READING STRATEGIES OF GOOD AND AVERAGE BILINGUAL READERS OF
CHINESE AND SPANISH BACKGROUNDS

by

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Abstract

The current study examined the reading strategies of 19 bilingual undergraduate students who varied in reading proficiency (good or average) and language background (Chinese or Spanish). Using the think-aloud method, students’ reading strategies were measured and compared to determine whether strategy use differed as a function of reading proficiency, language background, and/or text level. Semi-structured interviews were also conducted to corroborate the findings obtained from the think-aloud protocols. Results from this study suggest that reading proficiency affects strategy use at the syntactic level, whereas language background affects strategy use at the vocabulary level. These findings have significant implications in education, particularly in the area of English language teaching. Students should be encouraged to use their first language reading skills when reading English text, as it facilitates their comprehension and improves their English literacy development.
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Chapter 1

Introduction

An important aspect of literacy development, whether in a first or second language, is learning how to read and comprehend written text. Both of these skills are required if successful reading is to be achieved. This concept was first introduced by Gough and Tunmer (1986) through a model known as the simple view of reading (SVR). According to this model, reading can be viewed as the product of two components: decoding and linguistic comprehension (Gough & Tunmer, 1986), where decoding is defined as efficient word recognition, and linguistic comprehension is defined as the ability to take lexical (i.e., word level) information and derive sentence and discourse meanings from it (Hoover & Gough, 1990). Although this model has been instrumental in helping us understand how reading develops throughout childhood and adolescence (Savage, 2001; Tilstra, McMaster, van den Broek, Kendeou, & Rapp, 2009; Verhoeven & van Leeuwe, 2008), in bilinguals (Gottardo & Mueller, 2009; Proctor, Carlo, August, & Snow, 2005; Zadeh, Farnia, & Geva, 2012), and in individuals with reading deficits (Aaron, Joshi, & Williams, 1999; Catts, Adolf, & Weismer, 2006; Catts, Hogan, & Fey, 2003), its simplistic nature has often been a point of criticism. As noted by Kirby and Savage (2008), the SVR model does not capture the true complexity of reading. In reality, reading is a multifaceted process and involves the integration of many literacy skills. In addition to decoding and linguistic comprehension, research has shown that factors such as reading fluency, vocabulary knowledge, verbal working memory, and reading strategies play significant roles in reading (Johnston & Kirby, 2006; Macaruso & Shankweiler, 2010; Ouellette & Beers, 2010). Of these factors, the one that has received the most attention within the field of reading comprehension is reading
strategies. Since the 1970s, a considerable amount of research has been conducted on this topic, which has greatly influenced the way in which researchers and educators understand the reading process. In the sections that follow, I will review what reading strategies are and describe some of the most prominent findings in the literature related to strategy use. Based on this information, I will discuss three research areas that require further investigation. This will provide a framework for the present study, which explores the strategies used by bilingual students of good and average reading proficiencies.

1.1 Theoretical Framework

1.1.1 What are reading strategies? One of the most comprehensive definitions of reading strategies was provided by Afflerbach, Pearson, and Paris (2008) where they explained the difference between reading strategies and reading skills. According to these researchers, reading strategies are “deliberate, goal-directed attempts to control and modify the reader’s efforts to decode text, understand words, and construct meanings of text” (p. 368). In simpler terms, reading strategies are actions, or a series of actions, that are used to construct meaning from text (Garner, 1987; Kletzien, 1991). To date, numerous reading strategies have been identified in the literature. To best conceptualize and investigate these strategies, researchers often group them into smaller categories. Group categorization depends on a number of factors such as a study’s theoretical framework, the measures used to examine reading strategies, and the strategy properties that are of interest to the researcher(s) (e.g., their function, complexity, level of processing, use during reading, etc.). Given that scholars often differ in their research interests, questions, and study designs, group categorization will vary from study to study. For example, Anastasiou and Griva (2009) used three categories to compare awareness of reading strategy use between poor and good Greek
readers: cognitive, metacognitive, and social affective strategies. In contrast, Lau (2006) used four categories to compare strategy use between good and poor Chinese readers: pre-reading strategies, strategies for identifying and interpreting main information, reading monitoring strategies, and post-reading strategies. The difference in categories between these studies is a result of the distinct frameworks that were used to classify reading strategies. Whereas Anastasiou and Griva used the categories developed by O’Malley and Chamot (1990), which were based on cognitive theory, Lau developed her own a set of categories based on the work by Pressley and Afflerbach (1995). Different categories have also been observed in studies comparing strategy use by second language learners. In a study by Davis and Bistodeau (1993), the categories suggested by Block (1986) were used to compare L1 and L2 strategy use among English-French and French-English bilinguals. The categories used were: bottom-up (e.g., focusing on individual words, re-stating text), top-down (e.g., making inferences, predictions), and metacognitive (e.g., comments on subject’s own behaviour) strategies. In a similar study, Alsheikh and Mokhtari (2011) examined the reading strategies used by English language learners in their L1 (Arabic) and L2 (English). Unlike the previous examples, the researchers in this study used a testing measure – the Survey of Reading Strategies (Mokhtari & Sheorey, 2002) – to categorize reading strategies. In this measure, strategies were grouped as follows: global reading strategies, problem solving reading strategies, and support reading strategies.

In recent years, the work by Pressley and Afflerbach (1995) has received considerable attention and acknowledgement within the field of reading comprehension. Their contributions to this field have been specifically noted in the area of reading strategies. Through an extensive analysis of previous research, Pressley and Afflerbach developed a
framework for categorizing and collecting data on reading strategies. These suggestions have been used in subsequent studies (Bråten & Strømsø, 2003; Cromley & Azevedo, 2006; Lau, 2006; Upton & Lee-Thompson, 2001) and are applied in the present study as well. Based on a meta-analysis of 38 think-aloud studies (published between 1972-1993), Pressley and Afflerbach concluded that reading strategies can be grouped into three main categories: identifying and learning text content, monitoring, and evaluating. Strategies for identifying and learning text content are those used to identify, construct, and code the meaning of text. These strategies can be used before, during, or after reading printed material. Strategies in this category can also be grouped into the following subcategories: initial reading of text, assigning importance to text information, inferencing, integrating, and interpreting. Monitoring strategies are those used to assess whether comprehension of text has been achieved. Often, these strategies require that readers have an awareness of their level of text comprehension. Examples of monitoring strategies are: questioning content, expressing comprehension difficulties, and expressing knowledge of content. Also included in this category are “fix-it” strategies which are used to improve the understanding of text. Strategies in this subcategory include: re-reading, revising text, and filling in missing information. Finally, evaluation strategies are those used to critically analyze text. These include strategies such as evaluating text style and text content. Also included in this category are affective reactions to text (e.g., disgust, surprise, satisfaction), which can influence the way in which readers process text content.

As noted by experts in this field, reading strategies can be mental or physical in nature (Pressley & Afflerbach, 1995). The difference between the two is that the former involves thought processes which are carried out in the reader’s mind, whereas the latter involves
behavioural processes that are carried out through physical actions. An example of a reading strategy that is thought-based would be inferencing. This reading strategy involves linking parts of texts that are not explicitly linked by the author, in order to reach a logical conclusion (Moore, n.d.). The “mental” nature of this strategy suggests that it cannot be observed by others, as it takes place in the mind of the reader. An example of a reading strategy that is action-based would be using a dictionary to search for the meaning of an unknown word. Unlike the previous strategy example, action-based strategies can be visible to others. Given that some reading strategies are not readily observable, researchers often rely on special measures to study them. One of these measures is known as the think-aloud protocol.

1.1.2 The think-aloud protocol. The think-aloud protocol (TAP) is a tool that is used to examine participants’ thought processes as they engage in a particular task (Pressley & Afflerbach, 1995). This method has been used most notably in studies investigating problem solving skills (Montague & Applegate, 1993; Rosenzweig, Krawec, & Montague, 2011), reading comprehension (Gillam, Fargo, & Robertson, 2009; Schellings, Aarnoutse, & van Leeuwe, 2006), and the use of reading strategies (Meyers, Lytle, Palladino, Devenpeck, & Green, 1990; Yang, 2006). During a TAP, participants are instructed to express everything they are thinking while performing an activity (e.g., reading a short story). Test sessions are usually recorded to allow researchers to go back and analyze participants’ verbal responses. It is also common for two testers to administer think-alouds as it allows for more accurate behavioural observations to be documented. Two types of TAPs are often used in reading studies: concurrent and retrospective (Pressley & Afflerbach, 1995). In concurrent think-alouds, participants are asked to verbalize their thoughts the moment they come to mind while completing a task (Kuusela & Paul, 2000).
In contrast, retrospective think-alouds require that participants verbalize their thought processes after completing a task (Kuusela & Paul, 2000). As noted by Ericsson and Simon (1993), one of the limitations of retrospective think-alouds is that participants’ responses may not be accurate representations of their thought processes. This is especially true if the duration between task completion and the verbalization of thoughts is long (e.g., greater than 10 seconds). Under these circumstances it becomes increasingly difficult for participants to provide accurate and complete recalls of all the thoughts that came to mind as they performed the given task. As a result of this, concurrent TAPs are often the preferred method of choice for reading studies (Pressley & Afflerbach, 1995).

Regardless of the type of TAP used, there are many advantages in using this method to examine reading strategies (Henk, 1993; Lau, 2006; Pressley & Afflerbach, 1995). First and foremost, it provides researchers with rich information about participants’ cognitive processes, which would otherwise be inaccessible for examination. Given that think-alouds provide direct assessments of participants’ strategy use, this reduces the need to infer them through participants’ performance on other measures (e.g., results on a reading test, answers given in an interview, etc.). Verbal self-reports also allow for affective processes in reading to be analyzed, in addition to cognitive processes. Finally, given that the delay between reading and verbalizing is quite short in TAPs, especially for the concurrent method, this greatly reduces the problem of memory failure affecting participants’ reports on their strategy use. Like every measure, of course, the TAP also has its disadvantages (Garner, 1987; Henk, 1993; Lau 2006). Verbal self-reports can be biased if participants have limited expressive language abilities or if responses are prompted by inadvertent cueing. Furthermore, given that subjects must report their thought processes during a think-
aloud session, the TAP is not an adequate method for examining reading processes that do not reach conscious awareness. To avoid these issues, Pressley and Afflerbach (1995) suggest that think-aloud studies be carefully planned and conducted (e.g., control for verbal ability among subjects, instruct all testers to avoid asking questions that can bias subjects’ responses). It is also recommended that additional measures, such as an interview or questionnaire, be administered (Charters, 2003; Li, 2004). Results from these measures can help complement the data collected from TAPs, and provide a more complete picture of the cognitive processes that are involved during reading. Despite its limitations, the TAP has been shown to be an effective method for collecting data on strategy use (Pressley & Afflerbach, 1995). This measure has been used extensively by researchers interested in learning more about reading strategies and the role they play in the reading process. The sections that follow review some of the most prominent findings from studies that have used the TAP method to examine strategy use among individuals of different reading proficiencies and language backgrounds.

1.2 Literature Review

1.2.1 Reading strategies of good and poor readers. Some of the most significant findings in reading research come from studies that examine the reading performance of unsuccessful readers. By understanding the reading process that underlies poor reading, researchers are able to develop more accurate theories of how successful reading abilities are acquired. This in turn can help educators create effective reading programs for students who are struggling with specific literacy skills. To date, an extensive amount of research has been conducted comparing the reading strategies used by good and poor readers (Cantrell & Carter, 2009; Kolić-Vehovec, Bajšanski, & Zubković, 2011; Lau & Chan, 2003; Olshavsky,
These studies have consistently shown that greater strategy use is related to better reading performance (i.e., reading comprehension). This finding was exemplified in a study by Kaufman, Randlett, and Price (1985). In their study, the following research questions were addressed: (a) Are good and poor readers at the college level aware of the strategies they use in reading comprehension? (b) Do good and poor readers at the college level use the same types of strategies when confronted with a comprehension problem? A total of 52 college students were included in this study. Based on their performance on a reading test, students were classified as being either high comprehenders \((n = 27)\) or low comprehenders \((n = 25)\). To assess the awareness and use of comprehension strategies, all students were required to complete five reading tasks, a questionnaire, and an interview. A comparison of the data collected from both groups revealed two significant findings. First, high comprehenders reported using more strategies than low comprehenders when confronted with comprehension difficulties. The researchers take this finding as evidence that good readers show greater awareness of the strategies they use when reading. Second, although both groups reported using equal amounts of concrete, observable strategies when reading (e.g., finding a quiet place to read, skimming text, re-reading, slowing down reading pace), high comprehenders were more likely to report using strategies that involve complex, unobservable mental operations to repair their misunderstandings (e.g., visualizing, perspective-taking, making predictions, drawing inferences). According to the researchers, these findings provide evidence that good readers use different sets of strategies when confronted with a comprehension problem. Specifically, they noted that higher order, complex thinking skills are required to achieve an accurate and
thorough understanding of difficult passages. Why some individuals are able to grasp these skills and others are not is a question that requires further research.

