was then requested to read sample passages which represented the same type of passages used in the study. The subject was asked to verbalize as much as possible about what he/she was thinking during reading and to discuss any actions taken when comprehension was impaired. The length of this practice session varied according to individual need, based on the subject's ability to understand the procedure. Two or three sample passages were used in each case. The practice session was tape recorded so that subjects could become accustomed to the use of the recording device. This also allowed the researcher to assure that each subject understood the procedure by direct observation of their performance as well as analysis of the recording. When the subject felt comfortable with the procedure of think-aloud, the practice session was discontinued. At the end of the orientation, a time was scheduled for the study to be conducted the following day.

Data Collection Session. This session was conducted individually in a quiet location on several Oklahoma university campuses. The average time each subject spent on this session was approximately 2 hours. The instructions were repeated, allowing the researcher to check for understanding and respond to any last minute questions. The think-aloud was

conducted in accordance with established procedures used in the research literature (Afflerbach, 1990; Block, 1986, 1992; Kletzien, 1991; Olshavsky, 1976-77). Based on these studies, the following instructions were presented to each subject:

You will read the passage about the topic you select and answer the comprehension questions following the passage. I would like you to think aloud into the tape recorder. Just say as much as you can about what you are doing, have done, or will do in order to understand the passage while you are reading. You will read in a way you normally do your reading. The red markers have been placed between sentences to remind you to think aloud. When you come to a marker, tell me what you are thinking, however, do not wait for the marker if you have something to say! Be sure to describe whatever is in your mind before, during, and after your reading. The more you explain what you are doing while reading, the better.

The subject was given the list of topics in order to select a passage at each level of difficulty. The subject read the passage and thought aloud as specified in the instructions. Each session was tape recorded in its entirety in order to assure precise transcription. The researcher stayed in the room during the session, observing and taking notes about the subject's reading behavior. The subject was not interrupted unless he/she encountered problems. Upon the

completion of each passage, the subject read and responded to comprehension questions which followed the passage. The subject was allowed to use the text in answering questions. A brief follow-up interview was conducted at this time. The interview was based on the researcher's observation of the subject's specific reading behavior, therefore, questions varied for each subject. The researcher asked questions in order to clarify the think-aloud. Typical questions included: "What did you mean when you said *This part is different?*" "You paused at the end of the first paragraph. What were you thinking then?" "Why did you repeat sentence 3 in the second paragraph?" There was a short break after the first two passages to assure that the subject's attention remained focused on the task. Following the break, the remaining two passages were completed in the same manner.

The order of passages were counterbalanced for subjects. If the first subject started with English texts, the second would start with Chinese texts. The same procedure was used in reading easy and difficult texts. This allowed the researcher to consider additional factors in analyzing the data.

Data Coding

All tape recorded sessions were transcribed for analysis using a transcription system designed to preserve features of the spoken reports, such as pause time and repetition (see Appendix C for complete transcription guidelines and a sample

transcription). The data were used to determine whether Chinese readers use similar strategies when they read in Chinese and English. This information additionally addressed the effect of difficulty level of texts in both languages on the use of strategies by Chinese ESL readers.

The selection of reading strategies to be used in analysis was a consolidation of previous research (Block, 1986, 1992; Kletzien, 1991; Afflerbach, 1990). Each strategy was identified and described. Two groups of judges were hired to work with the researcher in identification of strategies and analysis of data based on those strategies. Group one consisted of the researcher and two other reading specialists who were about to finish their doctoral degree in reading. Group two consisted of two Chinese doctoral students in English and the researcher. First, the researcher discussed reading strategies in general with the judges. Strategies were examined by judges independently and then as a group. The discussion of the group addressed any disagreement in the strategies selected or description of strategies. When a consensus of strategies was reached then each judge was given the list of strategies and description as well as the three transcribed reading samples from the pilot study. The three judges in both languages independently coded the strategies used by the subjects. The judges then met with the researcher to discuss any discrepancy in the strategies identified until a consensus was reached. The reliability was .88 (.85, .89,

.91) for English responses and .89 (.89, .86, .92) for Chinese responses.

As a rule, a specific strategy was included in a category if it occurred at least three times in one subject's verbal report on one text or at least once by each of the three subjects in one language. Strategies were identified and agreement was reached by the three judges. Based on the group judgments, the researcher summarized the results and identified strategies used in reading both languages. Continuous discussions with the judges took place throughout the analysis in order to assure accuracy. Once the transcripts were coded, the frequencies with which each strategy was used were tallied for each text.

CHAPTER IV

RESULTS

This chapter presents the results of the study. First, the total number of strategies is described. Next, the analysis of strategy use by language is discussed, followed by analysis of strategy use by text difficulty. Finally, a summary of the results will be presented.

Total Strategy Use

Table 4.1 presents a list of the strategies used by the subjects when they read Chinese and English. A total of twenty strategies were identified which could be grouped into the following three categories: language-based strategies, text-based strategies, and reader-based strategies. Analysis of these strategies revealed that the language-based strategies focused primarily on the micro-structural aspects of the language, including looking for key word (e.g., "I am looking for the meaning of the word *chariot* in the following sentences.") and using grammar (e.g., "I put *taking* because it had to be a verb."). Text-based strategies focused mainly on the macro-structural aspects of text including using context (e.g., "The following phrase gives the definition of the word *gnomon*.") and recognizing text structure (e.g., "I

TABLE 4.1
 CLASSIFICATION SCHEME FOR STRATEGIES USED BY THE
 SUBJECTS IN READING EASY AND DIFFICULT
 TEXTS IN BOTH CHINESE AND ENGLISH

