

Chinese students' word-solving strategies in reading English

by

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CHAPTER I INTRODUCTION

In this chapter, a short introduction on second language reading difficulties is presented, the special problems of Chinese ESL (English as a Second Language) learners are stated and the objectives of this study are included.

In Chapter II, the review of literature is presented; and in Chapter III, the procedures and the methods of the research are outlined. The discussion and the analysis of the results are presented in Chapter IV, while the conclusion, the limitations of the study, the pedagogical implications and suggestions for future research are included in Chapter V.

Scope of the Study

It is generally agreed that reading is a complex process. It is, in many ways, more linguistically and intellectually challenging than other language skills (Goodman, 1968; Leow, 1984; Phillips, 1984). Second language reading may be even more complex "for it requires information processing using language skills still in developmental stages and not firmly established in the learner's mind" (Phillips, 1984, 295).

Yorio (1971), in attempting to explain the source of reading difficulties for foreign language learners, found that ESL students considered vocabulary their most serious handicap. This finding is not surprising at all: language learners are going to have comprehension problems if they do not understand the basic units of the message.

While recent researchers have emphasized the importance of guessing from context as a path to vocabulary expansion (Twaddell, 1973; Clarke, 1979; Kruse, 1979; Hosenfeld et al., 1981; Aspatore, 1984; Phillips, 1984), Walker's (1981) survey of ESL centers in the southern part of the United States revealed that not all centers provided instruction for word-identification skills and that some centers used native speaker materials in ESL classes. The fact that this basic skill in reading has almost been ignored by ESL centers as well as by ESL reading texts is worth our attention.

The present study intends to explore the contextual word-solving strategies, that is, the location of meaning clues in sentences, used by Chinese students when confronted with unfamiliar English words in their reading. This study, replicating in part Homburg and Spaan's (1982) study, will also seek insights to help learners develop word-solving skills.

Problem

A student who has adequate reading skills in his/her native language may still have difficulty with reading assignments in a foreign language. What causes this problem? Based on twenty years' teaching experience at universities in Taiwan, Arnold Sprenger, an ESL teacher, believed that if average college students in Taiwan were asked why reading English was so difficult, the most likely answer would be that they had not learned enough English words though they had spent at least

six years in English language classes studying almost nothing but grammar and vocabulary. This, of course, represents the students' perspectives of their reading problems; in fact, there might be other reasons for their difficulties in reading. According to Walker (1981), although some ESL reading problems may result from the inability to transfer reading skills from the first language, many problems stem from a lack of the skills in assigning meaning to unknown words. For Chinese students, this handicap may indeed be a contributing factor to their feelings of insecurity regarding vocabulary.

As Chinese consider reading an activity students learn automatically as they progress through school, the development of reading skills is mainly left to students themselves and hardly any formal instruction is given to the complexity of the reading process (Sprenger, 1975). With accuracy in translation of first importance in Chinese EFL classes, it is not surprising to see Chinese characters scribbled between the lines of students' English textbooks. For these students, the reading task is considered complete only when all the unknown words have been checked in the dictionary. Yet, according to Kruse (1979, 208), "the ESL student cannot begin to read with full comprehension until he has been taught to conquer the unknown words by using contextual aids." If Kruse is right, it is not surprising that Chinese ESL learners, most of whom seem to feel insecure reading without a dictionary, not only read slowly but also have comprehension problems.

Objectives

This present project is designed to observe a certain component of the reading process, that is, to see what educated Chinese readers do when the main meaning of the text is interrupted by unfamiliar words and no help from a dictionary is possible. In what situations are Chinese students most likely to succeed in decoding the unknown words? What information do they use in trying to determine the meaning of the words? Do students from different language proficiency levels use different strategies in their analysis of words? This study attempts to answer these questions.

CHAPTER II REVIEW OF RELEVANT LITERATURE

A search of the literature relevant to the present study revealed that the question of whether or not the reading processes in native and non-native languages are similar has received considerable attention recently. Since second language research in the past few years has attempted to determine the extent to which the psycholinguistic perspective of first language (L1) reading can explain second language (L2) reading (Hudson, 1982), important L1 reading theories will be reviewed first in this chapter. The application of L1 theory to L2 reading will follow. Finally, the third part will review issues related to word-solving and vocabulary expansion strategies.

First Language Reading Theories

The general debate in reading theory lies in whether reading is an active process (Goodman, 1971; Gough, 1976) or a receptive skill (Chastain, 1976). Goodman's study of miscue analysis contributes to his theory of reading as an active hypothesis-testing process of the reader's cognitive, linguistic and affective experiences (Goodman, 1965). Goodman further describes reading as a "psycholinguistic process by which the reader, a language user, reconstructs, as best as he can, a message which has been encoded by a writer as a graphic display" (Goodman, 1971, 135). Thus, reading is viewed as a process of hypothesis testing, confirmation and rejection instead of an exact process which depends on accuracy or precise identification of all

elements; and efficient reading results from "skill in selecting the fewest, most productive clues necessary to produce guesses which are right the first time" (Goodman, 1970, 260). He further emphasizes that readers accomplish this process by sampling, relying on the redundancy of language and their knowledge of linguistic constraints. Readers predict structures, test them against the semantic context they build up from the discourse and then confirm or disconfirm as they process further language (Goodman, 1971).

However, Goodman's concept is not without opposition. Gough does not agree that the reader is a guesser. His physiological point of view sees reading as beginning with an eye fixation followed by an intricate sequence of activity in the visual system. He insists that the reader "plods through the sentences, letter by letter and word by word" (Gough, 1976, 532). Psycholinguist Frank Smith argues against Gough's theory, believing that "readers normally look for meaning rather than strive to identify letters or words" (Smith, 1978, 163). His argument is that letter-by-letter or word-by-word reading will be a futile process because the meaning of one word will be forgotten before the next word is built and thus no meaning will be established between the words and no comprehension will be possible. Other researchers consider this word-by-word process as a phenomenon which occurs only when the reader encounters an unknown word (Clarke and Silberstein, 1979).

In summary, the predominant view among researchers today is that reading is an active rather than a passive process. Cognitive

psychologists and first language reading specialists tend to view reading as the derivation and assignment of meaning, and the reduction of uncertainty (Smith, 1978). According to Phillips (1975), this conceptualization of the reading process describes the second language situation equally well.

The Application of L1 Theory to L2 Reading

Goodman (1971) claims that learning to read a second language should be easier for those who are already literate in another language because for all languages, no matter how different they are, the process of reading is similar. However, Coady (1979) emphasizes the dissimilarity of learning to read in L1 and L2. There are at least two differences worth mentioning. "First, there is the obvious need to learn the target language and avoid the pitfalls of the native language. Second, there is the fact that a great deal of the ability to read transfers automatically" (Coady, 1979, 12). According to Coady, this automaticity has given ESL reading teachers the impression that there is no need to teach the process of reading.

To determine if psycholinguistic theory could explain the reading behavior of ESL learners, Clarke (1979) used cloze and oral miscue procedures to analyze the reading behavior of adult Spanish speakers in Spanish and English. His results show that language competence has a powerful effect on the reader; it reduces the good reader's advantage over the poor reader when their performances in the target language are

compared. The finding that "limited command of the language produces a short-circuit effect on good readers, forcing them to revert to poor reader strategies" (Clarke, 1979, 121), supports Coady's statement of the differences in reading L1 and L2 and thus emphasizes the importance of strengthening ESL readers' good reading skills.

In trying to explain some sources of ESL reading problems, Yorio (1971) uses Goodman's basic assumptions on the nature of the reading process to derive four factors that reading involves: (1) knowledge of the language (the code); (2) ability to predict or guess in order to make the correct choices; (3) ability to remember the previous cues; and (4) ability to make the necessary associations between the different selected cues. When reading in a foreign language, these factors are modified and new elements are included: (1) the reader's knowledge of the foreign language differs from that of native speakers; (2) the guessing or predicting ability is hindered by the imperfect knowledge of the language; (3) the wrong or uncertain choices of cues make meaningful association difficult; (4) memory span is shortened because of unfamiliarity with the material, thus making the recollection of previous cues difficult; (5) and at all levels and at all times, there is interference of the native language (Yorio, 1971, 108). All these factors that relate to linguistic competence put foreign language readers at a disadvantage in reading.