Similar findings have also been reported in studies involving younger learners. In a study by Kletzien (1991), the reading strategies used by good and poor comprehenders in high school were examined. The researcher was specifically interested in investigating how reading ability, text difficulty, and strategy knowledge interact with each other to affect the regulation of strategy use among good and poor comprehenders. For this study, 48 students in 10th- and 11th-grade were recruited. All students shared similar IQ levels, but differed in their reading comprehension abilities. Students who scored above the 75th percentile on a reading comprehension test were classified as good comprehenders \((n = 24)\), whereas students who scored below the 50th percentile were classified as poor comprehenders \((n = 24)\). To assess strategy use, all students were required to read three expository passages of increasing difficulty that contained missing words. Similar to a cloze task, students were asked to fill in the blank spaces of the passages with appropriate words and to provide explanations of their thinking processes as they chose their answers. To ensure the reading passages were not too difficult for the poor comprehenders, these students were provided with simpler versions of the original passages. As the researcher noted, “this design feature made it possible to compare the strategies used by the two groups as they read material with the same relative difficulty and the same content” (p. 71). Statistical analyses of the data revealed significant differences between the groups with regards to strategy use. For poor comprehenders, total strategy use declined as the texts became more difficult to read. In contrast, the strategy use of good comprehenders remained the same regardless of the level of difficulty on the passage. Although both groups used the same type and number of
strategies on the easy passage, good comprehenders used a greater variety of strategies more often than the poor comprehenders did on the difficult passages. According to the researcher, these findings may be the result of group differences in regulation, rather than knowledge, of comprehension strategies. In other words, good comprehenders were those who had a greater ability to change and control their strategy use according to the reading demands of the passage. Overall, this study provided further evidence that good reading comprehension, especially for difficult passages, is related to greater strategy use, both in type and frequency.

Differences in strategy use among good and poor readers have also been observed in studies using non-English speaking subjects. An example of this would be a study by Lau (2006) who examined the reading strategies used by good and poor Chinese readers in Hong Kong. Subjects in this study were eight 7th-grade students who were classified as good readers ($n = 4$) or poor readers ($n = 4$) based on their school placement and nominations from their language teachers. To assess their use of reading strategies, students were asked to complete two think-aloud tasks. These tasks consisted of reading two passages (a narrative text and an expository text) that contained comprehension questions at the end. During the tasks, students were required to say aloud everything they were thinking as they read the passages or answered questions. Following the reading activities, students were interviewed to assess their metacognitive knowledge about reading and their motivation to read. The results from this study showed that good readers used more strategies during reading than did poor readers. Good readers were also more knowledgeable about reading strategies, which presumably allowed them to apply strategies more effectively. Although poor readers performed significantly lower on both reading tasks, their scores indicated they had greater difficulty when reading the expository passage. Whether text type (narrative vs. expository)
affects strategy use needs to be addressed with further research. Another interesting outcome from this study is that poor readers had lower intrinsic reading motivation than did good readers. As a result, these students were more likely to give up when they encountered reading difficulties, which may be a reason as to why they had lower reading comprehension. Given that these findings are consistent with those of Western studies, the researcher notes that they lend support to the notion that reading may be universal across languages of different orthographies when processed at a higher level.

Overall, these studies provide evidence of the strong relationship between reading comprehension and strategy use. Good reading comprehension results when readers have the awareness, knowledge, skills, and motivation to use reading strategies when faced with difficult reading tasks. Although the research previously described has increased our understanding of the reading strategies used by good and poor readers, very little is known about the strategies used by other reading groups, such as average readers. One of the few studies that has addressed this issue was conducted by Fehrenbach (1991). In this study, the reading strategies of 60 students in grades eight, ten, and twelve were examined. Half of the students were gifted readers, and the other half were average readers. Reading strategies were assessed using think-aloud protocols. Students were required to read aloud five narrative passages of varying difficulty, while verbalizing their thoughts as they read. Results from this study showed that although gifted and average readers used the same types of reading strategies, they differed in how frequently they used some of them. Gifted readers used “effective” strategies (i.e., re-reading, inferring, analyzing, predicting, evaluating, and relating to content area) significantly more than average readers, whereas average readers used “ineffective” strategies (i.e., word pronouncing concern and summarizing inaccurately).
significantly more than gifted readers. A different finding was obtained in a study by Kragler and Martin (2009). These researchers examined the reading strategies of six, first-grade students. Two students were identified as struggling readers, two as average readers, and two as above-average readers. Data from each student was collected using a variety of measures: an informal reading inventory, metacognitive awareness interview, think-aloud interview protocols, running records, anecdotal notes, and story retellings. During the think-aloud sessions, students were required to read two nonfiction and two fiction books. Given that the sample size was very small, all data was analyzed qualitatively. Results from this study indicated that strategy use was not affected by reading level. In other words, students from all three reading groups made use of the same reading strategies. This finding is consistent with the one obtained by Fehrenbach. A contrasting outcome from the Kragler and Martin study, however, is that average readers used more reading strategies than above-average readers. The discrepancy in this finding can be explained by one or all of the following factors. First, the ages of the students in the two studies were vastly different. Students in the Fehrenbach study were all teenagers, whereas students in the Kragler and Martin study were all first-graders. It is possible that strategy use may differ as a function of age. Second, the sample sizes in the two studies were also different, resulting in different methods being used to analyze the data. The large sample size in the Fehrenbach study \((N = 60)\) allowed for quantitative analyses to be conducted, whereas the smaller sample size in the Kragler and Martin study \((N = 6)\) required that data be examined qualitatively. Given that quantitative findings are more generalizable than qualitative findings, the results from the Fehrenbach study may be a more accurate representation of the pattern of strategy use among average readers. Lastly, different measures were administered in both studies to collect data on
strategy use. Whereas the Fehrenbach study only relied on TAPs to examine reading strategies, the Kragler and Martin study used multiple measures to investigate strategy use. Given that more data was collected in the latter study, this allowed the researchers to conduct more detailed and in-depth analyses resulting in the different findings obtained by them. Although these studies have provided insights on how reading strategies are used by average readers, further research is needed to clarify how these readers differ from other reading proficiency groups in their strategy use.

1.2.2 Reading strategies of English language learners. Research on the reading strategies used by English language learners (ELLs) has grown extensively over the past few decades. Of particular interest has been the issue of whether strategy use differs as a function of language. Many studies have addressed this research question by comparing the reading strategies ELLs use when reading in their first and second languages (L1 and L2 respectively; Davis & Bistodeau, 1993; Hua, 1997; Taillerfer & Pugh, 1998; Talebi, 2013). An interesting finding among some of these studies is that ELLs make use of different strategies, both in quantity and type, when reading in their L1 and L2. This finding was demonstrated in a study conducted by Alsheikh and Mokhtari (2011). The researchers were interested in examining the perceived and actual use of reading strategies by Arabic native speakers who were learning English as a second language. Participants ($N = 90$) in this study were all university students residing in the United States. Strategy use was assessed through two measures: a self-report survey and two think-aloud tasks. The think-aloud tasks required participants to express all of their thought processes as they read two expository passages (one in English and the other in Arabic). Results from this study showed that participants used more strategies when reading in English. Specifically, they reported using more “problem solving strategies”
(e.g., reading slowly and carefully, visualizing information, re-reading) and “support reading strategies” (e.g., paraphrasing, asking questions, translating) when reading English text. These findings are not surprising, given the language and cultural differences second language learners (SLLs) often experience when reading in their L2. To overcome these barriers, SLLs must rely on more reading strategies to improve their reading comprehension. This suggests that greater strategy use is related to lower language proficiency for individuals learning a second language.

Similar findings have also been observed in studies involving younger subjects. In a study by Jimenez, Garcia, and Pearson (1996), the metacognitive knowledge and reading strategies of bilingual Latino students who were successful English readers were examined. Participants in this study consisted of 11 Spanish-English bilingual students and three monolingual Anglo students who were in grades six and seven. Eight of the bilingual students were successful English readers and three were less successful English readers. Students were categorized based on teacher judgements and their scores on a standardized English reading test. To assess reading strategies, students were required to complete various think-aloud tasks in their respective languages (Spanish and English for bilingual students and English for monolingual students) and to answer interview questions about their knowledge of reading and their experiences as bilingual readers. The results from this study revealed four major findings. First, successful Latino readers used a greater variety of strategies than did unsuccessful readers when they encountered unknown vocabulary in English or Spanish. Second, to overcome their comprehension difficulties, the successful Latino readers relied more on reading strategies that are unique to bilingual readers (i.e., searching for cognates, transferring, and translating). Third, less successful Latino readers used fewer strategies and
were less effective in resolving comprehension problems when reading in English or Spanish. This finding provides further evidence that poor reading comprehension is associated with less strategy use. Finally, Anglo readers demonstrated a smaller need to overtly monitor their reading comprehension, which resulted in their use of less reading strategies. This finding is consistent with the results obtained by Alsheikh and Mokhtari (2011), who found that bilingual readers made use of less strategies when reading in their dominant (i.e., first) language. Overall, the results from this study suggest that successful Latino readers possess a greater awareness of the relationship between Spanish and English, which allows them to use unique bilingual strategies to improve their reading comprehension. Whether this finding also generalizes to other language groups with different orthographies (e.g., Chinese-English bilinguals) requires further investigation.

The findings previously discussed have also been replicated in a study by Kong (2006). The objective of this study was to compare the reading strategies that adult Chinese learners of English use when reading Chinese and English texts. The researcher was interested in understanding the factors that affect strategy use in both languages. Given the qualitative nature of this study, only four participants were recruited, all of whom were proficient Chinese native readers and learning English as a second language (ESL). To assess their reading strategies, participants were asked to complete three think-aloud tasks – one in Chinese and two in English. All reading passages were matched on style, content, and length. Following the think-aloud tasks, participants were required to answer interview questions related to their comprehension of the texts and their use of reading strategies. The results from this study indicated that participants used significantly more strategies when reading in English. This finding is also consistent with the results obtained by Alsheikh and Mokhtari
Given that English passages take greater effort and time to read for ESL learners, it is not surprising that participants would rely on strategy use more often when reading in English than in Chinese. With regards to proficiency, participants with higher English proficiency showed greater use and transfer of higher level cognitive and metacognitive reading strategies across the two languages. In contrast, low English proficiency seemed to have hindered one participant from using more top-down strategies (e.g., making predictions and drawing inferences) when reading in English. Similar findings have been obtained in other studies as well (Jimenez, Garcia, & Pearson, 1996; Tsai, Ernst, & Talley, 2010; Zhang, Gu, & Hu, 2008).

Two main conclusions can be drawn from the studies previously described. First, English language learners (ELLs) use more strategies when they read in their second language (L2). Given that ELLs are less proficient in their L2, they must compensate for their comprehension difficulties by relying on more strategies when reading in English. Second, ELLs who are more proficient in English show greater awareness of reading strategies, use strategies more often, and apply them more efficiently when reading difficult L2 text, than ELLs who are less proficient in English. This finding suggests that greater knowledge and efficient use of reading strategies contribute to better reading comprehension in a L2. Although these results have greatly improved our understanding of how strategies are used in a L1 and L2, very little is known on how strategy use differs across readers of different L1s. Taking this comparative approach is important, as the findings can help educators develop more effective reading programs for ELLs of different language backgrounds.