Strategy	Description	Sample Responses
Using known phrase (PHRASING)	The subject's response mentions use of a known phrase	"Nine layers of the sky were supported by four columns; that's a phrase you hear from the legends."
Adjusting Speed (SPEED)	The response indicates that the reader is in control of reading and adjusts reading speed based on text difficulty.	"This part is complicated and I have to read it very slowly." "I need to go back to the first paragraph again."
Recognizing text structure (STRUCTURING)	The subject's response shows that he or she recognized author's organization: distinguishing between main points and supporting details.	"I think the first is the statement and the author gives example in the second and third sentences."
Translating (TRANSLATING)	The subject's response shows that he/she translated the content into the other language for comprehension	(Translations)
Using context (CONTEXT)	The reader uses context to understand a sentence, phrase, or word.	"The following phrase gives the definition of the word- <i>gnomon</i> ."
Using prior knowledge (KNOWLEDGE)	The subject indicates that he or she already knew something or had experienced something.	"I am familiar with it. Several years ago when I came to the U.S. we set our watch several times."
Visualizing (VISUALIZING)	The response indicates that the subject had a picture or a mental image.	"I am thinking the time when I was on the plane changing my watch."
Using main idea (USING IDEA)	The response is based on major points of the paragraph or passage.	"The main idea of the text is about Chinese religion and science."

Table 4.1 (Continued)

Strategy	Description	Sample Responses
Interpreting information (INTERPRETING)	The response indicates that the subject makes an inference, draws a conclusion, or forms a hypothesis about the content.	"This came to the conclusion of how to determine the rate of/ rate at which animal grows up."
Paraphrasing	The subject's response indicates substitutions of the subject's own words for the original wording of the text.	"If the bird weighed less than two and a half grams it would die of hunger." (The original text said : "Mammal or bird that weighed two and a half grams would starve to death.")
Looking for key word (KEY WORD)	The response involves reasoning around a particular word or phrase. Alternatively, the subject indicates inability to recognize the word or understand the particular phrase.	"I am looking for the meaning of the word <i>chariot</i> in the following sentences."
Anticipating	The subject predicts what content will occur in succeeding portions of the text.	"I guess the story will talk about Chinese religion."
Integrating	The subject connects new information with previously stated content.	"'Ana' here must have something to do with 'Moses' mentioned at the beginning of the passage."
Questioning information (QUESTIONING)	The subject questions the significance or veracity of content.	"Why secondary important?" "What is the first importance?"
Commenting and evaluating content (COMMENTING)	The subject makes comment or evaluates the content, process, or structure of the text.	" I don't think it is dragon. The old people said it was dog."

TABLE 4.1 (Continued)

Strategy	Description	Sample Responses
Monitoring comprehension (MONITORING)	The subject assesses his or her degree of understanding of the text, indicates awareness of the components of the process, or expresses a sense of accomplishment or frustration.	"Now I see what it means." "I am not quite clear what 'burning up' means."
Correcting (CORRECTING)	The subject notices that an assumption, interpretation, or paraphrase is incorrect and changes that statement.	"No, this is not something about philosophy as I thought earlier. It talks about science."
Reacting to the text (REACTING)	The subject reacts emotionally to information in the text.	"It is interesting."
Using syntax (SYNTAX)	The subject's response mentions aspects of grammar.	"I put <i>taking</i> because it had to be a verb."
Confirming content (CONFIRMING)	The response indicates that the reader confirms or agrees with what is said.	"I agree." "That's correct."

think the first is the statement and the author gives example in the second and third sentences."). Reader-based strategies focused on the reader's reactions to text content including anticipating ("I guess the story will talk about the Chinese religion.") and monitoring ("I am not quite clear what 'burning up' means."). These strategies seem to reflect the interactive nature of the reading process. To make sense of text, readers construct meaning by interacting with the reading materials. In doing so, they resort to language-, text-, and reader-based strategies.

An examination of Table 4.1 shows that the total strategies used most include reader- and text-based strategies. The most frequently used strategies in reading all the texts were three reader-based strategies (i.e., interpreting, commenting, and monitoring); and two text-based strategies (i.e., using prior knowledge, and using main idea). The strategies used least by the subjects include two language-based strategies (i.e., using syntax and using known phrase), two text-based strategies (i.e., using context and confirming information), and one reader-based strategy (i.e., correcting). These findings indicate that readers were actively involved in the process of using strategies.

Table 4.2 presents the means and standard deviations of strategy use by language and text difficulty level. These data were analyzed using a 2 (English/Chinese) by 2 (Easy/difficult) Multivariate Analysis of Variance (MANOVA). Results indicated that the interaction of language by text

TABLE 4.2
 MEANS AND (STANDARD DEVIATIONS) OF STRATEGY USE
 BY LANGUAGE AND TEXT DIFFICULTY LEVEL

<u>Strategy</u>	<u>Chinese Text</u>		<u>English Text</u>	
	<u>Easy</u>	<u>Difficult</u>	<u>Easy</u>	<u>Difficult</u>
Phrasing	0.05 (0.22)	1.10 (1.29)	0.70 (1.59)	1.00 (1.21)
Speed	0.30 (0.57)	0.30 (0.47)	1.50 (1.32)	2.40 (2.64)
Confirming	0.15 (0.37)	0.05 (0.22)	1.30 (1.89)	0.30 (0.66)
Structuring	1.25 (1.59)	1.60 (1.79)	2.25 (2.24)	1.30 (1.17)
Translating	0.85 (1.46)	0.75 (1.52)	0.05 (0.22)	0.55 (0.89)
Context	0.00 (0.00)	0.10 (0.31)	0.05 (0.22)	0.90 (1.02)
Knowledge	1.30 (1.34)	1.30 (1.03)	3.60 (3.78)	3.75 (2.36)
Visualizing	0.35 (0.81)	0.10 (0.31)	0.45 (0.83)	1.20 (1.24)
Using Idea	1.75 (2.07)	2.05 (1.70)	2.10 (2.13)	1.95 (1.64)
Interpreting	3.70 (2.27)	4.20 (2.95)	3.80 (2.71)	4.15 (3.01)
Paraphrasing	0.40 (0.82)	0.95 (1.10)	1.35 (1.35)	1.90 (1.89)
Key word	0.10 (0.31)	0.45 (0.69)	0.50 (1.15)	2.40 (1.67)
Anticipating	1.10 (1.07)	0.80 (1.15)	0.70 (0.80)	2.10 (1.94)
Integrating	1.95 (1.43)	1.05 (1.00)	1.55 (1.64)	1.60 (1.73)
Questioning	1.50 (1.47)	0.55 (0.95)	1.30 (1.03)	1.45 (1.43)
Commenting	3.25 (1.92)	2.00 (1.84)	2.15 (2.28)	2.30 (1.95)
Monitoring	1.35 (1.57)	2.50 (2.46)	3.10 (2.17)	5.40 (3.63)
Correcting	0.25 (0.44)	0.15 (0.49)	0.30 (0.57)	0.50 (.089)
Reacting	0.65 (0.88)	0.35 (0.67)	0.55 (0.95)	0.60 (1.05)
Using Syntax	0.00 (0.00)	0.10 (0.31)	0.00 (0.00)	0.40 (0.82)
Average	1.00	1.02	1.36	1.82