Although reading is sometimes described as receiving communications, making discriminative responses to graphic symbols,

decoding graphic symbols to speech, and getting meaning from the printed page (Gibson, 1970), many reading theories give top priority to meaning in all reading activities (Goodman, 1971; Clarke and Silberstein, 1979; Coady, 1979). Hudson (1982), in trying to provide the information on the possible application of L1 "schemata theory"¹ to the non-linguistic elements of L2 reading, claims that while there may be a short-circuit in the application of good reading skills, there will not be a short-circuit in the processing of meaning because "the comprehended meaning of a message is fundamentally dependent upon a reader's knowledge of the world and analysis of context, in addition to his or her use of the local linguistic characteristics of the message" (1982, 7). Hudson's statement enables us to trace many reading problems to the lack of background knowledge rather than of linguistic skills. Walker (1981), however, points out that linguistic knowledge of spelling or the phonological system of English, as well as of the semantic and grammatical systems also helps ESL readers search for meaning in the text.

There are many theories which attempt to explain how a reader is able to derive meaning from written language. Cziko (1980) classifies these theories into three major groups: bottom-up, top-down, and interactive views of reading. Cziko defines these three terms as

¹ According to Hudson, the schemata based theory indicates that readers process meaning which has been presented through print by using prior knowledge of the world to produce representations of anticipated meaning. This knowledge and representation can either aid or impede comprehension.

follows: (1) A bottom-up view describes reading as a one-way flow of information starting with the visual (graphic) input and proceeding through a series of higher-order stages to approach meaning. (2) A top-down view of reading emphasizes the role of higher cognitive processes that generate meaning hypotheses based primarily on contextual information. (3) The interactive view of reading describes how the reader uses and integrates both graphic and contextual information in extracting meaning from written language. This grouping of theories has generated research in investigating what type of information, visual or contextual, and what processing strategies, top-down or bottom-up, the reader uses in reading for comprehension.

Some studies have been conducted to see whether second language readers rely heavily on contextual information or use a strictly bottom-up approach in reading. Oller's (1972) study using eye movement photography suggested that non-native speakers of English are more attentive to graphic information than are native speakers, which suggests that bottom-up processing is employed more by non-native than native speakers. Macnamara's (1970) and Hosenfeld's (1977) studies also show that second language readers appear to have more difficulty in using contextual information in reading. Haynes' (1984) finding that graphemic analysis of words is an important basis for ESL students in processing the unknown words also supports the important role of bottom-up processing for L2 readers. Although the results from all the above studies suggest that bottom-up processing of words plays a major role in

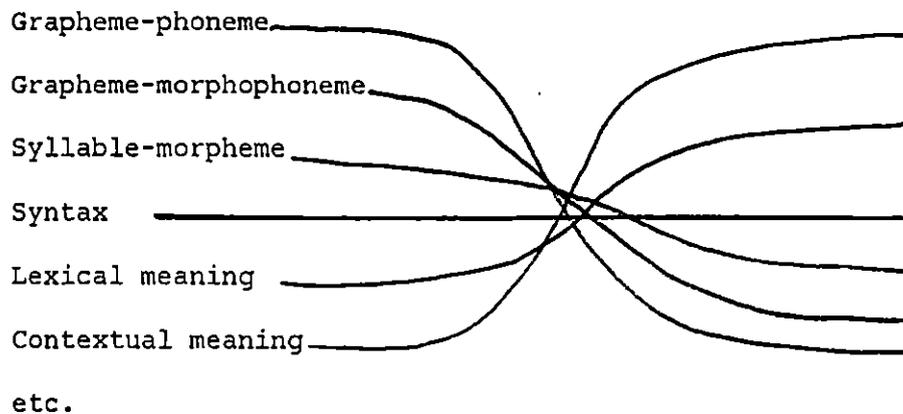
L2 reading, we cannot yet be assured that students from all language backgrounds process the same way or how proficiency in L2 affects this processing.

In describing the psycholinguistic models of ESL students, Coady (1979) listed six process strategies pertinent to reading: (1) grapheme-morphophoneme correspondences (2) syllable-morpheme information (3) syntactic information (deep and surface) (4) lexical meaning and contextual meaning (5) cognitive strategies (6) affective mobilizers. According to this model, the typical reader acquires the skills of reading by moving from the more concrete process strategies to the abstract. This process is manifested in the display on page 13.²

The claim made in this display is that second language learners begin by attending to more concrete process strategies such as phoneme-grapheme correspondences and word meaning, and gradually learn to take advantage of more abstract strategies such as syntax and context (Coady, 1979). Support for this model can be found in Cziko's (1980) study on oral reading errors of native and non-native speakers of French. Cziko found that both native French speakers and advanced students of French as a second language used an interactive strategy of drawing on both graphic and contextual information in reading French, while students with less advanced competence in French did not use contextual information to the same extent and relied primarily on graphic

² This display is taken from Coady (1979), and was originally presented in a talk by Roger Shuy at Ohio State University on April 24, 1975.

Coady's Model of Process Strategies



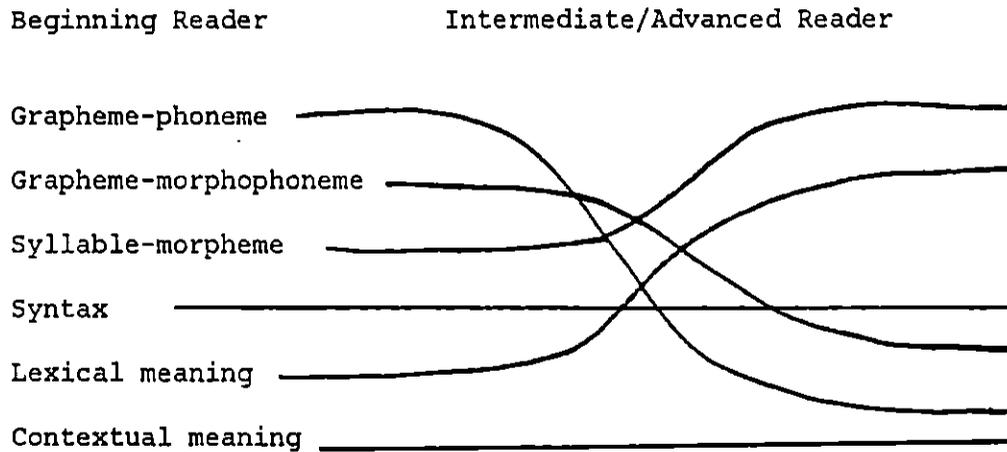
Relative change in use of process strategies over time is presented from left to right, e.g. beginning to advanced reader.

information.

But for Chinese ESL readers, Field (in press) proposed a different model. Her observations in China led her to the conclusion that Chinese students have particular difficulty in using those more abstract strategies even when they have gained a certain mastery over the English language. Field's model of Chinese ESL students' process strategies suggests why reading is painful and comprehension is low for the students she encountered in China.

Field's display shows that syllable-morpheme decoding strategies are used most frequently by intermediate and advanced Chinese readers while contextual meaning is the least used. This suggests that Chinese students are more sound-centered and word-centered in reading, rather than meaning-centered. This model also states that Chinese decoding strategies focus on details rather than on overall comprehension.

Field's Model of Chinese Students' Process Strategies



Field points out that Chinese students often resort to a dictionary when encountering an unfamiliar word, rather than venturing to guess the meaning of a word or the function of a word from its place in the sentence. If Field's claim can be substantiated, the problems suggest that helping Chinese students develop the ability to infer the meaning of unknown words from the context should be a priority in English reading classes.

Word-solving and Vocabulary Expansion Skills

Hosenfeld views reading strategies as comprised of two categories: one category includes the student's operations in ascribing meaning to sentences in a relatively uninterrupted manner which is called students' "main meaning line." The second category includes the student's operations when encountering an unknown word or phrase; that is, what

the reader does when the "main meaning line" is interrupted. These operations are called "word-solving strategies" (Hosenfeld, 1977) and turn out to be an important part of the reading process (Walker, 1981).

Assuming that students already possess efficient reading skills in their native language, then one of the biggest barriers to reading English as a foreign language will be the unknown words. In order to make sense out of a passage, a reader must know the meaning of a sufficient number of words. But as it is impossible to teach learners "enough" vocabulary for understanding the next page or the next day's newspaper or the next page of text they may encounter elsewhere, many researchers claim that ESL students must do what native speakers do to build up their vocabulary, that is, guess from context and/or word formation clues (Twaddell, 1973; Kruse, 1979; Clarke and Silberstein, 1979; Clarke, 1979; Phillips, 1975; Mackay, 1979).

