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READING STRATEGIES USED BY ADVANCED KOREAN AND CHINESE ESL GRADUATE STUDENTS: A CASE STUDY

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Abstract

Research in second language acquisition and reading in particular indicate that certain literacy skills transfer across languages. This study examines the reading strategies used by advanced Korean and Chinese ESL learners. Particular attention is devoted to how word recognition and processing skills developed in learners' native languages (L1) may influence the type of strategies used in determining meanings of unfamiliar words when reading in English (L2). Given that Korean is an alphabetic language and Chinese is an ideographic language, we hypothesize that Korean ESL learners would generally use phonological processing strategies, while Chinese ESL learners would generally use visual-orthographic processing strategies. Six graduate-level students, three from each language background, were asked to read two different texts. Through oral recall, structured interviews, and questionnaire of reading strategies, we examine the kinds of strategies used and the level of comprehension achieved by the participants. Findings confirm the hypothesis that Korean ESL learners tend to rely on phonological, while Chinese ESL learners tend to rely on visual-orthographic strategies when reading English texts. The learners' English language proficiency, however, may be a more important factor contributing to the level of L2 reading comprehension achieved rather than the strategies used.

Introduction

This study examines the reading strategies used by advanced Korean and Chinese ESL learners when reading academic texts. We focus on the kinds of strategies used by each group of learners and examine the characteristics of the strategies preferred by each group of students. We explore the possibility that certain strategy preferences are effects of the transfer of processing skills developed in L1 and that the differences in processing skills may lead to different levels of comprehension. Although scholars in the field have studied the effects of transfer on decoding skills with participants of different L1 backgrounds, relatively little research has examined the influence of transfer on reading comprehension, particularly the comparative effects of different L1s on comprehension. This study is an attempt to address this gap in the field.

Background Literature

Studies in both L1 and L2 reading generally indicate a binary categorization of “top-down” strategies and “bottom-up” strategies. Top-down strategies involve identifying main ideas, seeing how the new information fits with the overall text, using background knowledge, making predictions, or skimming (Barnett, 1988; Carrell, 1989, as cited in Salataci & Akyel, 2002). Bottom-up strategies include focusing on identifying the meaning and grammatical category of individual words, sentence structure, and details of the text (Salataci & Akyel, 2002). Such binary division, however, is an overly simplistic effort to distinguish between strategies used by successful and less successful readers. More recent studies, therefore, suggest that successful readers in fact use a combination of both the top-down and bottom-up strategies. Saricoban (2002), for example, observed a group of successful and less successful readers in an EFL context throughout the pre-reading, reading, and post-reading stages. He notes that successful readers use a combination of global and local strategies and suggests that teachers instruct students to begin by trying to construct a global understanding of a given reading material. Teachers are then advised to proceed to help students figure out the meaning of paragraphs, sentences, and words because the larger units will provide contexts for understanding the smaller units.

The claim that high performing readers tend to use more global strategies and the recognition that successful reading comprehension requires using a combination of top-down and bottom-up strategies corroborate with the schema theorists’ view of reading comprehension. Schema has also been described in the reading research field as background, or prior knowledge. Numerous studies and reviews have been published on schema theory, and in a nutshell, the theory claims that comprehension can be achieved relatively more easily if the reader has an appropriate schema or frame for the new information being presented in a given text than if the reader lacks an appropriate schema in which to fit the new information (Anderson, 2004; Bransford, 2004). Wilson and Anderson (1986) provide a review of a number of studies, several of which compare expert and novice readers; these studies indicated that those who have substantial amount of knowledge in a domain can acquire new information about the topic more easily, since new information is simply mapped onto existing structure. Other studies suggest that using background knowledge is also a local reading strategy. Jimenez, Garcia, and Pearson (1996), for example, investigated the reading strategies used by bilingual Latina/o students who were successful English readers. The study reported that on the global level, the successful Latina/o ESL readers invoked prior knowledge about a topic, made predictions, asked questions, confirmed or disconfirmed one’s beliefs, or used text structure to organize ideas. On the local level, the readers figured out unfamiliar vocabulary based on the linguistic context, by looking for cognates, and by using their knowledge of other similar words in English. The readers also broke down the structure of sentences and tried to identify phrases or chunks that were familiar and comprehensible.

A brief review of the reading research in L1 and L2 suggests that there are certain strategies that characterize successful reading comprehension and certain ones that characterize less successful comprehension. We also know that in order for readers to achieve comprehension, they must have automatic decoding skills. However, the greater emphasis on top-down or global strategies in reading, along with the focus on background knowledge, seems to have led researchers to overlook the importance of word-recognition skills, particularly the transfer of word-recognition and decoding skills from L1 to L2. Yet research exists indicating the transfer of L1 decoding skills when reading L2 texts. Koda (1988, 1989), for example, reports studies on four different L1 orthographic backgrounds and claims that second language readers of English use the cognitive strategies developed in their L1 when reading English as an L2. She notes also that orthographic structure has a significant impact

on the reading processes. More recently, Koda (1998) compared Korean and Chinese ESL learners to examine the relationship between L2 text comprehension and decoding skills. She found that for Korean ESL learners, there were strong relationships between their reading comprehension, decoding, and phonemic awareness. For Chinese ESL learners, however, no such relationships were observed, suggesting the potential influence of different L1 experiences. Since Korean is an alphabetic language, it demands the same decoding skills as in English (matching grapheme to phoneme), so Korean ESL readers can use the same kind of phonological processing skills when learning to read English. Chinese ESL learners, however, are faced with the task of learning a new processing skill when reading in English, as their L1 is primarily an ideographic language, requiring the reader to match the form of the character with the meaning.