level was significant (Wilk's Lambda =.53, $p < .05$). Separate univariate analyses were performed to examine the differences in strategy use across languages and text difficulty levels. The dependent variables for each analysis were the average number of occurrences per subject for each of the strategies used. The independent variables were language and text difficulty level.

Strategy Use by Language

Table 4.3 presents the means, standard deviations and F-tests of strategy use by language (English/Chinese). These results indicate that the use of some strategies varied significantly when the subjects read in Chinese and English. Indeed, as Table 4.3 shows, significant differences were found for eight of the twenty strategies used. The differences were found for adjusting reading speed, $F(1,76)=23.49$, $p < .001$; confirming, $F(1,76)=9.32$, $p < .003$; using context, $F(1,76)=12.18$, $p < .001$; using prior knowledge, $F(1,76)=22.75$, $p < .001$; visualizing, $F(1,76)=9.68$, $p < .002$; paraphrasing, $F(1,76)=9.93$, $p < .002$; looking for key word, $F(1,76)=23.70$, $p < .001$; and monitoring, $F(1,76)=16.36$, $p < .001$. The average number of times these strategies used was significantly higher in English than in Chinese as indicated in Table 4.3. However, no significant differences were found with respect to the remaining twelve strategies indicating that these strategies are indeed used as often in both English and Chinese.

TABLE 4.3
 MEANS, STANDARD DEVIATIONS, AND F-TESTS OF
 STRATEGY USE BY LANGUAGE

Strategy	Chinese		English		Univariate Analysis	
	Mean	SD.	Mean	SD.	F (1, 76)	Pr > F
Phrasing	0.57	1.06	0.85	1.33	1.14	0.289
Speed	0.30	0.51	1.95	2.11	23.49 ✓	<u>0.001</u> ✓
Confirming	0.10	0.30	0.80	1.48	9.32	<u>0.003</u> ✓
Structuring	1.42	1.67	1.77	1.83	0.81	0.371
Translating	0.80	1.47	0.30	0.68	3.79	0.055
Context	0.05	0.22	0.47	0.84	12.18	0.008 ✓
Knowledge	1.30	1.18	3.67	2.87	22.75	0.001 ✓
Visualizing	0.22	0.61	0.82	1.10	9.68	0.002 ✓
Using Idea	1.90	1.87	2.02	1.87	0.09	0.769
Interpreting	3.95	2.61	3.97	2.83	0.00	0.967
Paraphrasing	0.67	0.99	1.62	1.64	9.93	0.002 ✓
Key word	0.27	.055	1.45	1.78	23.70	0.001 ✓
Anticipating	0.95	1.10	1.40	1.62	2.35	0.129
Integrating	1.50	1.30	1.57	1.66	0.05	0.820
Questioning	1.02	1.31	1.37	1.23	1.59	0.211
Commenting	2.62	1.95	2.22	2.09	0.80	0.374
Monitoring	1.92	2.11	4.25	3.17	16.36	0.001 ✓
Correcting	0.20	0.46	0.40	0.74	2.06	0.155
Reacting	0.50	0.78	0.57	0.98	0.14	0.708
Using Syntax	0.05	0.22	0.20	0.60	2.34	0.130

Strategy Use by Text Difficulty Level

Table 4.4 presents the means, standard deviations, and univariate analyses obtained when the differences in strategy use by text difficulty level were examined. The results indicate that use of six of the strategies varied significantly when the subjects read easy and difficult texts in Chinese and English. Indeed, as Table 4.4 shows, differences were found for using known phrase, $F(1,76)=6.86$, $p<.010$; confirming, $F(1,76)=5.57$, $p<.018$; using context, $F(1,76)=15.21$, $p<.002$; looking for key word, $F(1,76)=21.73$, $p<.001$; monitoring, $F(1,76)=9.01$, $p<.003$; and using syntax, $F(1,76)=6.51$, $p<.012$. These results indicate that the subjects used these strategies more often when reading difficult text as shown in Tables 4.2 and 4.4. However, no significant differences were found with respect to the remaining fourteen strategies used in both Chinese and English easy and difficult texts.