1.2.3 Reading strategies at the vocabulary level. The majority of studies examining the use of reading strategies only focus on how they are applied at the global text level. Few
studies have looked at how reading strategies are used when unknown or difficult words are
encountered in text. Studies that have investigated this issue have done so from a learning
strategies perspective. Unlike reading strategies, learning strategies are “tools that learners
use for active, self-directed language learning” (Waldvogel, 2013, p. 209). Although there is
a lot of overlap in the types of strategies that fall under each category, reading strategies are
mainly applied in reading contexts, whereas learning strategies can be applied in isolated
contexts (e.g., determining the meanings of words presented in a vocabulary test or as a list
in a textbook). In recent years there has been a growing interest in the field of second
language acquisition to learn about the strategies second language learners (SLLs) use when
learning L2 vocabulary. A common finding in the literature is that more proficient L2 learners
use a greater variety of vocabulary strategies and apply them more often when presented with
novel or uncommon L2 words, than less proficient L2 learners. This finding was obtained in
a study by Fan (2003), who examined the English vocabulary strategies of Cantonese
speakers in Hong Kong who were learning English as an L2. In this study, 1,067 first-year
undergraduate students were asked to complete two measures: (a) a vocabulary test to
determine the vocabulary size of students and identify those who were proficient in English
vocabulary, and (b) a vocabulary learning strategies questionnaire to learn about the
strategies used by students and those related to successful L2 vocabulary acquisition.
Statistical analyses of the data revealed four significant findings. First, regardless of
proficiency levels (high, middle, low), students used strategies to guess the meaning, to
review, and to consolidate their knowledge of new words (e.g., breaking words into smaller
segments or using a dictionary) most often, and found them to be the most useful as well. In
contrast, grouping and association strategies (e.g., linking Chinese and English words that
have similar sounds) were used the least and were found to be the least useful. This latter finding is not surprising, given that Chinese and English have different orthographic (logographic and alphabetic respectively) and speech systems (tonal and non-tonal respectively). Second, there is a discrepancy between frequency of use and perceived usefulness of vocabulary learning strategies. Strategies that were used most often by students were perceived as being the least useful (e.g., guessing the meanings of words), whereas strategies that were used the least often were perceived as being more useful (e.g., management strategies such as planning vocabulary learning). Third, specific strategies were associated with learning high- and low-frequency words. For high frequency words, guessing strategies were the most effective, whereas sources strategies (e.g., using newspapers, magazines, etc. to increase English vocabulary) were the most useful for learning low-frequency words. Lastly, different patterns of strategy use were observed for students of higher and lower L2 vocabulary proficiencies. The most proficient students used diverse kinds of strategies significantly more often than the less proficient students. Specifically, this group reported using more sources, guessing, dictionary, and known words strategies when presented with new L2 terms. This latter finding was also obtained in a recent study by Waldvogel (2013), who examined the vocabulary learning strategies of adult Spanish foreign language learners.

In his study, Waldvogel (2013) recruited 475 students who were enrolled in three Spanish foreign language courses: beginner-level \((n = 182)\), intermediate-level \((n = 188)\), and advanced-level \((n = 105)\). All students were required to complete two measures: (a) a Spanish vocabulary learning questionnaire and (b) a Spanish yes-no vocabulary checklist test. The former test was used to determine the types of vocabulary learning strategies students used
when encountering difficult/unknown Spanish words and how frequently they used them, and the latter test was used to measure students’ vocabulary proficiency (i.e., vocabulary size) by asking them to indicate (yes or no) whether they recognized a list of high-frequency Spanish words. Statistical analyses of the data revealed three important findings. First, there was a significant correlation between type of strategies used and vocabulary size for the advanced students only. Results indicated that the following strategies significantly predicted vocabulary size within the advanced group: consolidation social (e.g., interacting with native speakers to learn word meanings), cognitive (e.g., note-taking), and metacognitive (e.g., testing one’s knowledge of word meanings). No significant correlations between strategy use and vocabulary size were observed for the beginning and intermediate groups. Second, there was a significant difference in the vocabulary strategies used by students with high and low vocabulary test scores in the advanced group. Although both score groups reported using the same number of strategies, the high-scoring group relied more on social and metacognitive strategies, whereas the low-scoring group relied more on memorization and cognitive strategies. There were no significant differences in the patterns of strategies used between students with high and low vocabulary test scores in the beginning or intermediate groups. Lastly, there was an increase in the number of vocabulary strategies used by students as they progressed from the beginning, intermediate, and advanced proficiency levels. Overall, the proficient students tended to use a variety of strategies more effectively than the less proficient students when learning new Spanish vocabulary. This finding is consistent with that obtained by Fan (2003). Similar findings have also been obtained in other studies examining different language groups (Ansarin, Zohrabi, & Zeynali, 2012; Barcroft, 2009; Gu & Johnson, 1996; Lawson & Hogben, 1996). However, whether these findings can be
replicated in non-testing scenarios (e.g., while reading a passage aloud) requires further investigation. A comparative approach should also be taken when examining the strategies SLLs use when learning unfamiliar L2 words. Doing so could help draw conclusions as to whether different strategies are used by different language groups. Results from such investigations could help ESL teachers develop effective lesson plans for teaching English vocabulary to students of diverse language backgrounds.

1.3 The Present Study

Based on the previous literature review, it is evident that gaps in research remain regarding the use of reading strategies during the reading process. Specifically, it was noted that little research has been done to understand how strategy use differs among average readers or bilingual readers of different L1 backgrounds. Another area that requires further investigation is the use of reading strategies at different levels of text reading. Therefore, the purpose of this study is to address these areas by examining the reading strategies of English language learners (ELLs) who are good and average readers of Chinese and Spanish backgrounds. Research has shown that compared to monolingual English-speaking students, bilingual students who are ELLs often have lower reading comprehension and reading achievement in English, their second language (Droop & Verhoeven, 2003). As a result, their learning is often compromised. These findings have great implications for Canadian education systems, where an increasingly large number of language minority students are enrolled (Citizenship and Immigration Canada, 2011). Understanding what contributes to the lower reading performance of bilingual students is important, as it can provide further insights to the reading difficulties these students experience. Given the important role that reading strategies have in the reading process, the reading performance of ELLs will be
examined in this study by looking at the reading strategies used by students who are of different language backgrounds and of different reading proficiencies. Specifically, the following research questions will be addressed:

(1) Do good and average readers differ in strategy use?

(2) Is strategy use dependent on a shared L1 and L2 alphabet, or is it metacognitive (i.e., not language-specific) in nature?

Both of these questions will be applied at the global text (i.e., paragraph), syntactic, and vocabulary levels to determine if strategy use differs when reading different levels of text as well.
Chapter 2

Method

2.1 Participants

Nineteen bilingual undergraduate students from a Canadian university in Toronto, Ontario participated in this study. Participants were selected based on their language and reading proficiency levels from a larger sample of students that participated in a study of literacy development approximately one year prior. Ten students were Spanish-English bilinguals and 9 students were Chinese-English bilinguals. All students identified themselves as English Language Learners (ELLs). Within each language group, half of the participants were good readers \( (n = 5) \), and the other half were average readers \( (n = 4 \text{ for the Chinese group}) \). Reading proficiency was determined based on the scores students received on the comprehension section of Gates-MacGinitie Reading Test (Level F, Form 4), which was administered one year before the conduction of this study. Students who scored at or above the 80th percentile were categorized as good readers, whereas average readers were those who scored between the 50th and 70th percentiles. These cut-offs were used as they are in line with the percentile criteria used by other studies comparing the performance of different reading groups (Arfè, Re, & Carretti, 2013; Borella, Pelegrina, & Carretti, 2010; Fehrenbach, 1991; Kaufman, Randlett, & Price, 1985; Kletzien, 1991).

Table 1 provides demographic information for each of the reading groups examined in this study. Four important observations should be pointed out. First, the sample sizes of the groups were not all equal. The average Chinese group had one less participant which resulted from challenges we experienced with recruitment (i.e., students were not responding to our invitation to participate in this study). Second, the gender ratio within each group was
not balanced; there was a greater representation of female participants. Third, the Spanish readers were slightly older than the Chinese readers, but not significantly so. Fourth, the length of time in Canada for the Spanish readers was much higher than that of the Chinese readers. This latter point may have given the Spanish readers at a slight reading advantage and should be taken into consideration when interpreting the results.

Table 1

*Group Demographics*

<table>
<thead>
<tr>
<th>Reading group</th>
<th>L1</th>
<th>Gender ratio(^{a})</th>
<th>Mean age</th>
<th>Mean length of time in Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good Spanish</td>
<td>Spanish</td>
<td>3:2</td>
<td>23 years, 0 months</td>
<td>9 years, 4 months</td>
</tr>
<tr>
<td>(n = 5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Spanish</td>
<td>Spanish</td>
<td>4:1</td>
<td>22 years, 1 month</td>
<td>15 years, 6 months</td>
</tr>
<tr>
<td>(n = 5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good Chinese</td>
<td>Chinese(^{b})</td>
<td>5:0</td>
<td>20 years, 7 months</td>
<td>7 years, 4 months</td>
</tr>
<tr>
<td>(n = 5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Chinese</td>
<td>Chinese(^{c})</td>
<td>3:1</td>
<td>21 years, 1 month</td>
<td>6 years, 1 month</td>
</tr>
<tr>
<td>(n = 4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* L1 = first language

\(^{a}\)Females are listed first. \(^{b}\)All students indicated Mandarin as their L1. \(^{c}\)One student indicated Cantonese as their L1; the remainder indicated Mandarin as their L1.
2.2 Measures

2.2.1 Reading passage. An expository passage from the book *A Short History of Nearly Everything*, by Bill Bryson (2004), was selected for this study. This book explains complex scientific topics, but is written in a style of language that is easy to understand by those with very little or no scientific background. There were two advantages in selecting a passage from this book. First, due to the lack of technical terms, students with science majors would not have a significant advantage over students with non-science majors in comprehending the text. Second, the simple writing of the text allowed us to change some of the vocabulary and sentence structures, thus making the passage more challenging to read and understand.

The passage for this study was 459 words in length and was selected from a chapter that described the functions of microbes (Bryson 2004, pp. 302-303). Throughout the passage, prompts and questions were strategically placed to assess students’ comprehension of the text, their use of reading strategies, and their understanding of vocabulary. A total of 21 prompts were included in the passage. Prompts were marked with an asterisk (*) and were placed at locations where students were most likely to engage in strategy use while reading the text (e.g., at the end of sentences or paragraphs and challenging words). These markers served two main purposes. For the students, they were helpful reminders to say aloud what they were thinking as they read the passage. For us, they provided opportunities to verbally prompt students who were not engaging in the think-aloud process. For example, if a student read long portions of text without expressing any of their thoughts, the researcher was allowed to ask the following question to elicit a response: “Are you thinking anything at this moment?” Doing so ensured that enough data would be collected from each participant to
conduct further analyses. In addition to the prompts, follow-up questions were also incorporated into the text. The question “What does this word mean and how do you know?” was placed next to 10 vocabulary items to assess students’ strategy use at the word level. The terms selected for this component of the study met two criteria. First, they were low frequency words in English. This meant ELLs would be less familiar with the words and more likely to rely on reading strategies to determine their meanings. Second, they were Spanish-English cognates. Cognates can be defined as “words of different languages that have descended from a common source” (O’Grady & Archibald, 2004, p. 243) and share similar pronunciation and spelling. Incorporating cognates into the test passage allowed us to determine whether a student’s L1 (Spanish or Chinese) affected the types of strategies used when trying to understand unfamiliar words. Out of the 10 target words, 8 were Spanish-English cognates (preoccupied, conceive, fortifying, trillion, ubiquitous, exiled, and synthesize) and 2 were only low-frequency English words (shrewd and gullet). The purpose of the latter two words was to examine whether strategy use differed among the reading groups once L1 factors were controlled.

Sentence structure was also manipulated in the test passage to assess students’ strategy use at the syntactic level. Two sentences were changed into run-on sentences by adding more words without the use of punctuation or connecting words (e.g., which). The following are the grammatically incorrect sentences that were included in the passage:

1. By way of thanks, they give your body odour is not always pleasant.

2. Bacteria may not build cities or have interesting social lives, but they will be here when the sun explodes all life will end.
Each sentence was marked with an asterisk to encourage students to express their thoughts about the altered text. At the end of the passage, three feedback questions were added to evaluate whether students understood the text, encountered any challenges while reading it, or had any questions about its contents. In total, 21 prompts, 10 vocabulary questions, 2 grammatically incorrect sentences, and 3 feedback questions were included in the reading passage.

2.2.2 Student interview. An interview consisting of 24 closed-ended and open-ended questions was also administered to the students (see Appendix A for a complete list of the interview questions). These questions were divided into four main sections. The first section addressed students’ reading experiences in their L1 and L2. This section contained 9 items and included questions such as: “Do you think reading in your L1 is different than reading in your L2?” and “What kinds of reading material are most difficult/easiest for you to read in your L1 and L2?” These questions helped to assess the challenges and advantages bilingual students experience when reading in their native and non-native languages. The second section consisted of 3 items that addressed students’ reading habits. Examples of the questions included in this section were: “What kinds of reading material do you mostly read in your L1 and L2?” and “When reading for pleasure, do you mostly read in your L1 or L2?”

The purpose of these questions was to determine whether reading frequency is correlated with reading proficiency. The third section contained 6 questions that focused on students’ motivation to read. These questions addressed different aspects of motivation, such as one’s perception as a reader, whether reading is an enjoyable activity, and other factors (external or intrinsic) that may stimulate reading. Some of the questions that were used for this part of the interview were: “Do you think you are a good reader in your L1 and L2?” and “Is there
anything that motivates you to read in your L1 and L2?” The fourth and final section contained 6 questions that addressed students’ metacognitive knowledge of reading strategies. The following are examples of items included in this section: “What do you do when you encounter a difficult word during your reading?” and “Is it any different for when you read Chinese/Spanish or English?” Information collected from this section of the interview was used to compare the amount of consistency between the reading strategies students claimed to use and those they actually used during the think-aloud task.