Koda (2000) further investigated Korean and Chinese ESL learners in a study designed to examine their morphological awareness. She observed that Chinese learners were noticeably slower than their Korean counterparts in performing what she refers to as intraword structural analysis tasks, but that they were much more efficient in integrating morphological information with the contextual information in processing sentences. Wang, Koda, and Perfetti (2003) also examined Korean and Chinese ESL readers by having them perform semantic category judgment tasks. Their findings converged with previous results and suggested that Korean readers rely more on phonological information, while Chinese readers rely more on orthographic information in identifying English words. Furthermore, Akamatsu (2003) conducted a study comparing Chinese and Japanese (nonalphabetic L1 group) with Persian (alphabetic L1 group). Her findings also confirm the L1 effects on the L2 reading processes, as the second language readers with a nonalphabetic L1 background were less efficient in processing English words than the readers with an alphabetic L1 background.

Present Study

While the studies discussed above suggest the effects of differential L1s in processing L2 words, they do not extend their analyses to examine whether the different processing skills developed in L1 affect the level of comprehension achieved in L2. If word recognition or decoding tasks are influenced by the nature of the ESL learners' L1s (alphabetic or non-alphabetic), it seems likely that the strategies or skills that ESL learners use in achieving comprehension when reading L2 texts will also be influenced by the nature of their L1s. In this study, therefore, we decided to compare the strategies Korean and Chinese ESL learners use in reading academic texts in English. Our research questions were:

1. What strategies do advanced Korean and Chinese ESL learners use to achieve comprehension when reading academic texts?
2. Are there strategies that are preferred by either the Korean or the Chinese readers?
3. In particular, upon encountering unfamiliar words, do Korean readers tend to use phonological processing strategies to overcome comprehension gaps while Chinese readers tend to use visual-orthographic processing strategies?

Our hypothesis was that ESL readers with different L1 backgrounds will be influenced by the transfer of different L1 processing skills, and therefore a tendency to prefer certain strategies over others. Consequently, it was hypothesized that they may achieve a different level of comprehension, or the same level of comprehension at a different rate.

Method

The methods that were employed to elicit reading strategies used by Korean and Chinese ESL learners in our study include 1) oral recall of the text immediately after having read the text and 2) semi-structured interview based on the text. In addition, each participant

completed a questionnaire of reading strategies at the end of the interview so that they may report strategies that they generally or sometimes use, but were not discussed in the interview.

Participants

The participants were graduate students enrolled in a TESOL program at a selective U.S. university. We initially requested participation from eight graduate students (4 Koreans and 4 Chinese) and gathered preliminary information about them using a questionnaire that was distributed via e-mail. The participants completed the questionnaires and returned them electronically, and the information reported was used to form a group of students with relatively similar level of English proficiency as determined by their reported TOEFL scores. Two of our Chinese respondents were more advanced than the other respondents. Due to the difficulty, however, of recruiting another Chinese participant whose profile matched those of the other students in our group, one of them was included as a participant in our study, and the other helped us in piloting our research procedure and instruments. One of the four Korean participants withdrew in the middle, and thus, we report here our study based on the participation of six individuals, 3 Korean and 3 Chinese female graduate students. In addition, one native English-speaking graduate student participated in the study and helped establish the baseline. Table 1 summarizes the background characteristics of our participants.

Table 1. Participant background information

Group Background	Korean Participants	Chinese Participants
Current Level of Study	3 Master's level students	2 Master's level students & 1 Doctoral student
Program Enrolled	TESOL	TESOL
Length of Stay in the U.S.	3 - 27 months	12 - 71 months
Number of Formal English Instruction Received	6 to 10 years	9 to 10 years
TOEFL CBT Score	250-257	250-290
Self-rating of English grammar proficiency	2 participants: need some improvement 1 participant: need a lot of improvement	2 participants: proficient 1 participant: advanced
Self-rating of English vocabulary knowledge	2 participants: although there are a few words they do not know, can usually grasp the meaning from the context; 1 participant: has difficulty with a few technical words specific to particular fields of study	All 3 participants: although there are a few words they do not know, can usually grasp the meaning from the context

Instruments

Using the information we gathered through the questionnaire mentioned above, we determined the texts to use in our study. Since it was believed that background knowledge or familiarity with a subject area may influence the type of strategies used by our participants, we included in our study two tasks: one with a familiar text and the other with an unfamiliar text. As all of our participants were enrolled in a TESOL program, the familiar passage entitled *The Nature of Interlanguage*, was selected from a textbook (*Teaching language in*

context, 3rd ed.) used in one of the core courses of the program. In selecting the unfamiliar passage, entitled *Hyperarousal, Triggering, and State-Dependent Learning, (Trauma: Explorations in memory)* we took into consideration the participants' graduate coursework as well as their undergraduate majors and searched for a text outside of their fields of concentration, but one that would be comprehensible to students studying humanities. The unfamiliar passage we decided to use was selected from a textbook used in a graduate-level psychology course offered at the same university attended by the participants.

Both passages came from the beginning of a section, and the word counts in the familiar and unfamiliar passage are 471 and 495 words, respectively. In order to ensure that both passages were approximately of the same level of difficulty, we applied to each text the Gunning-Fog Index, an algorithm that produces a rough estimate of the number of years of schooling it would take one to understand the content of the text (<http://juicystudio.com/services/readability.php>). The results indicated that both passages were appropriate for post-graduate level readers.

To provide our participants with the opportunity to report their strategy use that they may not have had the chance to discuss during the study, we constructed a questionnaire based on an inventory of reading strategies. The questionnaire, reproduced in Appendix B, was adapted from studies conducted by Brantmeier (2002), Saricoban (2002), and Singhal (2001), in which L2 reading strategies were examined.