There are probably more varied methods in teaching vocabulary than for any other aspect of language. But so far, no one method seems to have gained general acceptance. Because the mastery of vocabulary is a never-ending process, Twaddell (1973) suggests that skills for guessing the meaning of unfamiliar words are more important than the resources of the vocabulary. He includes skimming as an indispensable part of language competence because "pedagogically it is the way to build up habits of guessing at meanings and realistically tolerating a certain amount of vagueness" (1973, 61). Twaddell's argument has found support from many researchers (Kruse, 1979; Clarke and Silberstein, 1979; Walker, 1981; Tetrault, 1984).

Clarke and Silberstein (1979) also agree that guessing from context is perhaps the most important of the vocabulary attack skills. According to them, students must be made aware of the number of language cues available to them when they are interrupted by an unfamiliar word. Students should also be convinced that they can usually continue reading and obtain a general understanding of what they are reading. Some examples of the clues provided by context are: (1) synonym in opposition (2) antonym (3) cause and effect (4) association between an object and its purpose or use (5) description (6) example (Clarke and Silberstein, 1979; 57). They further claim that if context does not provide the meaning of an unfamiliar word, morphological analysis will often provide a clue. The point they stress here is that the goals of reading teachers should be to encourage students to take risks, to guess and to use the minimum number of syntactic/semantic clues to obtain the maximum amount of information in reading.

With the framework set up by Clarke and Silberstein, Walker (1981) conducted a comprehensive study to investigate word-identification strategies used by one hundred Spanish speakers in her institute. Ten strategies were identified: pronouncing, regressing, skipping, ignoring, guessing,³ morphemics, graphemics, syntax, dictionary-use and intuition. Among these ten strategies, pronouncing, morphemics, graphemics and syntax were the clues most used in arriving at the correct meaning of unknown words. Walker argues that though

³ Here, guessing is defined by Walker as translating the target word into the native language.

pronunciation and graphemic guesses (the association of a nonsense word with another word which has a similar spelling) are typical processing strategies for ESL students, they should be discouraged because in her study they rarely led to successful guesses.

Haynes (1984) did a similar study with nonsense words in the passages. From the strategies used by her subjects to figure out the meanings of those words, she concluded that graphemic analysis of words is an important basis of guessing and that local context clues produce a higher rate of success than global ones. From Haynes' and Walker's studies, we can conclude that helping students to improve their accuracy in word identification, rather than ignoring the graphophonemic strategies used by students, is what a reading teacher should do.

Summary

The sources reviewed in this chapter reveal that Goodman's emphasis on reading as an active rather than a passive process predominates among researchers today. This review also suggests that a current emphasis in ESL reading is on the effective strategies in guessing from lexical, syntactic and semantic information. So far, from the guessing patterns of the students in the above studies, we can conclude that ESL readers can be successful guessers if they are given adequate context, though there might be a hierarchy of the application of skills. Still, this leaves an important question unanswered: Do students from different language backgrounds guess differently? If, according to Field (in

press), Chinese students use different processing models in reading, do they also use different strategies in guessing unknown words?

CHAPTER III RESEARCH METHODS AND PROCEDURES

In this chapter, the design of the research is outlined first and some insights from pilot studies are discussed. The selection of subjects and instrument, and the procedures of data gathering follow consecutively. A summary of the research procedure is included at the end of this chapter.

Research Design and Procedures

Answers to the research questions posed in this study were sought via a case-study approach that, in part, replicates the work of Homburg and Spaan (1982). Each subject was questioned individually to determine his/her word-solving strategies. A passage of approximately 240 words with twelve nonsense words underlined was given to each subject. The task for the subjects was to summarize the main idea of the passage and identify the nonsense words by giving either their meanings or synonyms for them.

The whole interview session was tape-recorded. To assure that no language barrier discouraged students' guessing efforts, the interview was conducted in the subjects' native language, Chinese. The investigator later translated part of the interview, the summaries, into English for the purpose of obtaining judgments by non-Chinese speaking ESL instructors.

Pilot Study

Two pilot studies were conducted several months before the main study. It was at that time that the research instrument and techniques were developed, tested and revised. The subjects used in the pilot studies were equivalent to those used in the main study, i.e., they were all native speakers of Chinese from Taiwan and currently enrolled at Iowa State University.

The first pilot study was conducted in summer 1984. Five subjects were interviewed individually during a thirty-minute "think-aloud" session. They were asked to "think-aloud" while they were reading an article from an advanced ESL reading textbook. Although the "think-aloud" technique has been used successfully by many researchers interested in the ongoing process of cognitive strategies (Hosenfeld, 1977; Hosenfeld et al., 1981; Walker, 1981), this technique did not lead to success in soliciting Chinese adults' processing strategies. A discussion with the five subjects after the interview session revealed that it was unnatural and embarrassing for them to "think-aloud" while they were reading, and that they lost the thread of the message when using this procedure. This supports Phillips' view that reading aloud cannot be an effective comprehension strategy in all second language situations (1984), and also suggests that the "think-aloud" procedure may not be an effective research technique for Chinese students. Thus, it was decided that, instead of asking subjects to "think-aloud" a silent reading session followed by a problem-solving consultation would be used in the main study.

A second pilot study was conducted in November 1984 to test the reading passage to be used. The passage was "When a young bird leaves its nest" which had been previously used by Homburg and Spaan (1982). Its content appealed to the subjects tested and was appropriate to their reading proficiency level.

Selection of Material

The instrument used in this study was a modified cloze test.⁴ Although opinions differ as to whether the random cloze (in which every nth word is deleted) or the rational cloze (in which the test designer decides which words to omit) is a better test of reading comprehension, the investigator of this study chose to use the rational technique to investigate the four contextual word-solving strategies discussed later in this section. As a rational cloze test was able to test both limited sections of a text, such as phrases and clauses, and more general levels of a text, that is, inter-sentence, inter-paragraph (Bensoussan and Ramraz, 1984), it was chosen to focus on specific parts of content words investigated in this study.

A passage of 239 words was adapted from National Wildlife and analyzed as to its structure and context. The first two paragraphs contain several parallel structures and the third paragraph, which

⁴ After Taylor (1953) developed the cloze, a method of test construction which consists of deleting words from prose, to measure text difficulty for native readers, other researchers showed that it can measure foreign and second language proficiency as well (Oller, 1972; Bensoussan and Ramraz, 1984). The cloze test has also been shown to correlate well with reading comprehension (Oller, 1972; Wanat, 1977).

contains the main idea of this passage, develops in non-parallel structures, elaborating an experiment and then summarizing the general idea of the whole passage. (See Appendix I.)⁵

Twelve words in the passage were taken out from the original text. Instead of leaving them blank as a traditional cloze does, they were replaced by nonsense words because nonsense words not only assure equal familiarity for all subjects but closely replicate the actual reading situation ESL students face when encountering unknown vocabulary (Homburg and Spaan, 1982). The replaced words were either nouns, adjectives, verbs or adverbs; all the functional words were left intact. All the nonsense words were underlined and they retained the morphological features of English that would indicate their grammatical functions.

The twelve underlined nonsense substitutions were placed so as to allow a comparison of global versus local context use.⁶ They were further classified according to the four following contextual word-solving strategies:

⁵ This is the same passage used in Homburg and Spaan's study, though the number of underlined words is different.

⁶ Discourse analysis theory states that a text has three levels of meaning: (1) the micro-level, focusing on the lexical choice of words and their interaction with other words in the context; (2) the pragmatic level, which is extra-textual and draws on the reader's general knowledge of the world; and (3) the macro-level, dealing with the functions of the sentences and the structure of the text as a whole. Here, local cues refer to the micro-level of text meaning while the global cues include pragmatic and macro levels of meanings in a text (Bensoussan and Ramraz, 1984).

1. parallelism (words 1,2,5). Sensitivity to grammatical relationship and semantic similarity between words is essential in identifying these words.
2. sentence-bound cues (words 6,9,10). All information required to decipher these words occurs in the same sentence in which the word occurs, i.e., local cues can be easily found.
3. forward cues (words 3,7,8). To understand these words, one must read beyond them in the passage to get more information.
4. backward cues (words 4,11,12). Circling back in the text or remembering what came before is necessary in order to understand those words.

As Homburg and Spaan mentioned in their study, there is some overlap among these categories, and meaning is certainly determined by using a combination of several of these strategies and possibly other strategies which have not been included here. Though the interest of this present study is mainly on the use of these four strategies, other strategies and information used by these Chinese students will also be discussed at the end of Chapter IV.