2.3 Procedure

Each participant in this study was tested individually, beginning with the think-aloud task and followed by an interview. Before starting the reading task, each participant received an information letter which described the purpose of the study and all of the testing procedures and regulations. To ensure participants had a clear understanding of the information presented in the letter, researchers provided brief descriptions of the study’s objectives, guidelines, and testing expectations. All participants were reassured that no risks were involved in participating in the study, and that the data collected would remain confidential and only be used for research purposes. After addressing any questions or concerns the participants had in relation to the study, participants were asked to sign a consent form to indicate they were willing to participate in the study.

The first measure administered was the think-aloud protocol. To familiarize the participants with the think-aloud task, three training exercises were provided. In the first exercise, participants were asked to describe out loud the house they grew up in, while counting the number of windows it had. In the second exercise, participants were asked to describe how to solve a math problem (e.g., multiply 12 by 16 and then divide it by 3). In the
final exercise, participants were asked to read three short paragraphs aloud and to verbalize everything they were thinking. Once the participants demonstrated an understanding of the task, they were presented with the test passage in their L2 (i.e., English). Prior to testing, a final set of instructions were read to the students, which included informing them that they could “think aloud” in their L1 or L2. Previous research has indicated that students produce more elaborate protocols when allowed to express themselves in their dominant language (Goldman, Reyes, & Vernhagen, 1984; Lee, 1986; Moll, Estrada, Díaz, & Lopes, 1980). In other words, students demonstrate a greater understanding of L2 text when given the opportunity to communicate their thoughts, whether verbally or in writing, using their primary or stronger language. Consistent with this research and the procedures used in other think-aloud studies (Ghavamnia, Ketabis, & Tavakoli, 2013; Jiménez, García, & Pearson, 1996; Seng & Hashim, 2006; Upton, 1997), students in this study were encouraged to complete the think-aloud task in the language they felt most comfortable with. Doing so would ensure that more accurate measures of students’ L2 reading comprehension and strategy use were obtained.

During the reading task, participants said aloud everything they were thinking as they read the passages and answered questions about vocabulary items. The think-aloud task took approximately 10 – 30 minutes to complete, depending on the participant’s reading speed, proficiency level, and verbal ability. Upon completing the reading tasks, a follow-up interview was conducted to assess students’ experiences when reading in their L1 or L2, and to inquire about their reading habits, motivation to read, and metacognitive knowledge of reading strategies. The interview took between 15 – 20 minutes to complete. The think-aloud
protocols and interviews were tape-recorded and transcribed by undergraduate research assistants who were not directly involved in the study.

2.4 Data Analysis

2.4.1 Coding. To analyze the think-aloud data, each transcript was coded using the guidelines suggested by Pressley and Afflerbach (1995). Students’ think-aloud responses were coded and categorized into the following groups: identifying and learning text content, monitoring, and evaluating (see Appendix B for examples of some of the reading strategies that were coded). As suggested by Jiménez, García, and Pearson (1996), if students’ responses demonstrated the use of more than one type of strategy, multiple codes were applied.

A separate coding scheme was also created for the vocabulary sections of the think-aloud task to account for reading strategies that are specific to word-reading and not text-reading. This coding scheme was developed by the researchers based on pilot data that was collected prior to the conduction of this study. A total of five categories were identified as strategies used to infer the meanings of words: context, morphological cues, prior knowledge, cognates, and translation. Context refers to the use of surrounding text (e.g., sentences and paragraphs) to infer the meaning of a word. Morphological cues refers to the use of internal word structures (e.g., root word, prefix, etc.) to determine a word’s meaning. Prior knowledge refers to the use of working- or long-term memory (i.e., previously learnt information) to recall the meaning of a vocabulary item. Cognates refers to the use of L1 vocabulary to determine the definition of a L2 term. Use of this strategy indicates that the meaning of an unfamiliar L2 word was determined by relating it to a familiar L1 word that has similar spelling. This strategy could only be applied by students whose L1 and L2 shared similar
orthographic features (i.e., Spanish and English). Translation refers to the use of a student’s L1 to articulate the meaning of a target word. (For full details of all the categories and subcategories used to code reading strategies at the vocabulary level, please refer to Appendix C).

2.4.2 Scoring. In addition to a coding scheme, two scoring schemes were also created for the vocabulary items. One scoring scheme was used to measure the accuracy of students’ definitions, and the other was used to measure how effectively students applied reading strategies to determine the meanings of words. The coding criteria by Lau (2006) were used as the basis for developing the vocabulary scoring schemes. For the definitions, scoring ranged from 0-3, where zero meant no definition was given and three meant a correct definition was provided. The maximum definition score that could be achieved for the 10 vocabulary items was 30. For the reading strategies, a similar scoring range (0-3) was used. A score of zero was given if no strategies were applied in determining the meaning of a word. This score usually meant that the student did not know the definition of a word and made no attempts to use reading strategies to help them infer its meaning. A score of three was given (for each strategy) if the strategy was used effectively and helped the student provide a complete and correct definition of a word. Given that more than one reading strategy could be used for each vocabulary item, there was no maximum score for this portion of the study (see Appendix D for a complete description of all the scores and criteria used for the vocabulary definitions and reading strategies).

Coding and scoring were performed by two independent raters. To prevent experimenter bias from affecting the results, the researchers ensured that at least one of the raters was blind to the research questions and reading groups. Both raters were trained on
how to identify, code, and score reading strategies from students’ think-aloud responses, prior to analyzing the transcripts. Given the time-consuming nature of examining qualitative data, only four (approximately 20%) of the transcripts were coded and scored by both raters. The transcripts used for double scoring were selected at random (three from each language group) to ensure an un-biased inter-rater value was obtained. During this phase of the study, the raters were encouraged to discuss their strategy coding/scoring whenever there was a disagreement. If the reasoning provided by one of the raters was sufficient enough to convince the other rater of their coding/scoring choice, it was counted as an agreement. The following formula, known as Holsti’s coefficient, was used to calculate inter-rater reliability:

\[ P = \frac{2M}{N_1 + N_2} \]  

(where \( P \) = inter-rater value, \( M \) = number of agreements, \( N_1 \) = number of observations from rater 1, \( N_2 \) = number of observations from rater 2; Holsti, 1969). Three separate inter-rater values were calculated for the think-aloud protocols: (1) strategies coded at the text level, (2) strategies coded/scored at the vocabulary level, and (3) definitions scored for all vocabulary items. The inter-rater reliabilities for these categories were .89, .94, and .95, respectively. Given that high inter-rater values were obtained from the double coding/scoring, only one rater was required to analyze the remaining transcripts.

2.4.3 Statistical Analyses. To analyze the data from the global text and vocabulary levels, both parametric and non-parametric tests were used. The following is a list of all the tests that were conducted: repeated-measures ANOVA, independent-samples \( t \)-test, Friedman’s ANOVA, Mann-Whitney tests, and Wilcoxon signed-rank tests. Table 2 shows all of the between-group comparisons that were conducted for this study. Within-group analyses were also carried out for each proficiency and language group. All statistical analyses were run using SPSS software (version 22).
Table 2

*Group Comparisons for Statistical Analyses*

<table>
<thead>
<tr>
<th></th>
<th>Between Proficiencies</th>
<th>Between Languages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All readers Good vs. Average</td>
<td>All readers Chinese vs. Spanish</td>
</tr>
<tr>
<td></td>
<td>Chinese readers Good vs. Average</td>
<td>Good readers Chinese vs. Spanish</td>
</tr>
<tr>
<td></td>
<td>Spanish Readers Good vs. Average</td>
<td>Average readers Chinese vs. Spanish</td>
</tr>
</tbody>
</table>

To compare the data obtained from the grammatically incorrect sentences and the student interviews, a more qualitative approach was taken. Descriptions of trends are provided in detail, as well as examples of students’ interview responses regarding their knowledge and use of reading strategies.
Chapter 3

Results

3.1 Global Text Level

3.1.1 Strategy use. The first set of analyses compared strategy use between each proficiency group and between each language group. To begin data analysis, students’ raw scores (i.e., frequency counts of strategy use) were converted into proportions. Given that students varied considerably in the number of reading strategies they verbalized, using proportions in the analyses ensured more accurate results would be obtained than if raw scores were used. A 2 (good vs. average) x 2 (Chinese vs. Spanish) repeated-measures analysis of variance (ANOVA) was conducted to examine differences in strategy use at the global text level. Results from this test indicated there was a significant main effect for strategy use, $F(2, 30) = 9.08, p < .01$. Contrasts revealed that monitoring strategies were used significantly more than evaluation strategies, $F(1, 15) = 20.44, p < .001$, and constructing meaning strategies were used significantly more than evaluation strategies, $F(1, 15) = 8.92, p < .01$. These findings suggest that regardless of reading proficiency or L1, evaluation strategies are used less than any other type of strategy group.

Results from the analysis also showed that there was no significant interaction effect between strategy use and reading proficiency. This finding suggests that strategy use was no different for good and average readers. Despite this insignificant outcome, general trends could be observed from the data. Figure 1 provides a graphical representation of the results.
A common trend between good and average readers was that both groups used evaluation strategies the least. A different pattern emerged when comparing monitoring and constructing meaning strategies. Good readers used monitoring strategies proportionally more than average readers, whereas average readers used constructing meaning strategies proportionally more than good readers. Although these observations reveal interesting trends in the strategies used by good and average readers, the findings from the repeated-measures ANOVA showed that they were not statistically significant.

No significant interaction effect was found between strategy use and language. This finding indicates that strategy use did not differ among Chinese and Spanish readers. Figure 2 provides a visual illustration of this result.

*Figure 1.* Strategy use as a function of reading proficiency. This figure illustrates proportion of strategy use for good and average readers.
Figure 2. Strategy use as a function of language. This figure illustrates proportion of strategy use for Chinese and Spanish readers.

Overall, Chinese and Spanish readers showed a similar pattern in strategy use. Evaluation strategies were used the least and monitoring strategies were used the most. It also appears that Chinese readers used monitoring and constructing meaning strategies more than Spanish readers, whereas Spanish readers used more evaluation strategies than Chinese readers. However, given that there was no significant interaction between strategy use and language, this conclusion could not be made.

Finally, no significant interaction was found among strategy use, language, and proficiency. This means that strategy use did not differ as a function of L1 and reading proficiency. In other words, strategy use was not significantly different between good and average Chinese readers, good and average Spanish readers, or between Chinese and Spanish readers overall.
3.2 Syntactic Level

3.2.1 Grammatically incorrect sentences. Four trends (two for the good readers and two for the average readers) were observed when students encountered the grammatically incorrect sentences in their reading. First, more than half of the good readers (6 out of 10) were able to identify the two sentences that were written incorrectly in the text. On the other hand, three participants correctly identified one of the grammatically incorrect sentences, but not the other. There was no clear indication as to which sentence was misidentified the most. Two of these readers made no comments regarding the sentence structure of the second sentence: “Bacteria may not build cities or have interesting social lives, but they will be here when the sun explodes all life will end”, whereas the third reader made no judgments regarding the grammaticality of the first sentence: “By way of thanks, they give your body odour is not always pleasant”. Only one reader failed to make any comments regarding the grammatical structure of the two incorrect sentences. Instead, this reader made evaluative comments about the sentences, either agreeing with the content or elaborating on the ideas mentioned. The second observation among the good readers was that most (~80%) applied monitoring strategies to at least one of the sentences to improve their comprehension of the text. The monitoring strategies that were used consisted mainly of making revisions to the sentence(s) and re-reading. The following is an example of a good reader making revisions to the first incorrect sentence:

If I were to like read the sentence and try to rewrite it, I would say, I would write um…“by way of thanks, the body odour they give you is not always pleasant” instead of “they give your body odour is not always pleasant”.


A more elaborate revision is presented in the following example in which a good reader was making revisions to the second incorrect sentence: “It feels like there’s something missing between explodes and all life will end. Either they will be here when the sun explodes ‘and’ when all life ends, or something like that. It sounds better to me”. Overall, these findings suggest that most of the good readers had the skills to identify and fix their comprehension problems while reading the incorrect sentences.

For average readers, the pattern of findings was quite different. First, the majority of the readers did not identify the grammatically incorrect sentences. Only three readers correctly identified one of the wrong sentences. In all three cases, students were able to identify the first sentence as being grammatically incorrect, but were not able to do so for the second sentence. Given that the first sentence was shorter in length, it is possible that this feature helped average readers notice the syntactic error(s) more easily in the first sentence than in the longer, second sentence. As the objective of this study was to examine the strategies used by the readers when they encountered discrepancies in the passage and not how syntactic complexity affected reading, a more in-depth analysis would be required to investigate this hypothesis. The second finding is that unlike the good readers, average readers seldom used monitoring strategies to make sense of the grammatically incorrect sentences. Instead, many readers either continued reading, agreed with the sentences, or made elaborations to support the ideas mentioned in the text. The following is an example of an average reader’s response to the first incorrect sentence: “Yeah, especially when it’s like under arm odour. It doesn’t give you a pleasant smell.” Here we see evidence of agreement and elaboration. Together, these findings indicate that in comparison to good readers, average
readers were less successful at identifying grammatical inconsistencies in the text, and were less dependent on using monitoring strategies to aid their comprehension.