Procedure

Each participant met with us individually at a scheduled time, and the research took place in a quiet classroom or conference room on campus. The participants were told that we are interested in how advanced ESL learners, whose native language is Korean or Chinese, achieve comprehension when reading academic texts. The exact focus of our study was hence made deliberately ambiguous so that our participants would not be concentrating on their use of particular reading strategies. They were requested to read two passages, one familiar and the other unfamiliar, and after having read each passage, they were asked to return the text to us and then tell us everything they can remember about the passage in either English or their L1. The participants knew that they would be asked to perform this task before reading, and they were given as much time as they needed to read and understand the text in preparation for the recall. There was no time limit placed on reading the texts because we were interested in examining the reading strategies they employ when reading academic texts for class. They had as available resources a bilingual dictionary, a monolingual dictionary, pens, pencils, highlighters, and blank scratch paper. We were unable to provide them with a computer with Internet connection, but they were asked to note on the texts or mention to us in the interview if there were any parts of the passages that they would have looked up using on-line references. Additionally, they were requested to use any resources (e.g., cell phones, electronic dictionaries, etc.) which they would normally use when reading for academic purposes.

When the participants were ready to perform the recall, they were free to recall the elements of the text in any order they wished. A digital voice recorder was used to record the recall and the semi-structured interview that took place subsequently. Written notes were also kept during the recalls and interviews. In the interview, the participants were requested to look at the text that they had read and talk to us about how they managed to achieve comprehension, especially of the parts which they found challenging. We started the conversations by asking them to rate the difficulty level of the text on a scale of 1 to 10, in comparison to the reading assignments they receive in their classes, 1 being the least difficult, and 10 being the most difficult. They were then asked to identify the elements of the text which made the reading difficult, and their responses guided our subsequent questions. When

unfamiliar vocabulary was mentioned as the difficult component of the text, we began by discussing ways in which the participants made sense of the words and eventually overcame the difficulty. When sentence structure or text structure was mentioned, we started with a discussion on how the participants handled the gaps in comprehension created by such difficulties. We also asked the participants to tell us about the notes that they made in the margins vs. on scratch paper and the different forms of marking the text (e.g., underlining vs. circling, asterisks vs. arrows, highlighting, brackets, etc.). Other questions were of the form, “What were you thinking when you read (e.g., the title, an unfamiliar acronym, a particular word)?” In addition, we inquired about how they would have read the same text if it were written in their L1 and whether they would use any of the strategies they use in reading L2 academic texts when reading academic texts in L1. The recall and the interview for each participant took on average, 60 minutes, and a total of approximately 6.6 hours of recorded data was collected. After the interview, each participant was requested to complete a questionnaire in which they reported the strategies they use or do not use while reading academic texts.

Results

In order to better analyze and compare the reading strategies used by these two groups of readers, we first present, in Table 2, our observation of Korean and Chinese participants’ reading behaviors, the average time they spent on each of the texts, their difficulty rating of the two passages, average number of idea units recalled from each passage, as well as some salient points they made in the post-reading interview.

Table 2. Findings from observation, recall, and post-reading interview

Group Findings	Korean Participants	Chinese Participants
Average time spent on the two passages	13 minutes: <i>Interlanguage</i> text 23 minutes: <i>Hyperarousal</i> text	10 minutes: <i>Interlanguage</i> text 16 minutes: <i>Hyperarousal</i> text
Average difficulty rating of texts	4.3: <i>Interlanguage</i> text 4.2: <i>Hyperarousal</i> text	6.0: <i>Interlanguage</i> text 6.8: <i>Hyperarousal</i> text
Average number of idea units recalled from the texts*	7.3: <i>Interlanguage</i> text 7.0: <i>Hyperarousal</i> text	8.7: <i>Interlanguage</i> text 7.3: <i>Hyperarousal</i> text
Observation of salient reading behavior	1) Read passages twice 2) Underline and mark certain parts of the texts 3) Read out loud certain parts of texts 4) Consult dictionaries upon encountering new words 5) Translate certain words into Korean; notate in margins 6) Break down new words into smaller components by placing slashes through them 7) Constant rereading as a way to achieve comprehension	1) Read passages twice 2) Underline and mark certain words and phrases 3) Try to summarize major points in margins 4) Feel reluctant to use dictionaries while reading 5) Silent reading of texts
Post-reading interview	1) 1 st reading of texts: to get the main idea 2) 2 nd reading: pay attention to	1) 1 st reading of texts: to get the main ideas 2) 2 nd reading: pay attention to

	<p>details</p> <ol style="list-style-type: none"> 3) Underline words or phrases important for accurate interpretation of the texts 4) Mark parts of text that relate to their personal experience or background knowledge 5) Read aloud as a way to achieve comprehension of difficult parts of the texts 6) Rereading the most common strategy used to understand texts 7) Automatically translate English text into Korean to help remember and understand the content 8) Feel more secure in looking up every new word in dictionary 9) Prefer analyzing parts of new words when having to guess its meaning rather than focusing on its spelling 	<p>details</p> <ol style="list-style-type: none"> 3) Underline key terms and make marginal notes to remember content of texts 4) Prefer guessing the meaning of new words from context rather than consulting a dictionary 5) Know the spelling or general shape of words but not necessarily the pronunciation of the words 6) Focus on meaning instead of pronunciation of the new words when looking them up in dictionary 7) Relate the shape of new words to that of known, familiar words when trying to make sense of their meaning, rather than breaking them down into smaller components
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* A tabulation of the main ideas or major details and minor details recalled by our participants as well as by a native speaker can be found in Appendix A.

All of our participants also reported using many of the strategies included in the reading strategies questionnaire when they read academic English texts. Table 3 summarizes some key findings from the questionnaire data.