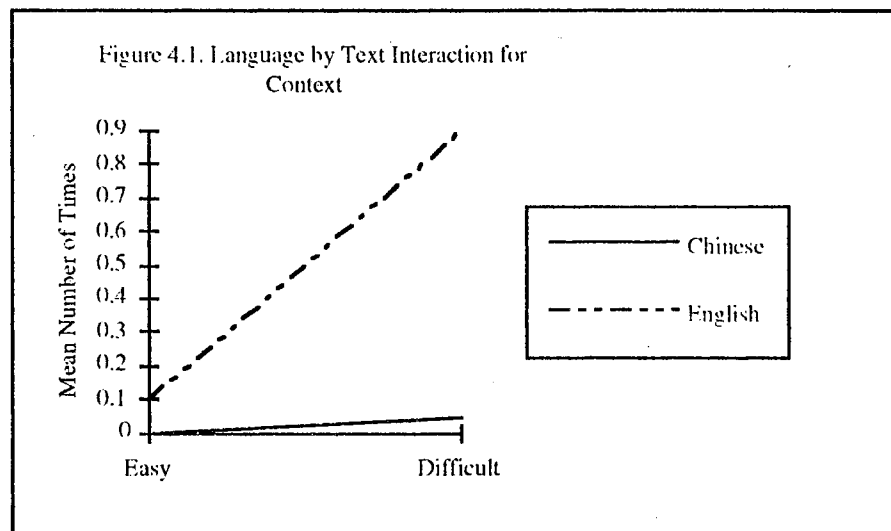
Interaction of Language and Text Difficulty

Figures 4.1-4.4 show that the interaction of language with text difficulty was significant for the following four strategies only: using context, anticipating, looking for key word, and visualizing. The use of context was found to interact significantly with text difficulty levels, $F(1,76)=9.48$, $p<.002$. This finding indicates that this strategy was rarely used for reading easy text (Chinese: $M=0$;

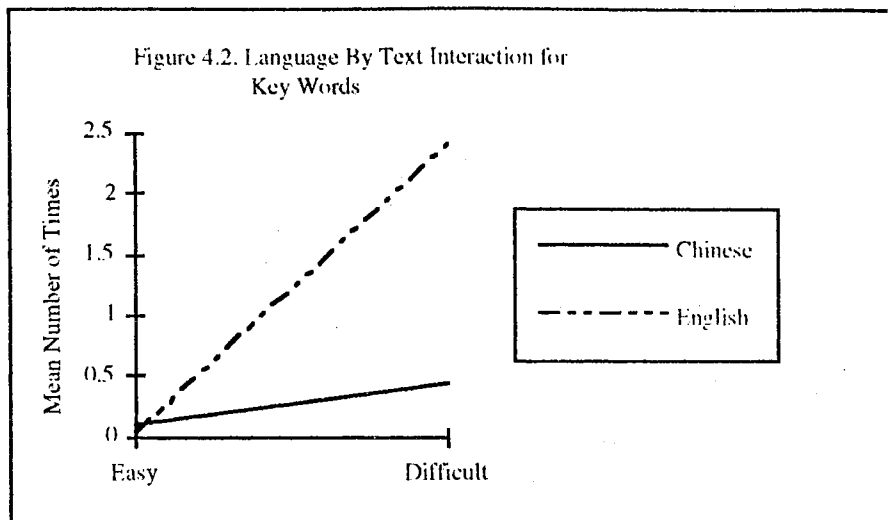
TABLE 4.4
 MEANS, STANDARD DEVIATIONS, AND F-TEST OF
 STRATEGY USE BY TEXT DIFFICULTY LEVEL

Strategy	Difficulty Level				Univariate Analysis	
	Easy		Difficult		F(1,76)	Pr>F
	Mean	SD	Mean	SD		
Phrasing	0.38	1.27	1.05	1.15	6.86	0.010
Speed	0.90	1.17	1.35	2.15	1.75	0.190
Confirming	0.73	1.47	0.18	0.50	5.75	0.018 ✓
Structuring	1.75	1.98	1.45	1.50	0.59	0.443
Translating	0.45	1.11	0.65	1.23	0.61	0.438
Context	0.03	0.16	0.50	0.85	15.21	0.002 ✓
Knowledge	2.45	2.79	2.53	2.18	0.02	0.880
Visualizing	0.40	0.81	0.65	1.05	1.68	0.198
Using Idea	1.93	2.08	2.00	1.65	0.03	0.860
Interpreting	3.75	2.47	4.18	2.94	0.48	0.491
Paraphrasing	0.88	1.20	1.43	1.60	3.33	0.072
Key word	0.30	0.85	1.43	1.60	21.73	0.001
Anticipating	0.90	0.96	1.45	1.71	3.51	0.064
Integrating	1.75	1.53	1.33	1.42	1.66	0.201
Questioning	1.40	1.26	1.00	1.28	2.08	0.153
Commenting	2.70	2.15	2.15	1.87	1.51	0.222
Monitoring	2.23	2.07	3.95	3.40	9.01	0.003
Correcting	0.28	0.51	0.33	0.73	0.13	0.720
Reacting	0.60	0.90	0.48	0.88	0.39	0.534
Using Syntax	0.00	0.00	0.25	0.63	6.51	0.012

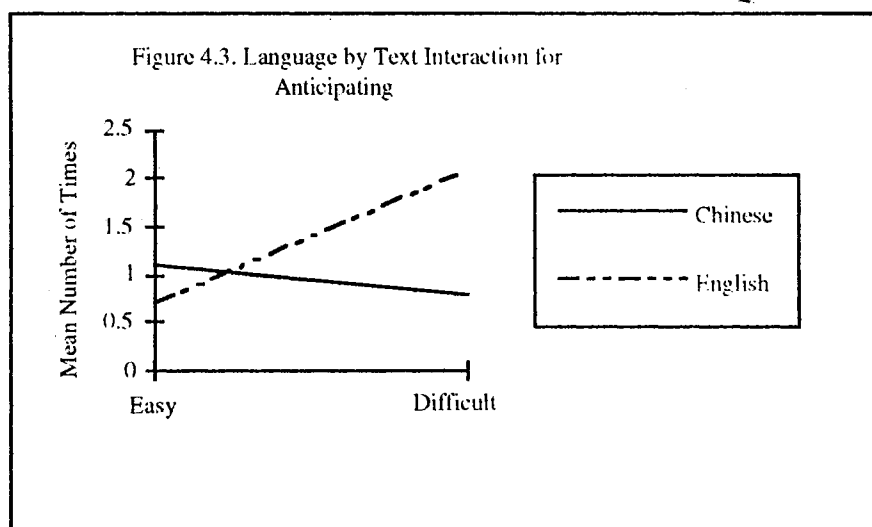
English: $M=.05$). For reading difficult text, it was used much more frequently for English ($M=.90$) than for Chinese ($M=.10$; see Table 4.2 and Figure 4.1).