3.3 Vocabulary Level

3.3.1 Strategy use. To examine the types of vocabulary strategies that participants in each proficiency and language group used, proportions were first calculated from frequency counts. Given that participants in each group varied in their frequencies of strategy use, converting the frequencies into proportions allowed for direct comparisons to be made. In the first set of analyses, the strategies used by good Chinese readers, average Chinese readers, good Spanish readers, and average Spanish readers were examined. Due to the small sample sizes of these groups (n ≤ 5), the data were analyzed using Friedman’s ANOVA (a non-parametric test). Results from this test showed there were no differences in strategy use among any of the groups of readers. This finding suggests that reading proficiency and language did not affect the types of strategies that readers used at the vocabulary level.

Strategy use was also examined within each proficiency group (by combining Chinese and Spanish readers) to determine if reading proficiency alone affected the types of strategies readers used at the vocabulary level. For these analyses, translation and cognate strategies were omitted given that they were used by one language group only (translation by Chinese readers and use of cognates by Spanish readers). The first set of analyses was conducted on the good reading group. Preliminary, descriptive statistics revealed that the data for context strategies were not normally distributed. As a result, Friedman’s ANOVA was used to compare strategy proportions. Results from this analysis showed that there were significant differences in the strategies good readers used, \( \chi^2(2) = 13.77, p < .001 \). Post hoc
analyses using Wilcoxon signed-rank tests revealed there were significant differences between context and morphological awareness strategies, \( z = -2.1, p < .05 \), and prior knowledge and morphological awareness strategies, \( z = -2.67, p < .01 \). Specifically, context (\( Mdn = 23.08 \)) and prior knowledge (\( Mdn = 52.94 \)) strategies were used proportionally more than morphological awareness strategies (\( Mdn = 7.69 \)). This finding suggests that regardless of L1, the good readers tended to rely on morphological awareness strategies the least when determining the meanings of low-frequency words. However, it is important to note that the difference between the use of context and morphological awareness strategies was only significant at a \( p \)-value of .05 and not at the corrected \( p \)-value of .017.

A different pattern of results was obtained for the average reading group. A repeated-measures ANOVA indicated that like the good readers, average readers used certain strategies significantly more than others, \( F(2, 14) = 9.07, p < .01 \). Follow-up analyses using paired-samples \( t \)-tests showed that significant differences were found between the proportions of prior knowledge and context strategies used, \( t(7) = -2.47, p < .05 \), as well as that of prior knowledge and morphological awareness strategies used, \( t(7) = -3.93, p < .01 \). A comparison of the strategy means revealed that prior knowledge strategies (\( M = 49.13 \)) were used proportionally more than context (\( M = 27.98 \)) and morphological awareness (\( M = 16.23 \)) strategies. It is important to note in this case as well that the difference between the prior knowledge and context strategies was only significant at the \( p \)-value of .05 and not at the corrected \( p \)-value of .017. Overall, these findings suggest that for average readers, prior knowledge strategies were used the most at the vocabulary level.
Proportion of strategy use was also examined *within* each language group (by combining good and average readers) to determine if readers’ L1s had any influence over the types of vocabulary strategies that were applied during the reading task. The first group that was analyzed was the Chinese group. Given that the data for one of the strategies was not normally distributed, a non-parametric test (i.e., Friedman’s ANOVA) was used to compare strategy use. Results from this analysis revealed that Chinese readers used some strategies significantly more than others, $\chi^2(3) = 15.7, \ p < .001$. Post hoc analyses showed there were significant differences between two pairs of strategies: prior knowledge and morphological awareness, $z = -2.37, \ p < .05$, and prior knowledge and translation, $z = -2.37, \ p < .05$. Specifically, prior knowledge strategies ($Mdn = 58.33$) were used proportionally more than morphological awareness ($Mdn = 10$) and translation strategies ($Mdn = 0$). It is important to note, however, that these findings were significant only at a $p$-value of .05; once the $p$-value was corrected for the number of comparisons conducted in the post hoc analysis (i.e., $p < .0083$), the results were no longer statistically significant.

Analysis of the Spanish group was conducted using a repeated-measures ANOVA. Results from this test showed that Spanish readers also used certain reading strategies more than others, $F(3, 27) = 14.33, \ p < .001$. To identify which strategies were significantly different, follow-up paired-samples $t$-test were conducted. The results of these analyses showed that context strategies ($M = 25.4$) were used proportionally more than morphological awareness strategies ($M = 8.71$), $t(9) = 4.037, \ p < .01$, and that prior knowledge strategies ($M = 46.15$) were used proportionally more than context, $t(9) = -3.18, \ p < .05$, morphological awareness $t(9) = -5.67, \ p < .001$, and cognate ($M = 6.03$), $t(9) = 4.54, \ p < .01$ strategies.
Differences in strategy use were also examined between good and average readers in each language group. To examine whether good and average Chinese readers differed in the proportions of their strategy use, a series of Mann-Whitney tests were conducted. Results from these analyses indicated there were no significant differences between good and average readers in how often they used context, morphological awareness, prior knowledge and translation strategies. In contrast, significant differences were obtained for the good and average Spanish readers. Mann-Whitney tests conducted on the four strategy categories (context, morphological awareness, prior knowledge, and cognates) revealed that there were significant differences between context strategies, \( U = 0, p < .01 \), and cognate strategies, \( U = 0, p < .01 \). A closer examination of the group medians showed that context strategies were used proportionally more by average Spanish readers (\( Mdn = 38.46 \)) than by good Spanish readers (\( Mdn = 18.18 \)), and that cognate strategies were used proportionally more by good Spanish readers (\( Mdn = 18.18 \)) than by average Spanish readers (\( Mdn = 7.69 \)).

The next set of analyses compared strategy proportions between all good and all average readers. Given that Chinese and Spanish readers were combined in each proficiency group, only the strategy categories used by both languages (i.e., context, morphological awareness, and prior knowledge strategies) were investigated. Descriptive statistics conducted prior to the analyses indicated that the data for context strategies were not normally distributed. As a result, a Mann-Whitney test was used to compare the difference in strategy use. Findings from this analysis showed that there was no significant difference in how often context strategies were used by all good and average readers. Similar findings
were also obtained for the morphological awareness and prior knowledge strategies, using independent-samples $t$-tests.

The last set of analyses compared strategy use between Chinese and Spanish readers in each proficiency group. Due to the small sample sizes of these groups, Mann-Whitney tests were used to analyze the following strategies: context, morphological awareness, and prior knowledge. Results from the tests showed there were no significant differences between good Chinese and good Spanish readers in their proportions of strategy use. In other words, regardless of L1, good readers did not differ in how often they used context strategies, morphological awareness strategies, or prior knowledge strategies. The findings for the average readers were a bit different. Like the good readers, average Chinese and Spanish readers did not differ in how often they used morphological awareness or prior knowledge strategies. However, a significant difference was obtained for the use of context strategies, $U = 0, p < .05$. A comparison of the group medians indicated that average Spanish readers used these types of strategies proportionally more than average Chinese readers ($Mdn = 38.46$ and $Mdn = 16.67$ respectively). Lastly, a comparison between all Chinese and all Spanish readers showed there were no significant differences in their strategy use.

One of the most important findings within the vocabulary data is that certain reading strategies were used by one language group only. For Chinese readers, this exclusive strategy was the use of translation. Examination of the data showed that the translation strategy was used by a few of the Chinese readers (1 in the good proficiency group and 2 in the average proficiency group), whereas no Spanish readers made use of this type of strategy. A similar pattern was observed for the Spanish readers and the use of the cognate strategy. Data from
this language group indicated that all of the good readers and some of the average readers (5 and 3 respectively) made use of this strategy. In contrast, none of the Chinese readers showed evidence of using the cognate strategy at the vocabulary level. Although Chinese and Spanish readers made use of different language-based reading strategies, a look at how often they were applied seemed to indicate that Spanish readers used the cognate strategy proportionally more often than Chinese readers used the translation strategy ($M = 15.71$ and $M = 4.44$ respectively). However, a comparison of these values using a Mann-Whitney test showed that this difference was not statistically significant.

3.3.2 Strategy scores. Effectiveness of strategy use was also examined to determine if L1 and/or reading proficiency had any effects on how well students applied reading strategies at the vocabulary level. To conduct this investigation, proportions were first calculated of the strategies that were used effectively, somewhat effectively, and ineffectively by readers in each language and proficiency group (see Appendix D for a full description of the scoring criteria). To simplify data interpretation, strategies that were used effectively and somewhat effectively were combined and compared to strategies that were used ineffectively. Doing so made it easier to identify the groups that were most and least successful at applying reading strategies to the vocabulary items.

The first analysis was conducted on the good Chinese readers. Due to the small sample size of this group, a Wilcoxon signed-rank test was used to compare the proportions of strategies that were used “effectively”\(^1\) and ineffectively by these readers. The results from

\(^1\) Throughout the rest of this report, “effectively” refers to strategies that were used both effectively and somewhat effectively.
this test showed there was no significant difference between the proportions of strategies that were applied effectively and ineffectively by the good Chinese readers at the vocabulary level. The same finding was also obtained from analyses conducted on the average Chinese readers, the good Spanish readers, and the average Spanish readers. These results indicate that L1 and reading proficiency combined did not significantly affect whether readers applied strategies effectively or ineffectively. The next set of analyses examined each of these factors separately.

To determine if proficiency alone was an important factor in the effective use of reading strategies, the data from Chinese and Spanish readers in each proficiency group were investigated. Results from a paired-samples t-test conducted on the good readers showed there was a significant difference in the proportions of strategies that were used effectively and ineffectively, \( t(8) = -4.19, p < .01 \). Specifically, it was noted that good readers used reading strategies more effectively (\( M = 76.06 \)) than they did ineffectively (\( M = 23.94 \)). However, this trend was not observed with the average readers. A paired-samples t-test conducted on this group showed that no significant difference was evident in how often strategies were applied effectively and ineffectively at the vocabulary level.

To determine if L1 alone was an important factor in the effective use of reading strategies, the data from good and average readers in each language group were examined. For the Chinese readers, a paired-samples t-test showed there was no significant difference between the proportions of strategies that were used effectively and ineffectively, despite a large difference in their means (\( M = 65.92 \) and \( M = 34.08 \) respectively). In contrast, a significant difference was obtained for the Spanish readers, \( t(9) = -3.40, p < .01 \). This finding
suggests that the Spanish readers applied more reading strategies effectively \((M = 73.24)\) than ineffectively \((M = 26.76)\) when determining the meanings of low-frequency English words.

Differences in effective strategy use were also examined across languages and reading proficiencies. This allowed us to determine whether readers of the same L1 but different reading proficiencies, and readers of the same reading proficiency but different L1s used effective and ineffective strategies in the same proportions. To conduct these analyses, a series of Mann-Whitney tests were used due to the small sample sizes of the groups. The first set of analyses examined differences in effective and ineffective strategy use between reading proficiencies. Results from the Chinese group showed there were no significant differences in the proportions of effective and ineffective strategies used by good and average readers. For the Spanish group, the findings were quite different. Results from the Mann-Whitney tests indicated there were significant differences between good and average readers in the proportions of effective, \(U = 0, p < .01\), and ineffective, \(U = 0, p < .01\), strategies they used. As expected, the good Spanish readers applied effective strategies proportionally more than average Spanish readers \((Md = 91.67\) and \(Md = 53.85\) respectively). However, when all good and average readers (i.e., Chinese and Spanish readers combined) were compared, no significant differences were found.

The final set of comparisons were conducted between the Chinese and Spanish readers in each proficiency group. Among the good readers, there were significant differences in the proportions of effective, \(U = 0, p < .05\), and ineffective, \(U = 0, p < .05\), strategies that Chinese and Spanish readers used. Specifically, good Spanish readers used effective strategies proportionally more than good Chinese readers \((Md = 91.67\) and \(Md = 56.93\) respectively). No significant differences were found between average Chinese and
Spanish readers, or between all Chinese and all Spanish readers (good and average readers combined).

3.3.3 Definition scores. To examine whether vocabulary knowledge was dependent on reading proficiency level (good or average) or L1 background (Chinese or Spanish), the definition scores obtained by students in each proficiency and language group were compared. As previously mentioned, students were scored on the completeness of their definitions. Scoring ranged from 0-3, where 0 meant a definition was not given and 3 meant a student gave a correct definition, used in the right context (see Appendix D for full details of the vocabulary scoring scheme). Given that 10 vocabulary items were included in the test passage, the maximum definition score that could be achieved was 30. Due to the small sample sizes, a series of non-parametric Mann-Whitney tests were conducted to compare definition scores for good and average readers in both language groups.