Selection of Subjects

Twenty Chinese adults (4 undergraduate and 16 graduate students) of two different proficiency levels (ten in each level) were used in this study. Prior screening of potential subjects was conducted by examining

the scores on the English Placement Test⁷ of Chinese students who had arrived on campus in Fall 1984. Those who scored thirty and above on the reading section of the placement test constituted the higher proficiency group while those who scored twenty-two and below on the same test constituted the lower proficiency group.

The twenty subjects had much in common. They had come to the United States at about the same time, thus helping to insure that their exposure to the academic environment of native speakers of English was similar. Prior to coming to the United States, all had had at least eight years of English training in Taiwan, Republic of China. Their latest scores on the TOEFL (Test of English as a Foreign Language) were 500 or above (TABLE 1).

Procedure for Data Gathering

The twenty subjects were interviewed individually in a thirty-minute session during January 1985. They were told to skim the passage for general meaning and then give a summary before they began their guessing efforts.

⁷ The English Placement Test was developed and is currently used by Iowa State University. It contains five sections: writing, listening, grammar, vocabulary and reading. The vocabulary section is composed of thirty questions on synonyms of the underlined words in sentences; while the reading section contains thirty-five multiple choice items testing reading comprehension of short paragraphs. The mean score on the vocabulary section for all entering ESL students in Fall 1984 was 24.7 with a standard deviation of 3.97; the mean on this reading section was 26.0 with a standard deviation of 5.27. In general, those who score below 24 (i.e., those who get less than two-thirds of the total items correct) on the reading section are required to enroll in a supervised independent reading laboratory.

TABLE 1. Profile of subjects

Subject #	Sex	Under/Grad	Major	TOEFL	EPT Reading
Low group					
1	M	G	Statistics	573	21
3	F	G	Mathematics	547	16
4	M	U	Micro-bio	533	21
6	F	G	Comp. Sci.	553	20
8	F	U	Journalism	543	18
9	M	U	Comp. Sci.	500	9
13	M	G	Indust. Eng.	550	21
15	F	G	Business	580	22
16	M	G	Physics	547	22
18	M	G	Horticulture	530	21
High group					
2	F	G	Indust. Eng.	567	31
5	F	G	English	603	32
7	M	G	Civil Eng.	567	31
10	F	G	Hotel Manag.	543	30
11	M	G	Business	597	31
12	M	G	Mech. Eng.	600	33
14	M	G	Comp. Sci.	563	32
17	F	U	Chem. Eng.	630	31
19	M	G	Physics	577	30
20	M	G	Elect. Eng.	577	30

After the oral summary, each subject was questioned by the researcher, who first asked the subjects the meaning of each particular nonsense word. If a suitable definition or synonym was given, the answer was coded according to predetermined categories, e.g., if the subject provided the word "fed," "helped," etc. for the first nonsense word "glurked," it was assumed that the strategy of parallelism had been used. (The subject was given points in accordance with the degree of accuracy of the guess.) The subject was encouraged to explain his/her use of strategy. This information provided further insight into other possible strategies used such as word analysis. All the subjects were also told to mark other unknown words, if there were any, in the passage and try to guess their meanings.

When the guessing process was completed, students were given a second chance to summarize the main idea of the passage. They were also asked if they recognized that some of the words were nonsense words. The total session was conducted in Chinese⁸ and tape-recorded.

Summary

The investigation, conducted during January 1985, gathered data from twenty Chinese adult students enrolled at Iowa State University. A modified cloze passage with twelve nonsense substitutions underlined was used to explore the strategies used to decipher unfamiliar words by

⁸ It was suggested by Margot Haynes that the use of subjects' native language would ensure genuine guessing and limit the language obstacles during the task.

Chinese students in reading English. The researcher elicited the initial data using subjects' native language, Chinese, in one-to-one interview sessions which were recorded. Analysis of this data appears in Chapter IV.

CHAPTER IV DATA ANALYSIS AND RESEARCH RESULTS

In this chapter, the scoring methods are summarized first, followed by the analysis of data. A summary of the results and additional findings which emerged from this study are also presented.

Scoring Methods

The summaries given orally in the subjects' native language were translated into English by the researcher. To ensure that no mechanical errors affected raters' judgments of summary contents, all the summaries were proofread by a native speaker of English before being given to the raters.

Four graduate teaching assistants, all native speakers of English, in the field of TESL (Teaching English as a Second Language) were asked to read the original passage and a model summary written by the researcher before they read the summaries by the twenty subjects in this study. The raters were told to sort the summaries into three categories with each having no more than eight and no fewer than six summaries. (See Appendixes II and III for the sample summary and directions for raters.) No specific criteria were given to the raters; they were only told to group these summaries according to how closely they matched the original essay and the sample summary.⁹

⁹ This procedure of sorting written pieces is called "holistic evaluation of writing." The general impression ranking, one type of holistic evaluation, was developed by Education Testing Service and the College Entrance Examination Board to score the English Composition Test and the Advanced Placement Test in English (Cooper, 1977).

The summaries were then graded as follows: 3 credits were given to the pile that represented the best, 1 to the worst and 2 to those lying somewhere in between.

The scores on the four contextual word solving strategies were given according to the subjects' choice of words to replace the nonsense ones. A scoring system with four scales was used: 3 was given if the subject provided the exact words used in the original essay, 2 if the words were semantically and syntactically acceptable but not the exact words, 1 to words that conveyed the right idea but violated some constraints in English, and 0 to words that did not fit semantically and syntactically at all. (See Appendix IV for taxonomy.)

A list of the scores on summary (SUM), parts of speech (P.SP), and four strategies; parallelism (PL, recognition of grammatical relationship and semantic similarity), sentence bound (SB, location of cues within the same sentence), forward cues (FC, location of cues in further context), backward cues (BC, location of cues in the previous context), and total (Total) are given in TABLE 2 and TABLE 3 for the higher proficiency and lower proficiency groups respectively.

Data Analysis

The legitimacy of the research design

A T-test procedure was computed using SAS (Statistical Analysis System) to check the grouping of subjects. It was found that there was a significant difference on the scores of TOEFL, TOEFL Reading, EPT

TABLE 2. Scores of the high proficiency group

Subject #	SUM ¹	P.SP ²	Strategies				Total
			PL ³	SB ⁴	FC ⁵	BC ⁶	
2	2.7	10	0	7	0	6	13
5	2.0	12	4	7	8	9	28
7	1.3	12	4	7	3	9	23
10	2.0	12	7	5	6	4	22
11	3.0	12	8	6	6	7	27
12	3.0	12	2	7	3	6	18
14	1.3	11	4	9	9	9	31
17	1.7	12	8	6	6	6	26
19	2.3	12	5	8	3	9	25
20	1.0	12	5	8	7	9	29
Mean	2.03	11.7	4.7	7.0	5.1	7.4	24.2

¹SUM=summary²P.SP=part of speech³PL=parallelism⁴SB=sentence bound⁵FC=forward cues⁶BC=backward cues

(English Placement Test) and EPT Reading between the high and low proficiency groups. This result (TABLE 4) confirmed the categorization of subjects in this study. The total scores on the four contextual strategies investigated in this study correlated satisfactorily with the EPT total (0.55), EPT reading sub-score (0.51), the TOEFL total (0.53) and TOEFL reading sub-score (0.64), which means that this research design was able to differentiate between the reading strategies of students at different proficiency levels.

TABLE 3. Scores of the low proficiency group

Subject #	SUM ¹	P.SP ²	Strategies				Total
			PL ³	SB ⁴	FC ⁵	BC ⁶	
1	1.0	12	5	0	0	9	14
3	2.7	11	8	7	3	5	23
4	1.0	9	6	8	0	6	20
6	1.3	12	4	7	0	6	17
8	1.7	12	1	7	6	8	22
9	1.0	10	2	7	0	3	12
13	1.7	11	6	3	0	3	12
15	3.0	11	5	8	3	9	25
16	1.7	12	3	8	6	6	23
18	2.7	12	1	0	0	3	4
Mean	1.78	11.2	4.1	5.5	1.8	5.8	17.2

¹SUM=summary²P.SP=part of speech³PL=parallelism⁴SB=sentence bound⁵FC=forward cues⁶BC=backward cues

TABLE 4. T-test procedure on two proficiency groups

Tests	High Group	Low Group	T-Value	prob> T
TOEFL	582.4	545.6	3.46	0.0028
TOEFL Reading	58.6	54.7	2.45	0.0260
EPT	81.3	59.3	6.55	0.0001
EPT Reading	31.1	19.1	9.18	0.0001

Inter-rater reliability

To see to what extent the four raters agreed in evaluating summaries, the inter-rater reliability was computed to compare each rater with one another. Their correlation coefficients are shown in TABLE 5.