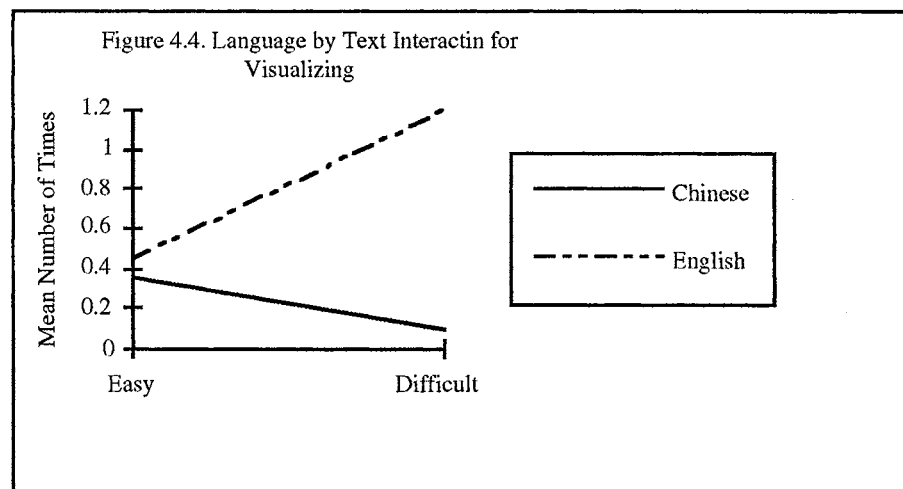
A significant interaction effect was also found for looking for key word, $F(1,76)=10.31$, $p<.002$, indicating that this strategy was not frequently used for reading easy text (Chinese: $M=.10$; English: $M=.05$). For reading difficult text, it was used much more frequently for English ($M=2.40$) than for Chinese ($M=.45$; see Table 4.2 and Figure 4.2).



A significant interaction effect was found for anticipating, $F(1,76)=8.38$, $p<.005$. These results indicate that for reading easy text, this strategy was more frequently used for Chinese ($M=1.10$) than for English ($M=.70$), while it was much more frequently used for English ($M=2.10$) than for Chinese ($M=.80$) for reading difficult text (see Table 4.2 and Figure 4.3).



Finally, a significant interaction effect was found for visualizing, $F(1,76)=6.73$, $p<.011$. This finding indicates that this strategy was more frequently used for reading English texts (difficult: $M=1.20$; easy: $M=.45$) than for reading Chinese texts (difficult: $M=.10$; easy: $M=.35$; see Table 4.2 and Figure 4.4). However, no significant interaction effects were found with respect to the remaining sixteen strategies indicating that text difficulty did not have a significant impact on the strategies used when reading Chinese or English.



Summary

In summary, in this study, an attempt was made to find answers to two questions. (1) What types of strategies do adult native speakers of Chinese use when they read English and Chinese? (2) To what extent does text difficulty affect

that the subjects used twenty (20) different reading strategies, which were meaningfully categorized into language-based, text-based, and reader-based strategies. Further, some strategies (see Table 4.3) were found to be used more frequently in English than in Chinese. Finally, text difficulty was found to play a key role in strategy use among Chinese subjects when they read English and Chinese. These findings have important implications, which will be discussed in the next chapter.

CHAPTER V

DISCUSSION

Findings

The results of this study have uncovered three important findings about the ways native Chinese speakers read English and Chinese. First, it was found that when the subjects read in English and in Chinese, they resorted to a variety of reading strategies. Specifically, a total of twenty strategies were identified (see Table 4.1). These strategies were meaningfully grouped into three categories including language-based, text-based and reader-based strategies. Language-based strategies focused on micro-structural aspects of language including using key words (e.g., "I am looking for the meaning of the word *chariot*."), known phrases (I would use *digest* rather than *burn the fuel*"), grammar ("The tense of the verb indicates something in the past.") and the like. Text-based strategies focused on macro-structural aspects of text including using text structure, (e.g., "This paragraph is describing the above statement."), integrating (e.g., "This statement has been mentioned at the beginning."), and using main idea (e.g., "The last two sentences support the main idea stated."). Reader-based strategies had to do primarily with the readers' monitoring

of what they were reading (e.g., "Now I see what it means."), confirming information (e.g., "That's not true."), and evaluating what they were reading (e.g., "This article was not written by a professional in the field.").

The use of strategies by the subjects illustrates what adult native Chinese readers do when they read in Chinese and in English. Particularly apparent in the use of the strategies is the balance between the various sources of information (i. e., language, text, and reader) which these readers resort to when they read easy and difficult texts in these two languages.

Second, when the use of reading strategies in each of the two languages was examined, it was found that eight strategies were used more frequently when the subjects read in English than when they read in Chinese (See Table 4.3) These strategies, which tend to be mainly reader-based, including adjusting reading speed (e.g., "It is complicated here so I need to slow down."), confirming, (e.g., "That's true." "I agree."), using context (e.g., "The following phrase gives the definition of the word-*gnomon*."), using prior knowledge (e.g., "I have been to the art museum before."), visualizing (e.g., "I try to form a picture in my mind."), paraphrasing (e.g., "I use my own words to explain it so I can understand it better."), using key words (e.g., "The word, *nature*, appears several times and must indicate some key points."), and monitoring (e.g., "I am not quite clear what 'burning up' means.").

The remaining twelve strategies (i.e., phrasing, recognizing text structure, translating, using main idea, interpreting, anticipating, integrating, questioning, commenting, correcting, reacting, and using grammar; see Table 4.1 for examples) were as frequently used in English as in Chinese indicating that some strategies are indeed used in both languages. These findings indicate that while some strategies were used much more in English, others were used in both languages. It is unclear, however, whether these strategies were learned in Chinese and transferred into English or vice versa.