Table 3. Summary of Reading Strategies Questionnaire Responses

Strategies reported to be used by all of the participants	Strategies reported to be used by none of the participants
<ul style="list-style-type: none"> • try to see how the information is organized and supported in the text • try to determine what reasons or evidence the writer gives for this claim • have good reasons for believing some things and not believing others • assimilate the new material with previously read materials • look for connectors that convey ideas and the writer's position on the matter • When I encounter difficult parts of a text, I slow down my speed of reading • try to pay closer attention 	<ul style="list-style-type: none"> • Question why the author uses certain language (e.g., figurative, verbs, etc.) • Put the reading aside and do nothing
Strategies used by 2 or 3 Korean participants and 0 or 1 of Chinese participants	Strategies used by 2 or 3 Chinese participants and 0 or 1 of Korean participants

<ul style="list-style-type: none"> • assimilate the new material with personal experiences • translate key words and phrases into my native language • analyze parts of words • When I encounter difficult parts of a text, I evaluate my ability to handle other text of the same kind 	<ul style="list-style-type: none"> • take notes • comment on the reading through journal entries, conversations with colleagues • To remember the content of the text, I create mental images • try to lower my anxiety level • ask the teacher for clarification, correction, and / or feedback
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Summary & Analyses of Findings

By examining our findings and comparing the similarities and differences between Korean and Chinese participants in terms of their reading behaviors and preferences of reading strategy use, we can state tentative answers to our research questions. Before we discuss the strategy uses of Korean and Chinese participants, one easily noticeable difference between the two groups is that our Korean participants, on average, spent more time reading each of the texts than their Chinese counterparts. The three Korean students spent approximately 13 minutes on the *Interlanguage* text and 23 minutes on the *Hyperarousal* text, while the three Chinese students only spent an average of 10 minutes on the first text and 16 minutes on the second. The numbers of idea units recalled by these two groups of readers, however, are approximately equal with the exception of the Chinese Ph.D. student who performed markedly better on the recall of both texts. Also noteworthy is that all our Korean participants chose to perform the recall and the post-reading interview in their native language, while all the Chinese participants preferred using English.

Research question 1: In terms of the reading strategies used by the two groups of participants, our Korean readers revealed to us during the interview that they tended to translate English texts into Korean in an effort to help them remember and comprehend the texts. One Korean participant, for instance, reported that “[she] naturally start[s] to translate when [she] read[s] in English” so she can better understand L2 texts. Interestingly, however, all our Chinese participants reported that they intentionally avoided translating in order to help them better comprehend and recall the content of the texts. They claimed that it would be harder for them to do the recall or to talk about the English texts in their native language because of the difficulty of finding the Chinese equivalents for many of the terms and words in the L2 texts. It seems, therefore, Korean participants were more reliant on their native language than their Chinese counterparts when reading and comprehending L2 texts.

Additionally, a scrutiny of the reading strategies questionnaire indicates some similarities and differences between the two groups of readers in terms of their reading strategy use. The strategies reported to be used by all of the participants seem to be general academic skills that students learn as they progress through their academic careers. Some of these skills, such as slowing down or paying closer attention, can be considered as natural reactions when trying to understand challenging texts. Others, such as examining the organization of the text or looking for evidence provided in support of a claim are skills that become almost second nature as students continue their studies at higher levels and read greater amounts of academic texts. Thus, it is not surprising that all of our participants, being graduate students at a selective university, reported using these “strategies” (or rather, skills) when reading academic texts. In addition, one of the strategies that none of our participants reported using (putting the reading aside and doing nothing) reflects their skills and knowledge about reading academic texts. They must have learned that they rarely can enhance their comprehension of a text by simply doing nothing. They have to make efforts

and perhaps take multiple approaches to grasp the meaning of a text, particularly if the text is challenging.

Research question 2: With respect to preferences for certain reading strategies, there was a notable difference between the two groups' response to difficult parts of texts and how they overcame such difficulties. We observed that when faced with unknown words, all our Korean participants consulted a dictionary, while the Chinese participants seemed reluctant to turn to dictionaries. Instead, they first tried to figure out the meanings of the words from context, or skip these words without having determined the exact meaning. Further, the strategies reported to be used predominantly by Korean participants, namely translating into L1 and evaluating one's ability to handle other similar texts, seem to reflect their relatively lower level of confidence in comprehending academic reading material in English. The strategies that are reported to be used predominantly by the Chinese participants, such as note-taking, talking with colleagues, lowering one's anxiety level, and seeking the teacher's feedback suggest their relatively higher level of comfort in reading academic texts in English. These strategies include activities that will lead them beyond mere identification of literal meaning to a higher-level comprehension of texts.

In addition, Korean participants' use of personal experiences to understand an academic text also reflects their lower level of reading comprehension ability in comparison to our Chinese participants. Assimilating the new material with personal experiences may be a strategy that can enhance comprehension to a greater extent when reading fiction, but one that is not very effective when reading academic texts. Personal experiences are different from topic knowledge or familiarity with a particular field. While personal experiences can serve as schemata for understanding specific events, attempting to understand the contents of an academic text through one's life experiences could lead to imposing one's idiosyncratic beliefs or world knowledge onto the text, which may or may not match the message conveyed in the text.

Research question 3: With respect to our participants' strategy use in overcoming comprehension gaps due to insufficient vocabulary knowledge, the observation of reading behaviors revealed that our Korean participants tried to repeatedly sound out words and sentences that they found hard to comprehend. The Chinese participants, however, all seemed to favor silent reading when facing challenging parts of the texts. In an interview, one of our Korean participants told us that repeating words and phrases that she found difficult helps her better comprehend texts, saying, "When I don't get it, I just read it over and over. ... I feel like I can understand it better when I keep reading it over and over again." Similarly, another Korean participant reported that her reading aloud was her translating texts into Korean since "in Korean, [her] memory is better, but in English, [she] cannot retain information in [her] memory for as long." Conversely, our Chinese participants all indicated that they normally would not sound out words and sentences to help them remember or understand the texts.