TABLE 5. Inter-rater reliability

	X	Y	Z	U
X	1.00	0.75	0.51	0.71
Y	0.75	1.00	0.40	0.75
Z	0.51	0.40	1.00	0.28
U	0.71	0.75	0.28	1.00

As we can see from TABLE 5, there was a correlation of over 0.70 between raters X, Y and U, graduate teaching assistants of English 100B or 100C.¹⁰ As rater Z, a graduate assistant in the writing center, did not seem to use the same criteria in categorizing summaries, it was decided to grade these summaries by averaging the scores given by raters X, Y and U.

¹⁰ At Iowa State University, entering non-native speakers of English are placed in English 100B, 100C or 100D if they do not pass the writing section of the placement test. English 100B is an intermediate grammar review and composition class; English 100C is an advanced composition class for undergraduates, while 100D is the graduate equivalent.

Comparison of higher and lower proficiency groups

As it is shown in TABLE 2, students in the higher proficiency group seem to use all four strategies in trying to get at the meanings of unknown words with the exception of subject #2 who used no parallel or forward cues and spent the least time on guessing.¹¹ TABLE 3 offers a different picture for the lower proficiency group. Forward cues seemed to be ignored by most subjects (six out of ten) in this group and two of them did not use sentence bound cues. In spite of the fact that two people in this group ignored sentence bound cues, the rest of the subjects seemed to use these strategies to a relatively great extent with seven out of the ten scoring over 7 (out of a possible high score of 12) in this category.

The general picture we get from TABLE 2 and TABLE 3 is that both groups of students were able to summarize the main idea and identify the parts of speech of the unknown words; there is almost no difference between two groups in the performance of these two tasks. As Figure 1 indicates, both groups seemed to be better at using sentence bound and backward cues than parallel or forward cues. While forward cues were able to differentiate high proficiency group from the lower one, the recognition of parallelism in the passage does not seem to make much difference between two groups. A T-test procedure was computed to test this observation (shown in TABLE 6).

¹¹ The average time spent on guessing for the higher group was 692 seconds; subject #2 spent 332 seconds, which was the least among all twenty subjects in this study.

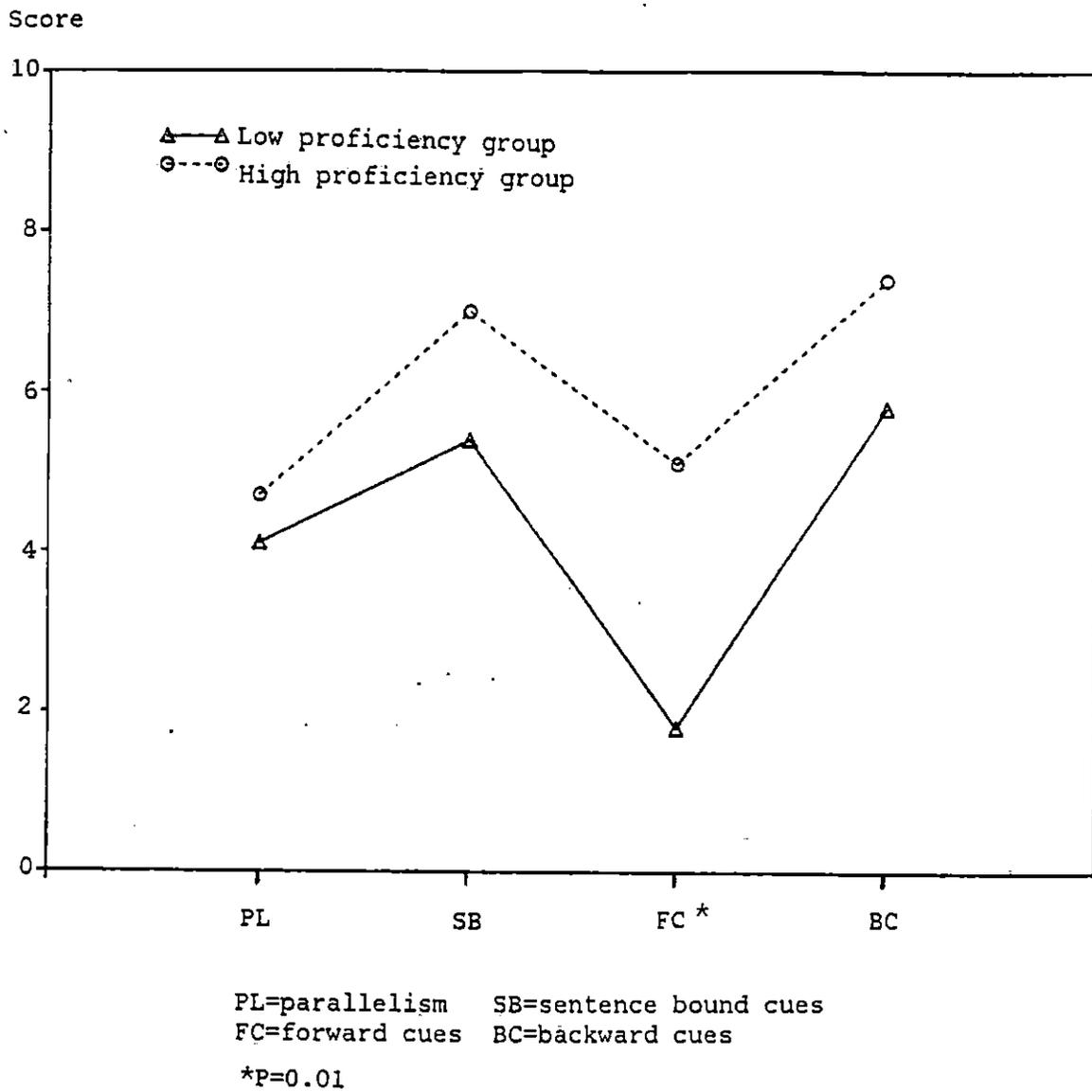


Figure 1. Performance on the four contextual strategies of high and low proficiency groups

TABLE 6. T-test for strategy use by group

	H	L	T-Value	Prob> T
PL ¹	4.7	4.1	0.55	0.588
SB ²	7.0	5.5	1.50	0.161
FC ³	5.1	1.8	2.78	0.012
BC ⁴	7.4	5.8	1.70	0.107
Total	24.2	17.1	2.62	0.017

¹PL=parallelism ²SB=sentence bound
³FC=forward cues ⁴BC=backward cues

In trying to explain the poor performance of subject #2 in the high proficiency group, the time each subject spent on reading and guessing was tabulated to see if it was related to their total performance. As TABLE 7 and TABLE 8 indicate, time did not contribute significantly to performance on the guessing task. Though high proficiency group students spent relatively less time on reading and guessing than subjects in the lower proficiency group, the difference was not statistically significant.

Correlation between strategies and language tests

As to the correlation between strategies used by subjects and their scores on language proficiency tests, TABLE 9 shows that scores on parts of speech correlate best with those of EPT vocabulary (0.58). While scores on forward cues correlate highly with EPT (0.64) and satisfactorily with EPT reading and TOEFL reading (0.53 for both);

TABLE 7. Reading/guessing time for high group

Subject	R.T. ¹ (sec)	G.T. ² (sec)	Total score
2	173	332	13
5	235	1223	28
7	157	904	23
10	131	690	22
11	150	673	27
12	175	662	18
14	170	655	31
17	164	607	26
19	440	705	25
20	173	469	29
Mean	196.8	692	24.2

¹R.T.= reading time ²G.T.=guessing time

TABLE 8. Reading/guessing time for low group

Subject	R.T. ¹ (sec)	G.T. ² (sec)	Total score
1	221	557	14
3	153	337	23
4	283	1173	19
6	191	826	17
8	158	601	22
9	348	1000	12
13	798	826	12
15	315	645	25
16	170	757	23
18	217	642	4
Mean	285.4	738.4	17.10

¹R.T.= reading time ²G.T.=guessing time

scores on backward cues correlate best with TOEFL reading (0.74) and next best with TOEFL total scores (0.53).

TABLE 9. Correlation coefficients between scores on strategies and scores on proficiency tests

	EPT VOC	EPT Read	EPT	TOEFL	TOEFL Read
SUM ¹	0.21	0.25	0.21	0.31	0.22
P.SP ²	0.58	0.37	0.47	0.46	0.27
PL ³	-0.03	0.13	0.09	0.33	0.25
SB ⁴	0.04	0.22	0.26	0.14	0.20
FC ⁵	0.44	0.53	0.64	0.45	0.53
BC ⁶	0.42	0.45	0.44	0.53	0.74
Total	0.33	0.51	0.55	0.53	0.64

¹SUM=summary

²P.SP=part of speech

³PL=parallelism

⁴SB=sentence bound

⁵FC=forward cues

⁶BC=backwards cues

The data we have here show that the use of backward and forward cues, both global cues, differentiates good readers from poor ones.