Third, when the use of strategies was examined by text difficulty level, it was found that some strategies tend to be used more often when the subjects read difficult texts than when they read easy texts in English and in Chinese. Specially, six of these strategies were found to vary with text difficulty level. These strategies included using known phrases, confirming, using context, using key words, monitoring, and using syntax (see Table 4.1 for examples). The significant difference in the use of these strategies indicates that the level of text difficulty plays an important role in the use of strategies when reading easy and difficult texts in English and in Chinese.

An examination of the use of the following strategies (i.e., using context, using key words, anticipating, and visualizing) showed some interesting patterns (see Table 4.2 and Figures 4.1 - 4.4). The results have shown that the

strategy of using context was rarely used when the subjects read easy text in Chinese ($M=0$) and English ($M=0.05$). On the other hand, this strategy was used much more frequently when the subjects read difficult text in English ($M=0.90$) than in Chinese ($M=0.10$). The strategy of using key words had a similar pattern. In other words, it was rarely used when subjects read easy text in Chinese and English. However, it was used more frequently when the subjects read difficult text in English ($M=0.90$) than in Chinese ($M=0.10$; see figure 4.2).

Similar patterns were found for the strategies of anticipating and visualizing (see figures 4.3 and 4.4). The strategy of anticipating was more frequently used when the subjects read difficult text ($M=1.10$) than they did in reading easy text ($M=0.70$) in English; however, it was less frequently used in reading difficult text ($M=0.80$) than in reading easy text in Chinese ($M=1.10$). A similar pattern was found in using the strategy of visualizing. The subjects used it more frequently in reading difficult text ($M=1.20$) than in easy text ($M=0.45$) in English while in Chinese they used it less frequently in reading difficult text ($M=0.10$) than in reading easy text ($M=0.35$). These findings provide additional support for the important role text difficulty plays in the use of strategies when the subjects read in English and in Chinese.

Implications for Educators

The findings of this study have some important implications for reading research and instruction. First, the data examined lend support to previous researchers who have investigated the use of strategies while reading by native and nonnative speakers of English (e.g., Alderson, 1984; Block, 1986, 1992; Koda, 1990). These researchers have suggested that strategy use is universal. The strategies students learn in a first language (e.g., Chinese) can be transferred successfully to a second language (e.g., English). In this study, the majority of the strategies were found to be used equally in both English and Chinese, hence the transferability of strategy use from one language to another. In most cases, the strategies learned in one language seem to operate alongside those learned in a second language.

Second, the findings of this study suggest that classroom teachers ought to consider teaching students how to use all the sources of information available to them (i.e., language, text, and reader)) to make sense of what they read. In other words, teachers should consider teaching reading strategies as part of the teaching process in order to help their students become strategic independent readers. Teaching efficient reading strategies such as comprehension monitoring, using text organizational patterns, making predictions about what they read, etc. can help nonnative

speakers compensate for language difficulties while reading (Alderson, 1984; Carrel, 1988).

Third, the technique of think-aloud used in this study to investigate how readers go about understanding text can be used not just as a research technique, but also as an assessment and instruction technique. Teachers can use this technique to assess how their students monitor their understanding of what they read (Baumann, Jones, and Seifert-Kessell, 1993; Fawcett, 1993; Garner, 1987). As such, it enables teachers to gain insights into their students' strengths and weaknesses and plan appropriate instruction. Reading strategies can be best taught through modeling techniques such as think-aloud. Teachers can use the techniques to demonstrate how competent readers access information from text. This demonstration provides a model for students to emulate in their own attempts to become strategic readers.

Recommendations for Future Research

This study has some limitations which should be taken into consideration when attempting to interpret the results and conduct follow-up research investigations. First, even though this study has established that reading strategies may transfer from one language to another, it is not clear what strategies do transfer, from which language to which language, and how consistent the transfer is across text types. Second, the difficult texts used were slightly longer

than the easy texts; therefore, it is not clear whether text length might have any impact on strategy use by the subjects. Future investigations in strategy use ought to control for this variable. Third, the subjects used were adult Chinese native speakers of Chinese who were proficient in both languages as indicated by their English language proficiency scores and Chinese language experiences. It would also be worth investigating whether strategies learned in a native language would compensate for language deficits in a second language. Finally, the use of the think-aloud technique should continue to be used not only as a research tool, but also as an assessment and eventually an instructional tool. This technique provides proven ways of uncovering how readers attempt to understand text and helping students become strategic readers.

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APPENDIXES

APPENDIX A

READING MATERIALS FOR THE STUDY:

EASY CHINESE TEXT

DIFFICULT CHINESE TEXT

EASY ENGLISH TEXT

DIFFICULT ENGLISH TEXT

摩西祖母已跻身于 20 世纪美国最著名的画家行列，然而她是 70 多岁以后才开始作画的。如同她曾说过的，“我绝不坐回到摇椅里，等着什么人来帮助我，”无人能拥有一个（比她）更多产的老年时期。

安娜·玛丽·罗伯逊出生在纽约州的一个农庄，是（家庭中）5 男 5 女中的一个（“我们像小萝卜一样成串地出生”）。她 12 岁时离开家去当家庭帮工，27 岁时她和雇主的助手托马斯·摩西结婚。他们一生中绝大部分时间都在务农，先在弗吉尼亚州，后来在纽约州的英格布里奇。她生了 10 个孩子，其中的 5 个活了下来，她的丈夫在 1927 年去世。

摩西祖母在孩提时期很少画画，作为爱好，她绘制绣花图案。直到老年，手变得太僵硬无法缝制（东西）了，她才转移到油画上来。她乐意忙着干点活儿来打发时间，她的画开始是在当地一家药店和定期集市上出售，不久（她的画）开始为一位商人所注意，他购买她画的每一件作品，其中的 3 幅在现代艺术博物馆展出。1940 年，她在纽约举办第一次个人画展。从 1930 年直到她去世为止，她创作了 2000 多幅画，以详细而充满活力（的笔触）伴之以奇迹般的色彩意识和形式，去描绘她多年来所熟知的田园生活。