In particular, when guessing the meaning of new words from the context, our Korean participants tended to break down the new words into smaller components to make sense of them. Two of the Korean readers placed slashes through new words (e.g., hyper/amnesias, neuro/transmitters) in attempts to guess the meanings. All three Korean readers reported in the interview that analyzing parts of the word was indeed a common strategy they used and would normally use when trying to make sense of new words. Contrastingly, our Chinese participants did not and claimed that they normally would not break down new words for comprehension purposes. Instead, they would look at the overall shape and spelling of words and try to relate them to some other words that have similar shapes and spellings in an effort to make sense of the target words. All three of our Chinese participants, for example, revealed to us that in order to make sense of the word "potentiation" their first reaction was to relate it to "potential," a word they knew. They would not, however, think of breaking it

down into smaller components such as “potent” or “-ion” to make sense of it. One Chinese participant reported during the interview that she automatically predicted the word to be “potential” when she saw part of the word, “poten-.” What made her realize that it was not “potential” was that she felt “[the word] is too long” to be “potential.” Apparently, she was paying attention to the overall shape of the word rather than the internal structure of the word when reading. Based on the aforementioned information, therefore, we concluded that Korean readers tended to use phonological processing strategies, while Chinese readers tended to use visual-orthographic processing strategies to overcome the comprehension gaps caused by inadequate knowledge of vocabulary.

Discussion

The differences between Korean and Chinese participants’ reading behaviors and reported strategy use support the literature on reading strategies characteristic of relatively less proficient vs. more proficient readers. The Korean participants demonstrated a reliance on dictionaries, habit of translation, and use of personal background knowledge in attempts to comprehend academic texts, all of which have been identified as characteristics of less skilled readers. Contrastingly, the Chinese participants preferred using contextual clues, discussion with colleagues, and help of peers or teachers as ways of achieving comprehension of academic texts, all of which have been recognized as habits of more skilled readers. Partly because of our participants’ differing language proficiency and reading levels, and partly due to the lack of a thorough screening method for determining our participants’ background knowledge, the distinction between the familiar and unfamiliar text became blurred. Nonetheless, it was observed that our participants are similar in their use of some general reading strategies, while differing in their tendency to use strategies in determining the meaning of unfamiliar words.

Our findings confirm the existing research on the transfer of decoding skills in L1 in the comprehension of L2 texts. We note the possible influence of the alphabetic L1 in the Korean participants’ responses that they analyze unfamiliar words into smaller parts that are recognizable or easier to manipulate. Korean is written in a non-Roman alphabet writing system called *Hangul*, in which the basic unit of representation is the phoneme, but one or more consonants are combined with a vowel to form a syllable, and each syllable is written in a square-shaped block (Taylor, 1980, as cited in Koda, 1998). The blocks are more easily distinguished than the smaller phonemic symbols, so it has been assumed that Korean readers develop “compound phonemic awareness” through everyday practice of forming syllable-blocks with phonemic symbols when reading and spelling in *Hangul* (Koda, 1998, p. 200). Thus, our Korean participants’ reported tendency to analyze words into smaller parts may be a result of the transfer of sensitivity to word-internal structures and the ability to map phonemes onto graphemes.

Moreover, the Chinese readers’ reported use of creating mental images suggests the influence of their logographic L1. Unlike Korean or English, Chinese uses characters to represent meaning. Each character represents a syllable, and more than 80% of Chinese characters are compound forms, made up of a radical and a phonetic (Huang & Hanley, 1994). The radical provides clues to the meaning, while the phonetic component provides clues as to how the character should be pronounced. Chinese can therefore be more accurately described as morpho-syllabic (Jackson et al., 1999), and it has been claimed that Chinese speakers develop holistic visual-processing strategies as they read in the logographic system (Haynes & Carr, 1990). These visual-processing skills appear to be transferred when native readers of Chinese learn to read in English, and our Chinese participants’ reported use of creating visual images to remember the content of academic texts may also be an effect of the transfer of this visual-processing skill.

Implications for Teaching

Considering that Korean and English both have an alphabetic writing system, and assuming that Korean readers transfer the phonological processing skills from L1, it seems logical to expect that the Korean participants would process English texts with relatively greater ease and hence achieve a higher level of comprehension than the Chinese participants. The Chinese readers, who presumably transfer the visual processing skills from their L1, may be expected to achieve a lower level of comprehension or the same level of comprehension at a slower rate than the Korean readers. Our study, however, leads us to believe that both kinds of processing skills lead to more or less the same level of comprehension, and that the level of comprehension achieved may depend more on the level of English proficiency than on the transfer of skills from L1. Yet in resolving comprehension gaps created by unknown words, the fact that our Korean participants tend to use phonological processing strategies while our Chinese participants tend to use visual-orthographic processing strategies seems noteworthy for ESL teachers.

Teachers working with Korean ESL learners should know that the seemingly vast difference between Korean and English is merely an outward appearance, and that learners who have acquired literacy skills in Korean are already familiar with the same phonological processing skills that underlie an alphabetic language such as English. Moreover, teachers can take advantage of Korean students' tendency to use phonological characteristics of text (e.g., sounding out phrases and words to resolve comprehension difficulties). They can read aloud difficult portions of text, paying attention to prosodic features so that students can better grasp how sentences or arguments are interrelated. Teachers working with Chinese ESL learners may capitalize on their tendency to rely on visual or orthographic features of text and first teach them to look for key vocabulary such as transition words (e.g., nevertheless, moreover, consequently, etc.) which will then enable them to build a map or an outline of the text being read. In addition, it may be necessary for teachers of Chinese ESL learners to explicitly teach the processing skills that native English readers are trained to use. The teachers should have some familiarity with Chinese as well as some knowledge of linguistics to explain that the English mapping of meaning onto clusters of letters within words corresponds to the Chinese mapping of meaning onto characters. Teachers can then illustrate the word-internal structures of English by separating the morphemes of a word while explaining that English words are composed of strings of morphemes, each of which carries a meaning. By providing students with a set of commonly used morphemes and training them to recognize their meaning within words, teachers can help students to increase their vocabulary, and hence, their ability to comprehend texts.