Performance of males and females

As there were comparable numbers of males (N=11) and females (N=9) in this study, it is interesting to consider the possible differences in performance between sexes. As shown in Figure 2, female subjects in this study scored slightly higher than males in most of the categories

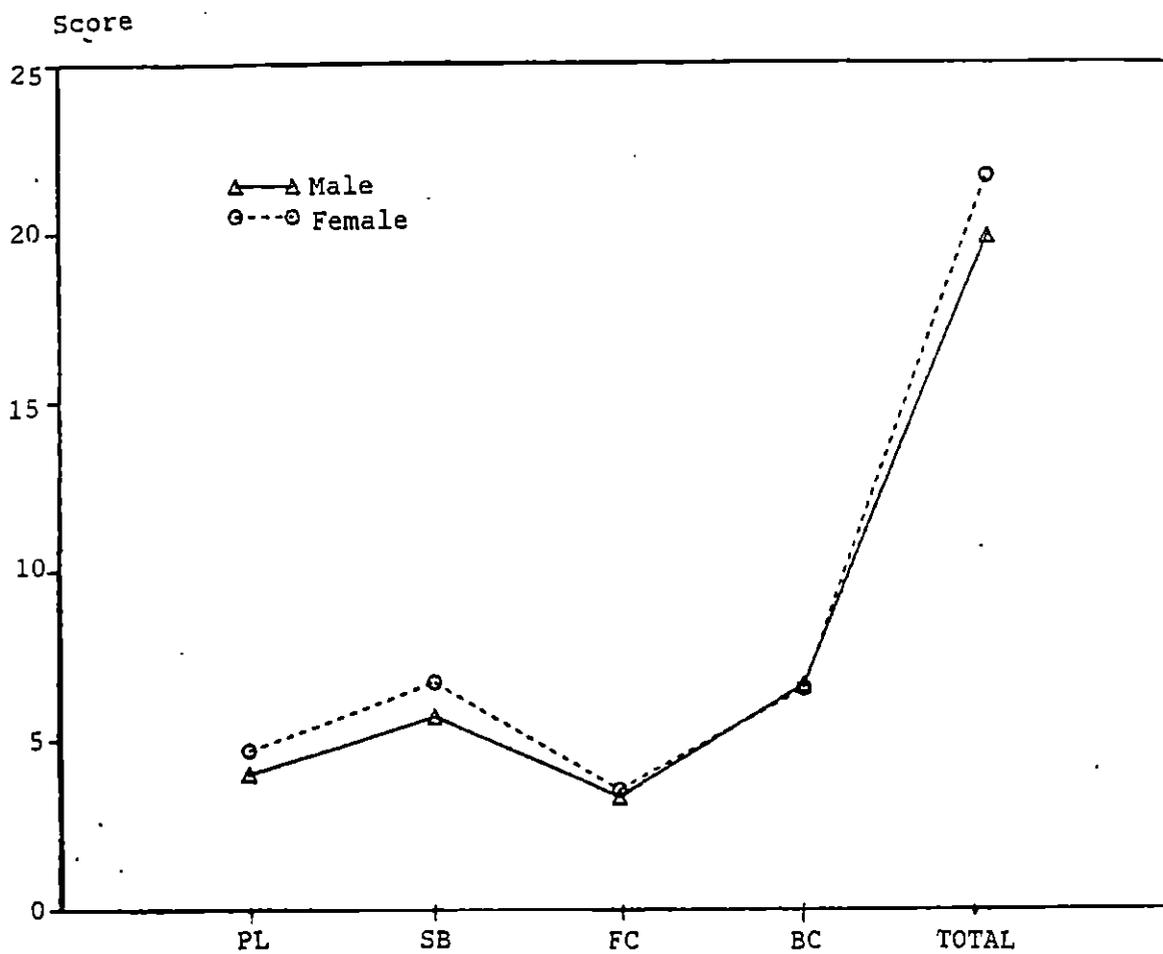
(with the exception of backward cues where they scored only 0.08 points lower). Although in this sample, female subjects did a somewhat better job in guessing than male subjects, this difference was not statistically different.

Performance of graduates and undergraduates

Figure 3 shows the performance of graduates and undergraduates. Graduate students used more of all strategies except sentence bound cues, i.e., local contextual cues, than did undergraduates. A T-test procedure was computed and it was found that the scores on summary also differed significantly between graduates and undergraduates (TABLE 10). Therefore, we can conclude that (1) undergraduates used sentence bound cues more often than graduate students and (2) undergraduates were less successful in determining the main idea of the passage.

If their summaries are re-graded by using a binary system of "yes" for those who got the main idea and "no" for those who did not, the procedure used in Homburg and Spaan's study (1982), three out of four undergraduates did not determine the main idea of this passage (TABLE 11).

Though there are differences between graduate and undergraduate students in other strategies investigated in this study, their T-values were not statistically significant (2.01 or above).



PL=parallelism SB=sentence bound
FC=forward cues BC=backward cues

For all strategies: $P > 0.1$

Figure 2. Performance on the four contextual strategies of male and female subjects

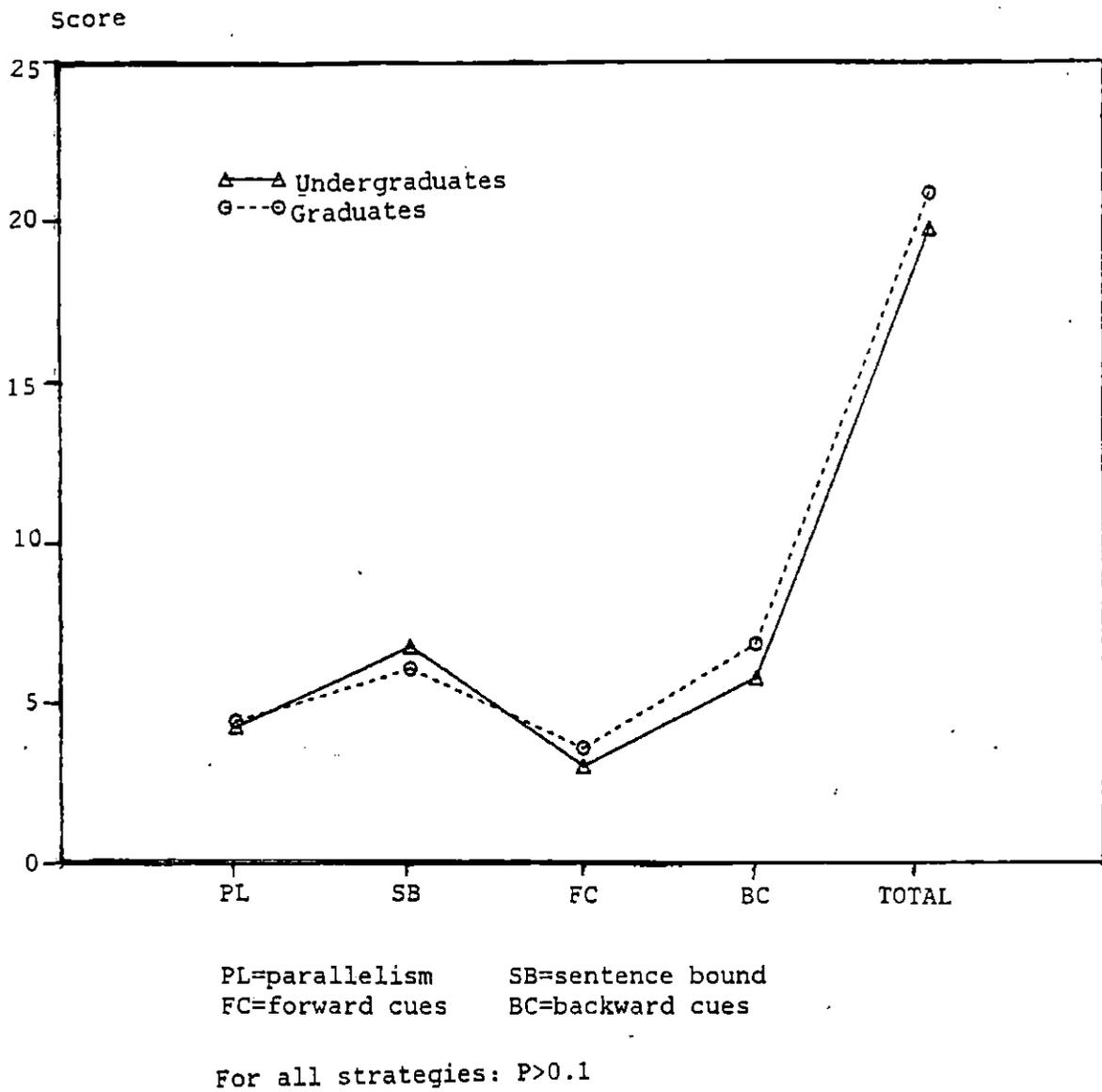


Figure 3. Performance on the four contextual strategies of graduates and undergraduates