In the first analysis, the scores of good and average Chinese readers were examined. Although the average Chinese group obtained a higher score than the good Chinese group ($Mdn = 23$ and $Mdn = 17.50$ respectively), this difference was not statistically significant. This finding indicates that both Chinese reading groups had similar knowledge levels of the vocabulary items. In contrast, a significant finding was obtained when comparing the good and average Spanish readers, $U = 1.0, p < .05$. In this case, the good Spanish group obtained a higher definition score than the average Spanish group ($Mdn = 26$ and $Mdn = 20$ respectively). These results suggest that the good Spanish readers had better vocabulary knowledge of the target words than the average Spanish readers.

A comparison between all good (i.e., Chinese and Spanish readers combined) and all average readers was also conducted to determine whether proficiency level alone had an
effect on definition scores. A paired-samples \( t \)-test revealed that there was no significant difference between these groups. This finding was expected, given that the combined good group had a similar mean definition score as the combined average group (\( M = 21.78 \) and \( M = 20 \) respectively).

The effect of L1 background on vocabulary knowledge was also examined. The first comparison was conducted on the good Chinese and good Spanish readers. According to the mean definition scores calculated for each group, the good Spanish readers performed better than the good Chinese readers (\( M = 24.6 \) and \( M = 18.25 \) respectively). A comparison of these values using an independent-samples \( t \)-test showed there was a significant difference between the groups, \( t(7) = 2.99, p < .05 \). This latter finding indicates that the good Spanish readers provided more accurate definitions of the vocabulary terms than the good Chinese readers did. The definition scores of the average Chinese readers and the average Spanish readers were also compared using the Mann-Whitney test. Although the average Chinese group obtained a higher definition score than the average Spanish group (\( Mdn = 23 \) and \( Mdn = 20 \) respectively), results from the test revealed that there was no significant difference between the two language groups. This finding suggests that the average Chinese and Spanish readers had similar knowledge levels of the vocabulary items.

For the final analysis, the definition scores of all the Chinese readers (good and average readers combined) were compared with those of all the Spanish readers. A paired-samples \( t \)-test conducted on the data showed there was no significant difference, despite the Spanish group having a slightly higher mean score than the Chinese group (\( M = 21.7 \) and \( M = 19.86 \) respectively).
3.4 Interview Responses

During the interview, students were asked a series of questions relating to their reading experiences, reading habits, reading motivation, and metacognitive knowledge of reading strategies. For the purposes of this study, only the questions directly assessing strategy knowledge and use are reported. These questions include the following:

1. Are you aware of any reading strategies you use when reading in your L2?
2. During reading, do you check your understanding of the text? If so, what strategies do you use for checking?
3. What do you do when you encounter a difficult word during your reading?

To facilitate the interpretation of the interview data, only the responses from good and average readers (Chinese and Spanish readers combined) are described.

3.4.1 Knowledge of L2 reading strategies. When asked about their awareness of using reading strategies when reading in English, most students in each proficiency group indicated they were aware. Although a small number of students (3 in the good group and 1 in the average group) indicated they were not aware of using L2 strategies, when given a definition of what reading strategies are, all were able to provide examples of strategies they use when reading English text. This finding indicates that regardless of proficiency, all students had the knowledge and skills of applying reading strategies, even though some were not fully aware of this.

Despite this observation, few differences were noted between the strategies mentioned by good and average readers. At the interview level, good readers provided more elaborate descriptions of the strategies they used than did average readers. Although there was some overlap between the strategies listed by good and average readers, most students
in each group differed in the reading strategies they most commonly used. The following is a list of reading strategies students in the good reading group mentioned they applied: background/prior knowledge, morphological cues (e.g., root words), skimming text, adjusting reading pace (e.g., reading fast for easy text and reading slow for difficult text), checking the meaning of words, summarizing ideas, monitoring text comprehension, re-reading, and translation. Half of these strategies can be classified as monitoring strategies, and the other half as constructing meaning strategies. Students in the average reading group mentioned the following strategies: skimming, reading titles and subtitles, reading topic and concluding sentences, re-reading, taking notes, highlighting, adjusting reading pace, using resources (e.g., thesaurus), reading out loud, using morphological cues (e.g., prefixes), inferencing through context, integrating different parts of text, and reading the conclusion. The majority of these strategies (10 out of 13) are constructing meaning strategies and the remaining few are monitoring strategies. Based on the amount of strategies listed, it appears that average readers reported using a greater variety of reading strategies than did good readers. Whereas the strategies reported by good readers were split between monitoring and constructing meaning strategies, the strategies reported by average readers consisted mostly of constructing meaning strategies. Another interesting observation is that only one reader from the good group reported using their L1 as a way to help them understand text in their L2:

Yea, I translate it. So, if it’s something easy, I won’t be translating. But if it’s something interesting and I want to remember it, I will translate it. Or if it’s something complicated, I will try to translate it as I read, and then I can understand it better.
Overall, students believed the strategies they used were very useful in helping them understand English text. When asked how they learned to use reading strategies, students provided one of three responses: (a) they were taught in school (b), they learned on their own, or (c) they were unsure where they learned how to use reading strategies. A common response among good and average readers was that they learned to use strategies in school.

### 3.4.2 Comprehension monitoring strategies

All readers in the good and average groups indicated they used certain strategies to check their understanding while reading English text. However, a notable difference between these groups is how often they mentioned using reading strategies to monitor their reading comprehension. In the good reading group, about half of the students indicated they always checked their understanding of text, whereas the other half indicated they only sometimes did this. A common response among this latter group is that they only check their comprehension when reading difficult material (e.g., textbook material, English literature, etc.) or when having trouble understanding concepts. However, when reading easier material for pleasure, such as a novel, they seldom or never monitor their comprehension. The following is response by a good Spanish reader that illustrates the points just described:

**Interviewer:** During reading, do you check your understanding of the text?

**Student:** Depending on what I’m reading. If I’m reading a novel, I’ll just assume that I understood it because later on I’ll be like “oh yeah, that happened three pages ago”. But if it’s something like a text as in like a, like a textbook or something like that, I’ll make sure because I don’t want to, you know, go read over things three times or four times or something like that. I’ll just read it once and make sure that as I’m reading it, I’m understanding it.
The following is a list of reading strategies good readers indicated they used to monitor their text comprehension: re-reading, paraphrasing, retelling, using resources (e.g., a dictionary), summarizing, taking notes, and asking for help when needing clarification of concepts.

For the average reading group, nearly all students indicated they checked their understanding of the text while reading. Only one Spanish reader stated they sometimes monitored their comprehension. For this student, monitoring was only applied when she did not understand something that was important for her to learn:

**Interviewer:** While you’re reading, do you check for your understanding?

**Student:** Well, it dep…Sometimes I just read because, for read. But if I have to read, I have, like I know…I stop myself, I’m like “ok just go over it” because I’m not getting the point. I have to, if I know this is important, I need to read. But if I’m just reading, I just keep going and then, and then maybe sometimes I get the last idea, like some, like few things. But yea, I don’t…it depends.

The strategies average readers reported using were the following: re-reading, making predictions, looking up words in the dictionary, reading out loud, and looking at pictures or figures in text to examine/confirm their comprehension.

Although readers in both proficiency groups reported using a variety of strategies to monitor their reading comprehension, the strategy most commonly used by good and average readers alike was re-reading. It is also important to note that some of the strategies mentioned by the students were actually constructing meaning strategies (paraphrasing, summarizing, taking notes), as opposed to monitoring strategies (e.g., re-reading, using a dictionary to determine the meaning of a word). Given that many of these students were unfamiliar with
reading strategies in the first place, their lack of knowledge could explain why some listed constructing meaning strategies as monitoring strategies.

3.4.3 Reading strategies at the vocabulary level. Notable differences were observed between good and average readers when asked how they dealt with difficult/unfamiliar words in their reading. Good readers reported doing at least one of the following: using a resource to look up the meaning (e.g., a dictionary, google), inferencing through context, using L1 knowledge to determine word meaning, looking at morphological cues (e.g., roots, prefixes), and skipping/ignoring the word. In total, five types of “vocabulary” strategies were mentioned by good readers. In contrast, only three strategies were reported by average readers: using a resource (e.g., a dictionary, thesaurus), inferencing through context, and skipping/ignoring the word. Across both proficiency groups, using a resource to look up the meaning of a word was the most commonly used strategy followed by inferencing through context. Readers in both groups also mentioned skipping or ignoring unfamiliar words. This latter strategy was applied only if a word did not affect their overall understanding of the text. If knowing the meaning of a word was important for text comprehension, students indicated they would look it up. These views are presented in the following student responses:

**Good reader:** Usually, I just skip over it. But if it really affects my understanding or if it’s a word that’s really important that I need to know, then I look it up.

**Average reader:** If it’s unimportant and I don’t really need to know, I just ignore it. If it’s important, then I’ll look it up.

Among the strategies good and average readers reported using at the vocabulary level, two differences are apparent. First, only two readers in the good group (both Spanish-speakers) mentioned using morphological cues, such as root words and prefixes, to determine the
meanings of unknown words, whereas none of the average readers reported using this strategy. Another strategy that was only used by good readers was relating L2 terms to L1 vocabulary. Two readers in this group (one Chinese and one Spanish) stated that it was easier for them to determine the meanings of difficult English words if they thought about them in their L1. This is illustrated in the following responses:

**Good Chinese reader:** Sometimes for English I’ll check the Chinese. So I’ll check the definitions in Chinese. I think it helps me as Chinese is my first language. So it’s easily absorbed. So once I know that, for example, if a word I don’t know in Chinese, if I check it in Chinese I might absorb that word and know it completely in two times. So if I see that word in two times and then I would know it. But then in English I’d have to possibly check it more or use it more to actually get it into my word bank.

**Good Spanish reader:** When I’m reading in English, if I don’t understand the word right away I’ll think of it in Spanish. Like, I’ll try to find like a root or something. Like “oh, this word reminds me of this word in Spanish” so maybe that’s what it means. And if it makes sense with the sentence, then I’ll accept it as that’s what it means. If it doesn’t make sense, I’ll just look it up.
Chapter 4

Discussion

The purpose of this study was to examine the reading strategies of English language learners who were good or average readers. Using the think-aloud method, the reading strategies of good and average Chinese readers and good and average Spanish readers were compared to determine whether strategy use differed as a function of reading proficiency or L1. Data analyses were conducted at three text levels (global, syntactic, and vocabulary) to assess if strategy use varied across each condition. The following discussion of the results is organized by research question and by text level. The findings from the global text level are discussed first, followed by those from the syntactic level, and followed by those from the vocabulary level. Where necessary, the trends obtained from the interviews will be integrated in the discussion as well.

4.1 Research Question 1: Do Good and Average Readers Differ in Strategy Use?

4.1.1 Global text level. At the global text level, reading strategies did not differ significantly between good and average readers. This finding is in contrast to the results obtained by Fehrenbach (1991). In her study, Fehrenbach compared the reading strategies of “gifted” (i.e., good) and average readers as they read five narrative passages using the think-aloud method. Analyses of students’ verbal protocols revealed two important findings. First, although both groups of readers used the same types of strategies while reading texts, gifted readers used six reading strategies significantly more than average readers (i.e., re-reading, inferring, analyzing structure, watching or predicting, evaluating, and relating to content area). Fehrenbach called these strategies “effective” reading strategies. The second finding was that average readers used two strategies significantly more than good readers (i.e., word
These strategies were labeled as “ineffective” reading strategies. Although the strategy categories used in the Fehrenbach study were somewhat different from those used in the present study, similar trends in strategy use were evident in both studies. A closer look at the data (see Figure 1) from the present study revealed that good readers used evaluation and monitoring strategies proportionally more than average readers, whereas average readers used constructing meaning strategies proportionally more than good readers. However, given that the analyses comparing strategy use between good and average readers were not statistically significant, these conclusions cannot be drawn.