Conclusion & Avenues for Further Research

The findings from this study lend support to the existing research that certain literacy skills transfer across languages. We conclude that ESL learners tend to use the processing strategies developed in their L1 when reading L2 texts, particularly in trying to determine meanings of unfamiliar words.

Due to the time constraints and limited access to resources, however, our study has a number of limitations. First, only six participants were involved in the study, and all of them were our classmates and acquaintances at the Steinhardt School of Education. With such a small number of participants and the use of sampling by convenience, we cannot make generalizations about the patterns of reading strategy use among a general population of Korean and Chinese ESL learners. Moreover, all six of our participants are female; research suggests that the use of language learning and reading strategies differ between males and females (Goh & Foong, 1997). Thus, our single-sex sample places another constraint on the

degree of generalizability of our analyses and conclusions about reading strategies employed by the two groups of readers.

Furthermore, although we tried to recruit participants who have achieved the same level of English proficiency by the time of our study, one Chinese participant is notably more advanced than the other five students. She was pursuing a Ph.D. degree, while the others were pursuing their Master's degrees. This fact poses a challenge on our comparisons of the strategy use between the two groups. The different levels of comprehension achieved by each participant can be attributed to either the different use of reading strategies or the different level of language proficiency, or possibly both. Therefore, we refrain from claiming, for example, that Chinese ESL learners tend to use more effective reading strategies, even though our data indicates that they generally achieved better comprehension of the texts.

As for measuring the level of comprehension achieved by each participant, we recognize that the method of oral recall used in our study has its own set of limitations. The recall is a legitimate way of assessing reading comprehension, and the number of idea units recalled can serve, to an extent, as an indicator of the level of reading comprehension achieved by our participants (Moss, 2004). Nonetheless, by asking our participants to perform the recall without access to the texts, we are not assessing comprehension only, but also their ability to memorize the content of the texts. We attempted to account for this limitation of the recall method by supplementing it with the semi-structured interview in which we asked questions designed to assess the readers' comprehension of texts. However, since these comprehension questions were not tested for validity or reliability, we still cannot claim that our assessments of the participants' reading comprehension are accurate. In our future studies, we plan to formulate comprehension questions of varying difficulty and test them for validation prior to conducting the research.

Since our study suggests that both Korean and Chinese readers achieved similar levels of comprehension using different processing skills, future studies need to determine the effectiveness of visual-orthographic processing strategies for reading English. The need for these studies is particularly strong considering that converging research indicates that both phonological awareness and orthographic processing are principal factors determining one's success in reading English (Wang, Koda, & Perfetti, 2004). In addition, further research should examine the length of time learning English or the degree of English proficiency beyond which the skills developed in L1 no longer influence reading in English. It should also determine whether there is a level of metacognitive knowledge that needs to be developed before ESL learners can control the influence of L1 in their choice of reading strategies. Is there a level of L2 proficiency which should be attained in order for ELLs to 1) benefit from a positive transfer of strategies or skills from their L1 and 2) be able to block the negative transfer of strategies from L1 when performing L2 tasks? Future investigations addressing such questions promise to further discussions about the threshold in the language interdependence hypothesis (Cummins, 1979) and the role of metacognition in L2 reading, both of which are fundamental issues in second language acquisition. The development of metacognitive knowledge particularly important for ESL students pursuing higher education in the U.S. because not only are strategic awareness and monitoring of reading processes essential elements of skilled reading (Mokhtari & Reichard, 2002), but also students in higher education are expected to read large amounts of academic materials and learn independently. Therefore, the more they are aware of their cognitive processes in relation to the reading and the self-control mechanisms they can use to monitor and improve their understanding of the text, the more successful their academic experiences will be.

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Appendix A
Recall of idea units from *Nature of Interlanguage*
(Italics indicate misinterpretations of the text)

Participant	Main Ideas & Major Details	Minor Details
Korean 1	1) "The text is about the nature of interlanguage." 2 & 3) "When adults are learning a second language they transfer from L1, but not everyone transfers to the same extent, so there is the term continuum." 4) "Professor Selinker said that the system between the target language and native language is called interlanguage." 5) "When someone uses imperfect language over a long period of time and can't change, that is called fossilization."	1) "Corder said something about changing systems." 2) Corder and Selinker both agree, but Corder asserts something slightly different, something about variety."
Korean 2	1) "It talked about interlanguage and change of language." 2) "Selinker said that there is a process of learning and that there are rules in the interlanguage." 3) "When going from <i>target language to native language</i> there are interferences and if they become fixed, that's called fossilization." 4) Because adults already know their L1's, they have a greater understanding and knowledge as they learn a L2."	1) "There were two other scholars, Nem..something and Cord... who agreed more or less with Selinker." 2) Professor Selinker said something about rules in the interlanguage." 3) It's like when children learn their native languages."
Korean 3	1) "The text is about the process of someone who knows one language learning a second language." 2) There were four scholars who all agreed with the process, and with each scholar, there were more complex arguments introduced." 3) "Interlanguage is the language in between the target language and the native language." 4 & 5) "Children, when acquiring their native languages, do not have prior knowledge of language, but adults already do have knowledge of a language, so when adults learn a L2, a restructuring takes place."	1) "The process is called different things, like recreation or restructuring." 2) "There was something about approximative progression." 3) "I remember the words fossilization and incongruence."
Chinese 1	1) "This reading is basically about the interlanguage system a second language learner develops." 2) "At the	1) "Authors believe the interlanguage system is...coherent, and that it's developing along the way." 2) "They