TABLE 10. T-test on summary scores of graduates and undergraduates

	Grad	Under	T-Value	Prob> T
SUM ¹	2.04	1.35	2.53	0.032

¹SUM=summary

TABLE 11. Binary grading on summary

Main idea in summary	Number of graduates	Number of undergraduates
Yes	13	1
No	3	3

Summary and Discussion of Results

Summary of results

This study found that the ability to recognize and use forward cues and backward cues (both global contextual cues) in reading English correlated at satisfactory levels with proficiency scores of Chinese EFL students, and that use of forward cues was more frequent among students with high TOEFL scores than among those with relatively low TOEFL

scores. Though scores on backward cues were not dramatically different for the two groups, they correlated best with TOEFL reading scores; that is to say, use of backward cues was the best single predictor of the overall reading proficiency as measured by TOEFL of all the subjects in this study.

While backward and forward strategies (both global contextual cues) were able to distinguish the high from the low proficiency reading groups, sentence bound strategies, that is local contextual cues, were relatively widely used even by most of the students in the low proficiency group.

Although differences were not significant, female subjects in this study were somewhat better at guessing unknown words than male subjects (Figure 2), and graduate students appeared to be better than undergraduates at performing the same task. Undergraduates in this study seemed to use more local clues, like sentence bound cues, and to be more likely to misinterpret the message in the passage (Figure 3 and TABLE 11).

Discussion of results

Forward and backward strategies played similar roles in this study as in Homburg and Spaan's (1982), although the subjects used in these two studies differed in many ways. The subjects in Homburg and Spaan's study were of a heterogeneous language background, and they were grouped in that study according to their intensive course levels at the English Language Institute of the University of Michigan. In that study, those

ESL students who used more forward strategies were better at understanding the main meaning of the passage. Likewise, in that study the use of backward strategies was significantly correlated with proficiency level. But because both studies used the same passage, the possibility of the particular passage being biased against certain strategies must be considered. Research using different passages is needed before we can conclude that backward and forward strategies are the main determinants of ESL reading proficiency.

The fact that sentence bound cues show a different pattern from other strategies throughout the present study is worth our attention. They were used to a great extent by most subjects, even by those who were in the low proficiency group (with the exception of subjects #1 and #18); and undergraduates scored higher than graduates in no other categories but sentence bound cues. Further studies need to be done in order to decide if overuse of sentence-bound cues might be a negative strategy as it appears to be in this study.

Other Findings

Aside from the four contextual strategies observed in this study, other testimony regarding strategies used by these Chinese subjects in their reading process was also investigated. It was found that the subjects in this study not only used contextual cues but also said that they attended to sounds, affixes and word shapes to perform their reading task. They also reported using their common knowledge about birds to help them figure out the meanings of unknown words.

Word analysis and pronunciation

Six of the subjects (#10, #11 and #15 from the high proficiency group and #4, #13 and #15 from the low proficiency group) used word analysis frequently to derive the meaning of unknown words.

For example, "woodpecker" was identified as unknown by five subjects and three of them (#11, #14 from the high group; and #4 from the low group) were able to name the bird in their native language because of "wood" in "woodpecker." Many of the subjects, ten out of twenty, replaced "grumpity" with "ability" and two of them (#4, and #15 both from the low proficiency group) stated that they were able to do that because of the suffix "-ity." A similar situation occurred with "refirk." Ten subjects were able to replace "refirk" with "return" and three of them (#14, #10 from the high group, and #4 from the low group) were able to associate these two words because of the prefix "re-." For these subjects, morphemic analysis led to successful guesses.

For other subjects, #1 (from the low group) and #19 (from the high group) for example, morpheme recognition did not aid their guessing effort. The nonsense word "tidly" was guessed as "regularly" and "frequently" by subjects #1 and #19 respectively because it reminded them of the word "tide." For these two people, being able to visualize the morpheme "tide" in "tidly" seemed to help them only in figuring out its part of speech. Thus, though morphemes were used as clues in deriving the meanings of some unknown words, their use did not always lead to success.

Three subjects attended to word shape when they were trying to figure out the meaning of the unknown word "tidly." Subjects #12 and #18 replaced "tidly" with "timidly" because these two words looked alike to them, and subject #11 replaced it with "tidily" because of the similarity to the word "tidy." For these three people, graphemic analysis similarly did not contribute to their success in guessing.

Evidence of pronunciation as a strategy was observed in three subjects. Subject #17 read several unknown words aloud before replacing them with other words. Subjects #15 and #20 guessed "glurked" as the chirping sound made by birds because it sounded like a bird.

As in Walker's (1981) study, pronunciation and graphemic strategies, though seemingly essential processing stages in normal reading, rarely led to correct guesses. But evidence from further studies is needed before we can conclude that these strategies should be discouraged as Walker (1981) advocated.

Background knowledge

Though this study was not designed to observe the effect of the readers' knowledge of the world on their reading comprehension, most of the subjects reported that they appealed to their background knowledge on the life of birds throughout the guessing procedure. They compared what they knew about birds with what they read in the passage and arrived at certain assumptions about the message of the text. This phenomenon supports the schemata-based theory of learning discussed by Hudson (1982).

Use of logical connectors

Subject #12, a male graduate in the high proficiency group, said specifically that logical connectors such as "however," "but," "similarly" and "surprisingly" helped him in his guessing effort. This indicates that global cues were attended to by at least one of the subjects in the high proficiency group.

Other unfamiliar words identified

Some other words were identified as unknown words besides the twelve underlined ones. Among them, "fledgling," a globally defined word which appears three times (twice in paragraph one and once in the third paragraph) in this passage, was identified as unfamiliar by nineteen out of twenty subjects; ten of them were able to explain its meaning as "a baby bird"; the rest of them could only say "it's a kind of bird." Among the ten people that determined the correct meaning of this word, seven were from the high proficiency group. This suggests that global cues, those that required the integration of information throughout the passage, were grasped successfully by subjects in this study, especially those who were more proficient in English.

"Wren," a locally defined word whose immediate context provided clues, was next most frequently pointed out as an unfamiliar word. Among the thirteen subjects who did not know its meaning, eleven (six from the high group and five from the low group) were able to say "it is a kind of bird" by using as clues from the neighboring words "woodpeckers" and "swallows" though none were able to name it in their native language.

The identification of these two words "fledgling" and "wren" as unknown words rendered some similarities to Haynes' study. The fact that "wren," a locally defined word in this passage, was easier to guess than "fledgling," a globally defined word, (eleven out of thirteen got the meaning of "wren" while only ten out of nineteen guessed "fledgling" correctly) supports Haynes' conclusion that ESL students profited more from local context cues than they did from global ones (Haynes, 1984).

Students' perspectives on guessing

When asked, none of the subjects indicated suspecting that any of the underlined words were nonsense words. They all agreed that those words "looked English" and that it was so common for them to confront unfamiliar words in reading that they did not bother to question whether they were English words. When given a second chance to add to or change their summary after their guessing efforts, most of them did not make any change but agreed that they understood the passage better. Subject #14 re-summarized the main idea of this passage after his guessing was done. His second summary was put in the best pile by all three raters; therefore his score on the summary improved from 1.3 to 3.0 at his second try. Apparently, his efforts at guessing the meaning of unfamiliar words helped him comprehend the whole passage.

To summarize, all the subjects in this study were able to use different strategies to help them decipher messages in the essay. Although graphemic, morphemic and phonetic clues were used to decipher the meanings of words, they did not always lead these subjects to successful guesses.

CHAPTER V CONCLUSIONS

In this chapter, a summary of the design of this research and the results found is presented first. The discussion of the limitations of this study follows. Some implications are drawn and suggestions for future research are made.