她说：“我构思很艰难，只有我想起一些真正美丽的事情，我才开始作画。”

一·回答问题:

1· 本文的标题可称为

- A. 祖母摩西: 传记素描。
- B. 祖母摩西的子孙。
- C. 祖母摩西: 其最佳画展。
- D. 祖母摩西以及其他老年艺术家。

2· 祖母摩西开始作画是因为她想

- A. 装饰她的家。
- B. 保持活动。
- C. 改善收入。
- D. 获得国际声誉。

3· 通过祖母摩西的自述, 可以推断她是一个

- A. 有独力精神的人。
- B. 相貌标致的人。
- C. 富有的人。
- D. 缺乏自信心的人。

4· 祖母摩西的大部分生涯是在

- A. 当护士。
- B. 作画。
- C. 绣花。
- D. 从事农业劳动。

5· 祖母摩西

- A. 在孩提时期就把画画作为爱好。
- B. 直到年老才转移到绣花上来。
- C. 描绘她所熟悉的田园生活。
- D. 作画构思很随便。

二· 请简单叙述一下文章的主要内容。

早期统计学方法的发展受到两种大相径庭的影响。统计学有一位“母亲”，她用于保存政府单位有条理的记录（State 和 Statistics 来源于相同的拉丁语词根 Status），和一位彬彬有礼的“父亲”，他依靠数学去增进其竞争的技能。这位“母亲”对后代统计学的影响表现为：计算，测量，描述，列表，整理及摘要，所有这些导致了现代描述统计学（的出现）。从这位“父亲”的影响中产生了现代推论统计学，它坚实地基于概率原理之上。

描述统计学包括资料的列表，叙述和制图集成。这些资料可以是数字变量，诸如高度的测量，智力或等级水平，由基础的连续统一体表示其特性，或者可以是性质的变量，诸如性别，学院专业或人格类型。大量的资料在能够被领会之前，通常需要经过一个摘要或缩减的过程，描述统计学是用于描述，概括或缩减浩瀚资料使之成为可理解形式的一种工具。

推论统计学是一种解决其他种类问题方法的定形主体，这些问题给人们无助的头脑带来极多的困难。这类综合问题包括使用观察例证去作出预报的。例如，一位学校主管人想在一个大范围的学校系统内确定来吃早餐的学生比例，或是接种了流感疫苗学生的比例，以及其他诸如此类的事；（如果）有一些统计学知识，（那么）这位主管人就会知道，去查问每个学生是不必要和低效率的，全部管区的比率能够从一次 100 个孩子的典型调查中相当精确地估算出来。这样，推论统计学的意图是通过部分人口调查的特点信息去预报全体居民的特点。

一·回答问题：

- 1· 本文涉的主要内容是？
 - A. 描述和推论统计学的缺陷。
 - B. 推论统计学的应用。
 - C. 统计学的发展及应用。
 - D. 如何使用描述统计学。
- 2· 哪个属于导致现代描述统计学出现的基本方法之一？
 - A. 推论
 - B. 描述
 - C. 不明变量。
 - D. 性质变量。
- 3· 为什么作者在第一段中提到“母亲”和“父亲”？
 - A. 指出父母可以教孩子统计学内容。
 - B. 介绍描述统计学。
 - C. 解释不同类的变量。
 - D. 使用幽默易懂的方法介绍统计学背景。
- 4· 哪个不属于性质变量的例子？

A. 性别 B. 高度 C. 学院专业 D. 特点类型
- 5· 本文阐述描述统计学的主要作用是
 - A. 把不易运用的大量资料简化到可以领会的程度。
 - B. 导致易变性的增多。
 - C. 解决所有的数字问题。
 - D. 将性质变量转变为数字变量。
- 6· 人口抽样调查的目的是什么？
 - A. 比较不同的团体。
 - B. 预报全部人口的特点。
 - C. 考虑数字量变。
 - D. 将资料集列成表显示。

二· 请简单叙述一下文章的主要内容。

Strange things happen to time when you travel, because the earth is divided into twenty-four time zones, one hour apart. You can have days with more or fewer than twenty-four hours, and weeks with more or fewer than seven days.

If you make a five-day trip across the Atlantic Ocean, your ship enters a different time zone every day. As you enter each zone, the time changes one hour. Traveling west, you set your clock back; traveling east, you set it ahead. Each day of your trip has either twenty-five or twenty-three hours.

If you travel by ship across the Pacific, you cross the international date line. By agreement, this is the point where a new day begins. When you cross the line, you change your calendar one full day, backward or forward. Traveling east, today becomes yesterday; traveling west, it is tomorrow!

1. Strange things happen to time when you travel because
 - A no day really has twenty-four hours
 - B the earth is divided into time zones
 - C time zones are not all the same size
 - D no one knows where time zones begin
2. The difference in time between zones is
 - A seven days
 - B twenty-four hours
 - C one hour
 - D more than seven days
3. From this selection it seems true that the Atlantic Ocean
 - A is in one time zone
 - B is divided into twenty-four zones
 - C is divided into five time zones
 - D cannot be crossed in five days
4. If you cross the ocean going east, you set your clock
 - A ahead one hour in each new time zone
 - B ahead one hour for the whole trip
 - C back one full day for each time zone
 - D ahead by twenty-three hours
5. The international date line is the name for
 - A the beginning of any new time zone
 - B any point where time changes by one hour
 - C the point where a new day begins
 - D any time zone in the Pacific Ocean
6. The best title for this selection is
 - A A Trip Across the Atlantic
 - B How Time Changes Around the World
 - C Crossing the International Date Line
 - D How Time Zones Were Set Up

The Chinese of 3500 years ago believed that the earth was a chariot, and the sky a curved canopy stretched above it. The canopy was nine layers thick, and it sloped slightly to the northwest, as a cataclysm had broken one of its supporting columns. This gentle slope explained the movement of the stars from east to west.