	beginning, there seemed to be evidence that there're a lot of transfer from their native language." 3) "But not all learners do that. So there's individual variability." 4) "Selinker mentioned the various ways interlanguage system can develop through." 5) "A second researcher they mentioned is Corder. He mentioned that the interlanguage system is a continuum—they call it something like 'progressive continuum' or 'restructuring continuum'." 6) "Their point is a second language learner develops an interlanguage system that is neither their native language nor their target language." 7&8) "[Selinker] believes that there is 'fossilization' in between; in other words, a second language learner can never reach the real target language level. So it's always somewhere in between."	mentioned a lot of researchers' names." 3) "They also mentioned about Nemser—cannot recall what he talked about now."
Chinese 2	1) "It talks about language developing process." 2) "It mentioned about fossilization." 3) "They also mentioned the difference between the adult and the young learners—kids have no knowledge about language; adult learners do have some knowledge about language."	1) "The oral and written [language developing process] is supposed to be the same." 2) "The process of learning language keeps changing." 3) "It also mentioned about progressive recreation." 4) "They also mentioned about L1 and L2"
Chinese 3	1) "I think this text is talking about some point of view about interlanguage." 2) "It gives some research, or some researchers and what they have done." 3) "But I think the main idea is there's something that is called the interlanguage between the target language and the native language maybe in our brain somewhere."	1) "One of them is Corder...he thinks [the interlanguage system] is continuous, and he called it progressively restructured." 2) "There's a difference among all learners; they have their own style." 3) "The progressive stage is the early stage." 4) "The second stage, 'Recreation', means they will use their native language to create the new things by target language." 5) "Someone called Na...Na something—said it's approx---I cannot pronounce that name, but I think it means it's an incomplete system in the brain."
Native Speaker	1) "I think this article is talking about being able...how second language is learned." 2) "There is various degrees	1) "The rules they learn by...they are just implicit." 2) "They use words like discontinuous, continuum, or

	<p>of competence that person may have.”</p> <p>3) “One of them believe that you acquire it and you continue to build on that knowledge, and that’s one of the continuums.” 4) “One of the words I do remember from my studies, is fossilization, and basically, it means that you are doing something out of habit...not because it’s correct. It’s probably incorrect, but you are doing it out of sheer habit of always doing something, it becomes natural.” 5) “The last part of the article has to do with whether you learn as if you were a child. It’s different if you have pre-knowledge. So the last part talks about the transfer of knowledge by adults.”</p>	<p>something like that.” 3) “About grammar, the two people, Corder and Selinker, have slightly different views on it.” 4) “Is it something like interdependence?” 5) “Because an adult is somebody who already has an L1, they can transfer easier, but kids just pick it up naturally.”</p>
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Recall of idea units from *Hyperarousal, Triggering, and State-Dependent Learning*
(Italics indicate misinterpretations of the text)

Participant	Main Ideas & Major Details	Minor Details
Korean 1	<p>1) “It’s something about how memory is affected by automatic arousal.” 2) “The way it happens in adults and children are different.” 3) “Noradrenaline is distributed in the body, and when it is accumulated, it affects... or causes something else to happen.” 4) “When dogs are upset or punished, they expose themselves to the shock and seek the familiar.” 5) “The experiment with animals supports the scholars’ argument about how humans react to arousal.”</p>	<p>1) “It said something about chronic disease or something.” 2) “There was something about a box in relation to the animal experiment.” 3) “What are Pavlov’s dogs?”</p>
Korean 2	<p>1) “Shock can cause differences in people’s memory, like it can cause someone to remember something.” 2) “There are chemicals that are distributed in the body that cause people to remember things.” 3 & 4) “The animal experiment showed that if dogs are exposed to minor shock, then they are just interested. But when they are exposed to repeated shock, then it leads to automatic reaction, and they seek a familiar path.”</p>	<p>1) “People can see things in dreams.” 2) “I think it also said something about how when people are exposed to something for a long time, <i>they develop the ability to self-cure.</i>”</p>
Korean 3	<p>1) “It’s about stress, trauma, and shock.” 2) “When people experience a traumatic event, there is a greater</p>	<p>1) “<i>There was something about how short-term memory becomes more vivid.</i>” 2) “There is a difference</p>

	distribution of noradrenaline in the body.” 3) “ <i>To avoid the shock, they seek the familiar.</i> ” 4) “What confuses me here at the end is, why do these animals seek the place where they were punished?”	between the trauma experienced as a child, and trauma experienced as an adult.” 3) “The familiar is secure. So they look for that.”
Chinese 1	1) “It talks about trauma and its effect on people’s memory.” 2 & 3) “There’re two types of amnesia—hypermnnesia: usually after one-time trauma experience; amnesia: long time effect of the repeated trauma experiences.” 4) “If they experience the same trauma again, if the scenario is the same as they experience before, this will trigger the traumatic memory.” 5) “Animals tend to be curious and seek novelty when the stimulus is low; but they tend to avoid seeking novelty when the stimulus is high, too high, trauma I guess.” 6) “It concludes that people will react in the same way as animals when confronted with trauma 7) “The middle part is [talking about] physiological change in a person’s nerves when the person is experiencing the trauma.”	1) “Their nerves will have certain physiological changes when they are experiencing the trauma.” 2) “That gives results the action they might take in the future.” 3) “People would relive those experiments in their dreams, relive the situation again and again, no matter in the dream or awake.”
Chinese 2	1) “Animals shocked or punished tend to stay in the same box.”	1) “The first paragraph focused on people.” 2) “The second paragraph focused on animals.” 3) “Animals are the same as human beings.”
Chinese 3	1) “It talks about amnesia I think, or hypermnnesia.” 2) “The first paragraph is probably about how the nerve system works.” 3&4) “Amnesia is probably caused by a one-time accident, but hypermnnesia can be traced back to [a person’s] childhood.” 5) “Then it talked about the animal experiment, which is the same with human beings.” 6) “[When animals are under] low-level stress, they tend to be curious and are more relaxed. But the high-level stress or....”	1) “In other words...something subconsciously stimulates the connection between the event and the accident happened in that person’s childhood.” 2) “The adults’ unhappy memory in the brain that stimulates the nightmare and constantly stimuli would lead to amnesia.”
Native Speaker	1) “Basically what it tells you is that there’s a fixed memory in your brain when a traumatic event takes place.” 2	1) “Well, the title is something like hyperarousal, triggering, and dependent-state.” 2) “It talks about