Summary

The purpose of this exploratory study was to observe the strategies used by Chinese students in decoding the unknown words they confronted in reading English. Following two pilot studies, the researcher carried out the descriptive study by interviewing twenty Chinese adult students from Taiwan in their native language, Chinese. A modified cloze passage with twelve underlined nonsense words was used to explore the use of contextual strategies: recognition of parallelism, sentence bound cues, forward cues, and backward cues.

The data gathered showed that these Chinese ESL students were similar to other ESL readers in the strategies they used to decipher the meaning of unknown words. They were able to use contextual cues, graphic cues, and sounds, as well as background knowledge in reading. Use of forward and backward cues, examples of global cues, distinguished good readers from poor readers. The findings of this study can be summarized as follows:

1. Sentence-bound (local) cues were relatively frequently used by both groups of subjects in this study.

2. The use of backward cues and forward cues, both global cues, correlated highly with these subjects' proficiency levels.
3. Although differences between the two proficiency groups on their performances of other cues were found, they were not statistically significant.
4. Although morphemic, graphemic, and phonetic cues were used as strategies in guessing, they did not usually prove helpful, and in some cases actually led subjects astray.
5. There is no statistical evidence to indicate that time spent on task contributed to success or failure in guessing words and summarizing the main idea; however, the more proficient students did use less time in performing the same task than less proficient ones.
6. The guessing process was a positive experience that helped these subjects comprehend the meaning of the passage.

Limitations

As a small scale exploratory study, the results of this study are limited and should not be applied to other situations without certain qualifications.

First, there were only twenty students used in this study, obviously too small a sample size to represent all Chinese students.

Second, whether subjects were good or poor readers was based on their reading scores on certain standardized tests taken before

university enrollment. It is possible that there is a discrepancy between their test scores and their real reading proficiency.

Third, the interview session was conducted in the subjects' native language, Chinese, which, while encouraging their guessing efforts, may have impeded their application of some strategies which they would otherwise have applied. For example, most of the subjects tended to focus on the meanings of the unknown words in Chinese rather than venturing to pronounce the words or attending to word shapes to find the equivalent words in English. This probably affected their performance on each category.

Fourth, the summaries were given orally in subjects' native language and translated into English by the researcher. The fact that there might be a discrepancy between oral and written languages and that translation sometimes distorts the original ideas should be kept in mind.

Fifth, the scores assigned to the guesses made by subjects are somewhat questionable. The scoring mechanism was biased against those subjects who were able to guess the meanings of nonsense words in their native language but failed to replace them with the correct English synonyms.

Additional considerations have to do with the artificiality of observing strategies in a passage containing nonsense words. First, students were forced to "guess" the meanings of the words which they might have chosen to ignore in their normal reading process. In

addition, there were probably not an adequate number of occasions which the four identified strategies could be employed (only three of each), and as pointed out earlier in this paper, there was some overlap among the four observed strategies and the combined use of these four strategies was impossible to report in this study.

Implications

Nevertheless, with all the limitations mentioned above, the results of this study were suggestive if not definitive. That the highly proficient Chinese readers in this study used the strategies of other proficient EFL readers suggests a universality of certain positive reading strategies and deemphasizes the uniqueness of Chinese readers suggested by Field. This implies that the pedagogical practices advocated for EFL readers in general should be applied by Chinese teachers, who at present tend to encourage accuracy and discourage guessing in reading.

Such practices that might be developed in the Chinese EFL classroom include helping students learn to:

1. develop abilities to infer meanings of unknown words from context, instead of resorting to dictionaries;
2. develop a willingness to make mistakes and a tolerance for inexactness, which has been deemphasized in the tradition of Chinese education;
3. choose strategies that best fit their reading situations;

4. increase their efficiency in the meaningful use of a dictionary.

Overall, this study has indicated that Chinese students can use semantic, and syntactic as well as graphic cues in English to hypothesize about the message of the writer. The future emphasis of the English reading class for Chinese students should be put on building up the learners' confidence in their skills in guessing meanings and speeding up the transition from conscious to unconscious use of grammatical clues to meaning.

Suggestions for Future Research

As not many studies have dealt with the reading processes and strategies of Chinese ESL learners, there is still room for more research in this area.

That this study failed to explain the performance of some idiosyncratic subjects (subjects #1, #2 and #18) suggests that future researchers might want to include subjects' personalities and learning attitudes in the interpretation of results. (For example, subject #2 was reluctant to spend more time on this task because she thought she already had enough reading assignments for her major field.)

Another suggestion for researchers interested in replicating this study is that although using subjects' native language in the interview session was natural and relaxed for this group of Chinese, the researcher needs to keep probing to elicit strategies. A well-

structured questionnaire after the guessing task would help achieve this goal.

The present study also suggests other questions which might interest future researchers:

1. Would the findings of this study be supported using a larger sample of students?
2. Would a larger number of strategies within each category reveal a difference in performance?
3. Would students from another Asian language background, such as Japanese, show similar results?

APPENDIX I

WHEN A YOUNG BIRD LEAVES THE NEST

Like people, young birds go through a different transition when it's time to strike out on their own. The fledgling must be glurked¹ while learning how to feed itself. It must be protected while learning how to fly. And in some species, fledglings must even be mexed² by their parents during their first autumn migration.

In most cases, a young bird tidly³ returns once it leaves the nest. But there are some padons⁴. The youth of certain kinds of woodpeckers, wrens and swallows fly back to the nest to sleep. Similarly, some eagles and large-hawks refirk⁵ home for weeks to feed until they learn how to catch their own pum⁶.

When it comes to snerdling⁷, however, few fledglings need any lessons. Fifty years ago, a German scientist named J. Grohmann raised some young pigeons in narrow tubes that prevented them from moving their lurds⁸. At the same time he allowed another group of pigeons of the same age to be raised by their medlons⁹ in a nest in the normal way, exercising their wings vigorously. When the two groups of pigeons were mature enough, Grohmann took them out into the open and possed¹⁰ them into the air. Surprisingly, the pigeons raised in the urmlaws¹¹ flew away as strongly as the ones that had been unrestrained in the nest. Grohmann thus proved that the instinctive grumpity¹² to fly develops in young birds with or without the opportunity to practice.

APPENDIX II

THE SAMPLE SUMMARY

Young birds go through a transition before they reach their maturity: they need to be fed before they know how to feed themselves; they must be protected while learning how to fly and they even need to be accompanied during their first autumn migration. But a German scientist's study proves that flying and the ability to fly is instinctive and needs no practice.

APPENDIX III

DIRECTIONS TO RATERS

Directions:

You will be reading twenty-one summaries translated from oral interviews of ESL students. Please read the original essay and the sample summary first, and then sort the twenty-one summaries into three categories with each having no more than eight and no fewer than six summaries. Put the pile that represents the best of the summaries into envelope #1 and the worst ones into envelope #3; the pile representing those that lie somewhere in between will be put into envelope #2.

As these summaries were given orally in the subjects' native language and then translated into English by a researcher, please try to pay as little attention to the language and structure as you possibly can. Instead, try to focus on the ideas expressed and how closely they match the original essay and the sample summary.

APPENDIX IV

TAXONOMY

<u>Word#</u>	<u>Score</u>	<u>Guesses made by subjects</u>
(1)	3-	fed.
	2-	helped, looked after.
	1-	protected.
	0-	chirped, grow up, fly and search, trained, independent.
(2)	3-	accompanied.
	2-	guided, trained, carried.
	1-	protected.
	0-	influenced, aided, taught.
(3)	3-	rarely.
	2-	seldom.
	1-	
	0-	suddenly, regularly, frequently, tidily, timidly, circulatory, difficultly, only, surely.
(4)	3-	exceptions.
	2-	
	1-	
	0-	not tidly, something birds never do, pattern.
(5)	3-	return.
	2-	come.
	1-	fly back.

- 0- live, leave.
- (6) 3- prey.
- 2- bug, food.
- 1-
- 0- nest, home.
- (7) 3- flying.
- 2- the ability to fly.
- 1-
- 0- growing up, practice, moving south, leaving home.
- (8) 3- wings.
- 2-
- 1-
- 0- part of a tube, prey, cage, narrow tube, a group
of birds.
- (9) 3- parents.
- 2- mothers.
- 1- mother birds.
- 0- method.
- (10) 3- tossed.
- 2- cast, released, threw.
- 1- throw.
- 0- exposed, pushed, pulled out.
- (11) 3- tubes.
- 2- a restricted place.
- 1-

- 0- cage, lab, in the air.
- (12) 3- ability.
- 2- potential.
- 1- nature, feature, character.
- 0- the way to grow up.

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