According to these ancient Chinese beliefs, the sun spent the night on earth and ascended to the sky each morning from the luminous valley of the east by climbing the branches of an immensely tall sacred tree. To the Chinese people, the sun was the incarnation of goodness, beauty, and truth. In popular imagination, the sun was represented as a cock that little by little assumed human form. His battles with the dragons, which personified evil in their beliefs, accounted for the momentary disappearances of the sun that men now call eclipses. Many of the Chinese people worshiped the sun, but in the vast and complicated organization of the Chinese gods, the sun was of only secondary importance.

Along with these unsophisticated beliefs about the sun, the Chinese evolved a science of astronomy based upon observation—though essentially religious—which enabled them to predict eclipses of the sun and the movements of the stars. Such predictions were based on calculations made by using a gnomon—an object whose shadow could be used as a measure, as with a sundial or simpler shadow pointers. Moreover, with the naked eye, the Chinese observed sunspots, a phenomenon not then known to their contemporaries.

1. The ancient Chinese believed that the earth
 - A was a chariot
 - B sloped to the northwest
 - C was supported by columns
 - D had nine layers
2. The movement of the stars was explained by the
 - A thickness of the canopy
 - B slope of the canopy
 - C position of the earth
 - D rotation of the earth
3. The Chinese thought that the sun spent the night
 - A in the branches of a tree
 - B above the sky
 - C in a western valley
 - D on earth
4. According to legend, the sun rose by
 - A climbing a tall tree
 - B riding in a chariot
 - C moving from west to east
 - D climbing a valley
5. To the Chinese people, the sun represented
 - A the primary god
 - B evil
 - C goodness, beauty, and truth
 - D combat
6. The sun's disappearances were thought to be caused by
 - A fights with cocks
 - B fights with dragons
 - C a scientific phenomenon
 - D eclipses
7. The Chinese calculated the movements of the stars with
 - A the naked eye
 - B sunspots
 - C a gnomon
 - D a sundial
8. Ancient Chinese astronomy could be accurately described as
 - A entirely religious in nature
 - B based on legendary figures
 - C advanced in some areas
 - D completely unsuccessful
9. Implied but not stated:
 - A The sun was worshiped by all the Chinese people.
 - B The sun was thought of as a cock.
 - C Chinese religion and astronomy were closely interrelated.
 - D Sundials were first used by the Chinese.

APPENDIX B

INSTRUCTIONS TO THE SUBJECTS

Instructions to the Subjects

Please read the text below and answer the questions. I would like you to think aloud into the tape recorder, expressing what you do in trying to understand the text or solving the problems while reading. You will read it in a way you normally do your reading. The red markers have been placed between sentences to remind you to think aloud. When you come to a marker, tell me what you have done, are doing, and will do in order to understand the text. However, do not wait for the marker if you have something to say! The more you tell about what you are doing while reading, the better. I am interested in the strategies you are using in order to comprehend the text, so please be sure to include all that you can in terms of verbalizing the strategies.

APPENDIX C

TRANSCRIPTION GUIDELINES

Transcription Guidelines

Following is a sample excerpt of an English text, the corresponding verbal report, and an explanation of the verbal report transcription scheme.

Text. A mammal or bird that weighed only two and a half grams would starve to death (*Repeated the whole sentence*). It would burn up its / food too rapidly and would not be able to eat fast enough to supply / more fuel.

Verbal report. /// I don't know why it would starve to death. Maybe / this is not true. The small-smaller the animals the less they eat so they don't need to eat fast, very fast to // to live.

1. Verbal report excerpts are enclosed with double quotation marks.
2. Slashes (/), appearing between words, represent one second of pause time. Three slashes (///) indicate 3 seconds of pause time.
3. Quotes from text are denoted with single quotation marks.
4. Normal spacing between words indicates that they were spoken at a regular rate.
5. A dash indicates that no pause time occurred between words or parts of words.

APPENDIX D

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
FOR HUMAN SUBJECTS RESEARCH FORM

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
FOR HUMAN SUBJECTS RESEARCH

Date:05-04-94

IRB#:ED-94-098

Proposal Title:WHAT CHINESE READERS DO AS THEY READ CHINESE AND
ENGLISH: A STUDY OF READING STRATEGIES

Principal Investigator(s):Kouider Mokhtari, Xiwu Feng

Reviewed and Processed as:Exempt

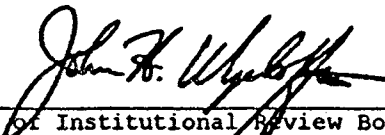
Approval Status Recommended by Reviewer(s): Approved

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT
MEETING.

APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR
RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL. ANY
MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for
Deferral or Disapproval are as follows:

Signature:


Chair of Institutional Review Board

Date: May 4, 1994

APPENDIX E
CONSENT FORM

Oklahoma State University

CONSENT FORM

I, _____, hereby agree to participate in this study which is designed to examine the reading strategies used by native speakers of Chinese when they read easy and difficulty texts in English and in Chinese.

I understand that the study will involve performing a set of reading tasks which will take approximately two and one half hours to complete; that my name will not be identified in any way and that my identity will be kept confidential.

Further, I understand that participation in this study is voluntary; that there is no penalty for refusal to participate; and that I am free to withhold my consent and participation in this project at any time without penalty after notifying the investigator.

I may contact Mr. Xiwu Feng, Principal Investigator, regarding any questions concerning this study at (405) 744-2323 or University Research Services, 001 Life Sciences East, Oklahoma State University, Stillwater, OK 74078 at (405) 744-5700.

I have read and I fully understand this consent form. I sign it freely and voluntarily. A copy has been given to me.

Participant

Date

2

VITA

Xiwu Feng

Candidate for the Degree of

Doctor of Education

Thesis: WHAT CHINESE READERS DO AS THEY READ CHINESE AND
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