Three possible explanations may account for the different findings obtained in the present study. First, the sample sizes in both studies were considerably different. The sample in the Fehrenbach study consisted of 60 students (30 gifted and 30 average), which was more than three times the size of the sample used in the present study (i.e., 19 students; 10 good and 9 average). Given that larger samples increase the chances of finding a significant difference when conducting statistical analyses (see limitations for a more detailed discussion), it is likely that the insignificant findings obtained in the present study were largely affected by the smaller sample sizes of the good and average groups. Second, the types of passages used to assess reading strategies were different in both studies. Students in the Fehrenbach study were required to read narrative passages, whereas students in the present study were required to read expository passages. Unlike narrative passages, which are story-based and have a subjective element to them (i.e., readers may interpret stories differently), expository passages are more factual and require less content interpretation by the reader. Given that Fehrenbach obtained significant results when her participants read
narrative passages, it would be worth investigating whether text genre affects the strategies good and average readers use. This may help explain why different findings were obtained in the present study. Third, the ages of the participants in both studies were quite different. Participants in the Fehrenbach study consisted of students in grades eight, ten, and twelve. In contrast, participants in the present study were all undergraduate students. Because admission into university requires that students have a certain level of literacy skills, it is possible that average readers were not that different from good readers to detect differences in their strategy use. Reading ability is more likely to vary among high school students which may explain, in part, why significant results were obtained in the Fehrenbach study. To the best of our knowledge, no other studies have examined differences in strategy use between good and average readers. A considerable amount of research has been conducted on good and poor readers, however, less attention has been given to the average reading group, which represents the largest percentage of readers. Based on the points discussed in this section, it is clear that further research will be required to clarify whether good and average readers differ in their strategy use.

Students’ responses to the interview questions revealed interesting findings regarding their awareness and knowledge of reading strategies. Regardless of proficiency level, most students indicated they were aware of using reading strategies when reading in their L2. About a quarter reported not being aware of using L2 reading strategies, the majority of which (3 out of 4 students) consisted of good readers. This latter finding may be an indication of the automatic processing that some good readers undergo when using reading strategies. According to Pressley and Afflerbach (1995), as individuals become increasingly proficient at using certain procedures, their processing becomes more automatized. When automatic
processing is achieved, these procedures become difficult to self-report as they occur too quickly to enter a person’s conscious awareness. The fact that all students in this study were able to apply reading strategies to the test passage suggests that for some, particularly the good readers, processing has become so automatic that they are no longer aware of when they apply reading strategies to L2 text. A notable difference was also found in the types of strategies good and average readers reported using. Average readers mentioned a greater variety of reading strategies than good readers, which is not consistent with the actual strategies they used during the test session. A look at the raw data suggested that average readers used a smaller variety of strategies than did good readers. This discrepancy between average readers’ reports and their actual use of reading strategies may suggest that these readers did not have the skills to apply some of the strategies they claimed to use when reading. When asked where they learned to use reading strategies, nearly half of the students in both proficiency groups indicated they were taught in school. The other half stated they either learned to use reading strategies on their own, or they did not know how they learned them. These remarks suggest that formal teaching of reading strategies is not provided in all schools. Given that the students indicated they found strategies to be useful when reading difficult text, it would be beneficial to incorporate reading strategies in the curriculum of English language teaching.

4.1.2 Syntactic level. When presented with grammatically incorrect sentences, good and average readers differed in their ability to identify these errors in their reading and in applying strategies to fix their comprehension. Overall, good readers were able to correctly identify the wrong sentences, whereas average readers were not. In terms of strategy use, nearly all good readers (8 out of 10) applied monitoring “fix-it” strategies to improve their
understanding of the text. In contrast, average readers seldom used reading strategies to monitor their comprehension of the incorrect sentences. Instead, these readers either continued reading, agreed with the sentences, or made elaborations to support the ideas mentioned in the sentences. This latter finding was not consistent with the interview responses average readers provided regarding their ability to monitor their reading comprehension. When asked whether they check their understanding of text during reading, all average readers indicated they did so. This was especially true when reading difficult material. They also indicated that they often apply re-reading strategies to monitor their comprehension. For most average readers, neither of these processes (i.e., monitoring and applying reading strategies) were evident in their verbal protocols. While reading the test passage, average readers seemed unaffected by the ungrammatical sentences in the text. A possible reason for this is that average readers may not process text at a level deep enough to notice grammatical inconsistencies that can affect their reading comprehension. If average readers cannot detect errors in text, they will have no need to apply monitoring strategies during their reading. In a study comparing the reading strategies of good and poor readers, Lau (2006) noted that poor readers did not process text deeply. These readers failed to read text fluently and did not recognize difficult vocabulary items in the test passages. Although the poor readers in the Lau study were lower in reading proficiency and younger than the average readers in the present study, the findings seem to indicate that less proficient readers do not engage as much in their reading as do good readers. During the interview, good readers in the present study stated they actively monitor their reading comprehension and often use strategies to overcome their reading difficulties. This was consistent with the way in which these readers approached the grammatically incorrect sentences in their reading. Further
research will be required to confirm whether good and average readers differ in the way they process text at the syntactic level. Findings from this line of research could help explain why readers in present study differed in their use of monitoring strategies.

**4.1.3 Vocabulary level.** At the vocabulary level, good and average readers did not differ in the types and proportions of reading strategies they used. They also did not differ in how effectively/ineffectively they applied strategies to unfamiliar words. As a result, there were no differences in the number of vocabulary items good and average readers defined correctly. Both proficiency groups correctly defined approximately two thirds of the vocabulary items. A possible explanation for these findings is that good and average readers do not differ in how they approach reading at the vocabulary level. However, it is important to note that the vocabulary items in the test passage were all prompted with leading questions. Therefore, each student was required to provide a definition for every word and an explanation of how they derived its meaning. It is possible that under normal reading conditions differences between good and average readers would have been noted. If good readers do in fact process text more deeply, as suggested above, they would be more likely than average readers to monitor their understanding of unknown words. This trend was observed in students’ interview responses. More average readers than good readers reported skipping unfamiliar words during their reading. In terms of actual strategy use, good readers reported using more types of reading strategies than average readers when trying to determine the meanings of an unknown words. This discrepancy in the findings supports the idea that vocabulary prompts may have masked any differences between good and average readers that would have been observed.
Differences in strategy use were also compared between good and average readers in each language group. For the Chinese group, no differences in strategy use were observed, however, significant differences were noted for the Spanish readers. Within this language group, average readers used context strategies more than good readers, and good readers used cognate strategies more than average readers. These findings indicate that good Spanish readers relied on their L1 knowledge more than average Spanish readers to determine the meanings of the vocabulary items. Good and average Spanish readers also differed in the proportions of strategies they used effectively and ineffectively. As expected, good readers used more effective strategies than average readers. This resulted in good readers achieving higher definition scores than average readers. On the other hand, no differences in effective and ineffective strategy use were noted between good and average Chinese readers. Similarly, there were no differences in their definition scores. Together, these findings indicate that differences in strategy use between good and average readers were only apparent at the language level. This was especially true for Spanish readers. Given that these readers had the advantage of using their L1 vocabulary knowledge to help them determine the meanings of the target words, it is likely that this strategy helped differentiate good and average readers in the Spanish group but not in the Chinese group.

Although there were no differences between good and average readers in their strategy use at the vocabulary level, differences were noted within each proficiency group. Among all good readers, morphological awareness strategies were used the least. This means that good readers relied less on morphological cues (e.g., root words, prefixes, compound words, etc.) to determine the meanings of the vocabulary items, and more on prior knowledge and passage context. Among average readers, prior knowledge strategies were used the most.
These readers showed little evidence of engaging with the actual text to determine a word’s meaning, such as using contextual or morphological clues. Instead, average readers often relied on their background knowledge to come up with the definitions of the target words. In terms of effective strategy use, good readers applied a greater proportion of their strategies effectively than ineffectively, at the vocabulary level. No trend was observed for the average readers, indicating they used similar proportions of effective and ineffective strategies. Overall, these findings suggest that good readers rely on multiple strategy types to determine the meanings of unfamiliar words, whereas average readers rely on their prior knowledge the most. Good readers are also more skilled at applying reading strategies. These findings may provide evidence that good readers process text content more carefully than average readers when encountering difficult words in their reading.

4.2 Research Question 2: Is Strategy use Dependent on a Shared L1 and L2 Alphabet?

4.2.1 Global text level. At the global text level, reading strategies did not differ between Chinese and Spanish L1 readers. This finding suggests that strategy use is not dependent on a shared L1 and L2 alphabet, but is metacognitive in nature. In other words, a student’s L1 does not affect the types or number of reading strategies he/she uses when reading English passages as a whole. This was evident by the fact that the Chinese and Spanish readers both used the same types of strategies in similar proportions when completing the think-aloud reading task. As noted by Lau (2006) this type of finding supports the idea that higher-level processing of reading may be universal across languages of different orthographies. Similar conclusions have been drawn by other researchers. For example, Hung and Tzeng (1981) concluded that at higher levels of processing, reading is a “universal property” – a cognitive activity that is not dependent on language orthography. In
their study, Hung and Tzeng reviewed the findings of numerous studies that have examined visual information processing among languages of different orthographies (i.e., logographic, syllabic, and alphabetic). Comparisons of the findings indicated there were no differences between languages in regards to the following reading activities: word recognition, working memory strategies, inferences, and comprehension. These results suggest that at the macrolevel readers of different L1 backgrounds acquire and use the same types of reading skills.

No major differences were noted between Chinese and Spanish readers in the interview responses they provided regarding their use of reading strategies in their L2. A small number of students in each language group reported not being aware of using reading strategies, however a closer look at the data revealed that most of these students were good readers. Therefore, proficiency, rather than L1, seemed to have affected strategy awareness in some students. In terms of actual strategy use, Chinese and Spanish readers reported using similar types of reading strategies. Almost half of the strategies reported by readers in both language groups were monitoring strategies and the other half constructing meaning strategies. These observations provide further evidence that a reader’s L1 does not affect the types of strategies he/she uses at the global text level. For this study in particular, it was evident that strategy use was not dependent on how similar the students’ L1s were to English. Both Chinese and Spanish readers used and reported using similar strategies when reading the English test passage as a whole.

4.2.2 Syntactic level. There were no differences between Chinese and Spanish readers in their ability to identify grammatically incorrect sentences and to apply monitoring strategies to improve their comprehension. Similarly, there were no differences in the
interview responses Chinese and Spanish readers provided regarding their ability to check their understanding of text. All students indicated they monitored their comprehension of English text, especially when reading difficult material. Students in both language groups also reported using monitoring strategies to check their understanding, with re-reading being the strategy that was most commonly described. These findings provide evidence that strategy use at the syntactic level may not be dependent on a shared L1 and L2 alphabet. This supports the theory that at higher levels of processing, reading skills are independent of language.

4.2.3 Vocabulary level. Differences in strategy use between Chinese and Spanish readers were quite evident at the vocabulary level. The most notable difference was that each language group used a type of reading strategy that was only used by their readers. For the Chinese group, this exclusive strategy was translation. Although a small number of Chinese readers applied this strategy when trying to determine the meanings of the vocabulary items, none of the Spanish readers made use of this strategy. Instead, Spanish readers relied on cognate knowledge to define some of the English target words. That is, Spanish readers often derived the meanings of the vocabulary items by associating them to Spanish words that had similar spelling (e.g., conceive and concebir). Given that cognates do not exist between Chinese and English, none of the Chinese readers showed evidence of using this strategy. These trends in strategy use were also noted in students’ interview responses. Only Chinese readers reported using translation to understand the meaning of a difficult word they encountered in their reading, and only Spanish readers reported using cognate knowledge when reading unfamiliar words in English text. Another interesting finding from the interviews is that only Spanish readers mentioned using morphological cues to determine the
meanings of unknown words. This may be related to the fact that many Spanish and English words share similar roots and affixes due to their common origins in Latin. Other than translation and knowledge of cognates, no other differences in strategy use were found between Chinese and Spanish readers at the vocabulary level.

In terms of effective strategy use, no differences were noted between Chinese and Spanish readers. In other words, Chinese and Spanish readers used strategies effectively and ineffectively in similar proportions. For both language groups, readers used a greater proportion (~70%) of their reading strategies effectively. As a result, no differences were found in the number of correct definitions Chinese and Spanish readers provided. In other words, both groups obtained similar definition scores. Taken together, these findings suggest that a reader’s L1 does not affect how well reading strategies are applied, but it can affect the types of strategies that are used at the vocabulary level.