<p>& 3) “Post traumatic stress disorder is one of the disorders that take place like after an accident or something, and then you have the stimuli in the brain.”</p> <p>4) “The last part talks about how the lower the arousal, then you are willing to ...I say take risks, expand, go some place.”</p> <p>5) “So I think the whole article talks about the way brain works, when there’s a traumatic, when a person faces a traumatic experience. What happens in the brain will cause them to refer back to these memories later on in their life.”</p> <p>6 & 7) “That whole test with low arousal and high arousal done on the animals – they are guessing that it is similar to what happens to humans. So that’s why they comment that when somebody has a traumatic event, then if they are faced with a similar situation, they will all of a sudden,...I don’t know it is rethink or reenact, but they will act very similar to they way they did during the traumatic event.”</p> <p>8) “One of the things I remember is like ... if the animal went into a box when there is a punishment, he will go back to the box where there is a punishment if he was hyper...if he was in a high arousal.”</p>	<p>the amnesia, how it only happens in kids, and it’s like a repetitive childhood thing.”</p> <p>3) “This hyper...hypermnnesia only happens when you are an adult and usually after a one-time deal.”</p> <p>4) “Locus...something, is some part of the brain, which triggers a bunch of different parts of the brain to stimulate.”</p> <p>5) “Your brain sometimes will know... that corpus whatever it is.”</p> <p>6) “The dependent state means like the action you do depends on the state you are in – high arousal or low arousal, and that can affect your memory.”</p>
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Appendix B

Reading Strategies Questionnaire: Below is an inventory to see what sort of strategies you often prefer to employ in reading. Please write “Y” for “YES”, “N” for “NO”, and “O” for Occasionally in the blanks provided on the left-hand side of each column. Thank you very much for your contributions.

When reading academic texts / When doing reading for a class, I try to:

- ☐ find answers to given questions based on the text
- ☐ give my personal opinion about the topic
- ☐ use my background knowledge
- ☐ recognize the text structure
- ☐ predict the content of the text
- ☐ guess the reason the author is writing about the topic
- ☐ think about different ways of writing the text
- ☐ generate my own list of questions about the text

While reading, I

- ☐ take notes
- ☐ read through the passage and underline difficult words and phrases
- ☐ skim for a general idea of the whole passage
- ☐ try to figure out the meaning of unfamiliar words and phrases from context
- ☐ look up the unfamiliar words in a dictionary or another relevant book, such as an encyclopedia
- ☐ try to practice the sounds and the sentence structures
- ☐ focus on the most important ideas of a text, separating what is central from what is peripheral
- ☐ try to see how information is organized and supported in a text
- ☐ try to see what point the writer is attempting to establish
- ☐ try to determine what is being asserted as true
- ☐ decide why I should accept this claim as true
- ☐ try to determine what reasons or evidence the writer gives for this claim
- ☐ focus on what I think the teacher expects me to know
- ☐ do not believe everything I read
- ☐ question everything that does not make sense to me
- ☐ analyze arguments
- ☐ dismiss arguments based on faulty reasoning
- ☐ have good reasons for believing some things and not believing others
- ☐ look for patterns or repetitions
- ☐ assimilate the new material with personal experiences
- ☐ assimilate the new material with previously read materials
- ☐ try to see if the author writes emotionally
- ☐ question why the author uses certain language (e.g., figurative language, verbs, etc.)
- ☐ look for connectors that convey ideas and the writer's position on the matter

- ☐ translate key words and phrases into my native language
- ☐ try to build the meaning of the sentences from the meanings of individual words
- ☐ analyze sentence structures
- ☐ analyze parts of words

To remember the content of the text, I

- ☐ create mental images
- ☐ draw maps or diagrams
- ☐ focus on keywords
- ☐ think of other words I associate with the keywords / main ideas
- ☐ place new words into a context I am familiar with
- ☐ try to find equivalences or similarities with my native language

When I encounter difficult parts of a text, I

- ☐ reread or repeat (sound out) the words or phrases that I do not understand
- ☐ try to solve doubts by questioning
- ☐ ignore or avoid them
- ☐ slow down my speed of reading
- ☐ speed up my speed of reading
- ☐ try to guess while reading
- ☐ use reference materials
- ☐ try to pay closer attention
- ☐ evaluate my ability to handle other texts of the same kind
- ☐ use the organization of the text to gain a better understanding
- ☐ reset / modify my goals and objectives
- ☐ seek practice opportunities
- ☐ monitor my understanding and correct errors
- ☐ encourage myself to persist
- ☐ try to lower my anxiety level
- ☐ ask / cooperate with my peers
- ☐ ask the teacher for clarification, correction, and / or feedback

After reading, I

- ☐ summarize what I have read
- ☐ evaluate the reading
- ☐ try to synthesize the reading with other materials I have read
- ☐ comment on the reading through journal entries, conversations with colleagues
- ☐ put the reading aside and do nothing