Differences in strategy use between Chinese and Spanish readers were also found within each proficiency level. Among good readers, Chinese readers used the translation strategy exclusively and Spanish readers used the cognate strategy exclusively. Good Spanish readers also used more effective reading strategies than good Chinese readers, which may explain why they achieved higher definition scores. Given that the Chinese and Spanish readers were all from the same reading group, reading proficiency cannot explain why Spanish readers were more successful at defining the vocabulary items. This suggests that language alone must be an important factor. Since most of the target words in the test passage were Spanish-English cognates, Spanish readers had the advantage of relying on their L1 vocabulary knowledge to guess their meanings. Chinese readers did not have access to this strategy, therefore, they were less likely to get the definitions correct.
Chinese and Spanish readers of average reading proficiency also differed in their strategy use. In addition to the differences already mentioned regarding the use of translation and cognates, these readers differed in their use of context strategies to determine the meanings of the vocabulary items. Specifically, greater use of these strategies was made by average Spanish readers. Given that the test passage was written in English, it is unlikely that language background (i.e., L1) would have affected a reader’s ability to use context strategies in his/her L2. A more plausible explanation may be found a reader’s experience with English text. Although both language groups consisted of average readers, a closer look at the students’ backgrounds showed that the Spanish readers had been in Canada for a longer amount of time than the Chinese readers (15 years, 6 months and 6 years, 1 month respectively). As a result, average Spanish readers had more experience reading English texts and were likely more comfortable using surrounding text to determine a word’s meaning. As expected, Chinese and average Spanish readers did not differ in how effectively they applied reading strategies at the vocabulary level. This was also reflected in the definition scores, in which no difference between the language groups was noted.
Chapter 5

Conclusion

5.1 Summary of Findings

Two main conclusions can be drawn from the results obtained in this study. The first is that differences in strategy use between good and average readers are only apparent at the syntactic level. However, this may be more of a text processing issue than an actual reading strategies issue. At other text levels, good and average readers do not differ in the types or proportions of strategies they use. The second conclusion is that strategy use is dependent on a shared L1 and L2 alphabet, but only at the vocabulary level. In other words, a reader’s L1 can determine the types of reading strategies he/she uses, but only when reading unfamiliar vocabulary in their L2. Regardless of reading proficiency or language, what is evident throughout this study is that ELLs make use of reading strategies when reading English text. This points to the important role that reading strategies play in the reading process of L2 learners. Although this study has provided insights into how reading strategies are used by undergraduate ELLs, further research is still required to have a full understanding of how reading strategies are acquired and applied by readers of different language backgrounds and reading proficiency levels. Results from this research can help create better reading programs for ELLs who are learning to read in their second language.

5.2 Educational Implications

The findings from this study have important implications for education and reading research. First, it provides educators and researchers with a better understanding of the reading strategies older bilingual students use when comprehending text in their L2. Given that previous research has focused on the strategies used by young bilingual students (i.e.,
children in elementary school grades), the findings from this study show that undergraduate students use different types of strategies when reading in their L2. Compared to younger learners, older bilingual students have more reading experience in their L1, and are more knowledgeable about the conventions of print material. As a result, these students have more cognitive resources available to them when reading difficult passages in their L2. These additional skills are likely to provide older bilingual readers with a greater range of strategies that can facilitate their L2 comprehension. Understanding the differences in strategy use among older bilingual students is important, as it can help teachers provide the right type of assistance for older students struggling with reading comprehension. Second, these findings can help teachers develop more effective reading programs that can meet the needs of bilingual students from different language backgrounds. For example, teachers can help bilingual students learn how to use L1 literacy skills to improve their L2 reading comprehension. For students whose L1 shares a similar orthography with English (e.g., Spanish), teaching them how to use cognates to make sense of unfamiliar vocabulary can be very useful. Furthermore, all bilingual students could benefit from using the translation strategy to comprehend text in their non-native language. For students who are overall average readers in their L1 and L2, teachers can provide them with instruction on how to process text more deeply and apply appropriate strategies to improve their comprehension. Finally, the results of this study can encourage the use of native language skills in the classroom. By showing that L1 reading strategies (e.g., translation and cognate knowledge) are important for L2 comprehension, these findings can provide support to the notion that a student’s L1 should be viewed as an advantage and not an interference when engaging in L2
reading. This, in turn, could motivate teachers and policy makers to incorporate more L1 instruction in their English reading programs.

5.3 Limitations

A number of limitations in this study may affect the generalizability of its results. First, the sample sizes in each reading group were small. One of the disadvantages of running qualitative research, especially when using the think-aloud method, is that data analysis can be very time-consuming. As a result, only a small number of participants can be included in a study, which may not be representative samples of the larger population. Another concern with small sample sizes is that it can reduce a test’s power when conducting statistical analyses (Howell, 2007, pp. 225-226). Although significant findings can be obtained from small samples, the results must be interpreted carefully as lower power reduces the chances that a statistically significant result reflects a true effect.

A second limitation in this study is that the reading abilities of average readers in both language groups were not completely matched. Even though specific criteria were used to identify participants’ as good and average readers, there were some differences in the reading comprehension levels of the Chinese and Spanish readers. It was noted that the reading comprehension scores of the average Chinese readers were higher ($M = 32$) than the scores of the average Spanish readers ($M = 26.2$). This discrepancy in comprehension levels may have affected any differences that could have been observed between these groups.

A third limitation is that factors such as verbal ability and working memory were not controlled. Given that the think-aloud protocol (TAP) relies heavily on thought verbalizations, participants with low verbal ability may be at a disadvantage. Although an individual may have the knowledge and skills to use reading strategies, if their verbal ability
is low, they will not be able to express these thoughts during a think-aloud session. This, in turn, can lead to misleading observations, which can bias any conclusions drawn from the overall findings. Working memory can also affect a participant’s performance on a TAP. Higher working memory may indicate higher cognitive ability which can put certain participants at an advantage when measuring their reading skills.

A fourth limitation is that think-alouds cannot measure unconscious thought processes. As noted by Pressley and Afflerbach (1995), when readers become proficient at using reading strategies, they process them more automatically. When this occurs, strategies are not heeded in short-term memory and do not become available for conscious self-reporting. If a reader processes reading strategies in this way, it is unlikely that they will be able to express how they construct meaning from text. This can result in few strategies being detected through a TAP, which can lead to misleading findings.

A fifth and final limitation is that prompted TAPs often interrupt the natural flow of reading, which can affect the way in which readers process texts. A participant expressed the following about his experience when reading the test passage: “I found it challenging only because I was stopped very often. I usually don’t read like that because I read very long passages and I don’t stop at every sentence”. It is possible that by breaking the test passage into prompted segments, participants were encouraged to come up with thoughts they would not have processed under normal reading conditions.

5.4 Future Directions

Although the research conducted to date has significantly improved our understanding of reading strategies and how they are used by readers of different ages, reading proficiencies, and language backgrounds, there are still many areas that require
further investigation. One of these areas is understanding the role that a reader’s L1 plays in strategy development. Reading strategies that are taught and used within a L1 context may influence the types of strategies that are applied when reading English text. The nature of this strategy “transfer” and whether it is dependent on a reader’s L1 or reading proficiency are important to understand, as they can provide insights to the kinds of L1 factors that affect L2 reading comprehension. One way to address these issues is by examining the reading strategies ELLs use when reading text in their L1 and L2.

Researchers seeking to examine reading strategies should also consider adding an eye-tracking component to their studies. Research has shown that eye fixation patterns observed in reading are often associated with the use of a variety of strategies in reading comprehension (Sereno & Rayner, 2003). While there have been a number of studies examining reading strategies using the think-aloud or eye-tracking paradigms (Hyönä, Lorch, & Kaakinen, 2002; Meseguer, Carreiras, & Clifton, 2002; van der Schoot, Vasbinder, Horsley, & van Lieshout, 2008), few have used them in conjunction (e.g., Kaakiinen & Hyönä, 2005). Doing so would allow information obtained from each method to be validated, a process known as triangulation. We hope to include this component in future investigations.

Another area that requires further research is examining whether text type (expository vs. narrative) has an effect on the strategies ELLs use when reading in their L1 and L2. Given that expository passages contain more factual information than narrative passages, it is likely that readers will apply more inferencing strategies when reading narrative texts. To test this hypothesis, future studies should incorporate narrative passages in their studies and compare the strategies used with this text to those applied with expository passages. Findings from
this line of research could help teachers identify specific reading strategies that should be taught to students when reading texts of different genres.

Finally, reading comprehension should also be measured in studies examining reading strategies. Doing so would allow correlations to be drawn between these factors. This, in turn, could help determine if greater strategy use is related to better reading comprehension.

Addressing all of these topics will not only contribute to our current understanding of how reading strategies are used in the reading process, but it will also help educators develop more effective intervention programs for students who are struggling with reading difficulties in their L2.
References


Appendix A

Interview Questions

Reading Experience in L1 and L2:

1. Currently, do you read in your L1?
2. Currently, do you read in your L2?
3. Do you think reading in your L1 is different than reading in your L2?
4. Does being able to read in your L1 help you when you read in your L2?
5. Does being able to read in your L2 help you when you read in your L1?
6. Is there anything challenging about reading in your L1?
7. Is there anything challenging about reading in your L2?
8. Are you aware of any reading strategies you use when reading in your L1?
9. Are you aware of any reading strategies you use when reading in your L2?
10. What kinds of reading material are most difficult /easiest for you to read in your L1 (e.g., newspapers, novels, comics, textbooks, etc.)?
11. What kinds of reading material are most difficult/easiest for you to read in your L2 (e.g., newspapers, novels, comics, textbooks, etc.)?

Reading Habits:

12. What kinds of reading materials do you mostly read in your L1?
13. What kinds of reading materials do you mostly read in your L2?
14. When reading for pleasure, do you mostly read in your L1 or L2? Can you tell me more about that?

Reading Motivation:

15. Do you think you are a good reader in your L1? Tell me more about that.
16. Do you think you are a good reader in your L2? Tell me more about that.
17. Do you like to read in your L1? Tell me more about that.

18. Do you like to read in your L2? Tell me more about that.

19. Is there anything that motivates you to read in your L1?

20. Is there anything that motivates you to read in your L2?

Metacognitive Knowledge:

21. What do you do before you start reading a text? Is it any different for when you read Chinese/Spanish or English?

22. During reading, do you check your understanding of the text? If yes, what strategies do you use for checking? Is it any different for when you read Chinese/Spanish or English?

23. What do you do when you encounter a difficult word during your reading? Is it any different for when you read Chinese/Spanish or English?

24. What do you usually do after reading a text? Is it any different for when you read Chinese/Spanish or English?
Appendix B

Coding Scheme for Reading Strategies

Identifying and Learning Text Content:

1. Paraphrasing/re-stating
   Example: The bouquet consisted of red, purple, yellow, orange, and pink flowers. “So the bouquet had colourful flowers.”

2. Visualizing/imagining concepts
   Example: “I’m picturing…”

3. Inferring meaning through context
   Example: “He must be a fierce person because he’s referred to as ‘the lion’.”

4. Translating text into another language
   Example: The house was really big. “Ah, la casa era muy grande.”

Monitoring:

1. Comprehension
   Example: “I don’t get this. I’m confused.”

2. Re-reading
   Example: “The boy ran swiftly…the boy ran swiftly.”

3. Knowledge of content
   Example: “I didn’t know that.”

4. Questioning content
   Example: “What does this mean?”

Evaluation:

1. Text style – Sentence structure
   Example: “This sentence sounds weird.”

2. Text content - Approval of argument(s)
   Example: “Yeah, I agree with this.”

3. Affective reaction – Negative
   Example: “This is grossing me out.”
4. Character(s) described in text
   **Example:** “This man is really rude.”
Appendix C

Coding Scheme for Vocabulary Reading Strategies

Inferencing through:

1. Context (sentences, paragraphs)

2. Morphological cues
   a) Root words (magician)
   b) Prefixes (pro-), suffixes (-er)
   c) Compound words (e.g., bookstore → book & store)
   d) Derivational knowledge (e.g., describe → description)

3. Prior knowledge
   Example: Schema, personal experience. “I learned this word in science class.”

4. Cognates (words with same meanings and similar spellings across languages)

5. Translation
Appendix D
Scoring Schemes of Vocabulary Definitions and Strategy Use

Table D1

Scoring Scheme for Vocabulary Definitions

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<thead>
<tr>
<th>Score</th>
<th>Criteria</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td>No definition given</td>
</tr>
<tr>
<td>1</td>
<td>Incorrect definition</td>
</tr>
<tr>
<td>2</td>
<td>Literal translation</td>
</tr>
<tr>
<td></td>
<td>Vague but close definition</td>
</tr>
<tr>
<td></td>
<td>Correct definition used in wrong context</td>
</tr>
<tr>
<td>3</td>
<td>Correct definition used in right context</td>
</tr>
<tr>
<td></td>
<td>Direct translation with elaboration</td>
</tr>
</tbody>
</table>

Table D2

Scoring Scheme for Vocabulary Reading Strategies

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<th>Score</th>
<th>Criteria</th>
</tr>
</thead>
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<tr>
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<td>Did not use strategy</td>
</tr>
<tr>
<td>1</td>
<td>Used strategy ineffectively</td>
</tr>
<tr>
<td></td>
<td>(gave wrong response)</td>
</tr>
<tr>
<td>2</td>
<td>Used strategy somewhat effectively</td>
</tr>
<tr>
<td></td>
<td>(gave incomplete response)</td>
</tr>
<tr>
<td>3</td>
<td>Used strategy effectively</td>
</tr>
<tr>
<td></td>
<td>(gave complete, correct response)</td>
</tr>
</tbody>
</table>