

## 探討學生閱讀母語與外語之後設認知閱讀

### 策略使用情形

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#### 摘要

後設認知的概念已被廣泛的探討與運用在各種學習領域，在第二語閱讀的研究領域中，過去也不乏有關學生後設認知知識以及閱讀策略方面的研究，但是就有關於比較學生閱讀母語與外語，和其後設認知閱讀策略使用之研究來說，文獻上仍舊缺乏統一定論，因此尚有探討之必要。本研究主旨在探討一群台灣大學生分別在閱讀母語（中文）及外語（英文）時，其後設認知閱讀策略的使用情形。研究參與對象為十位台灣的大一學生，採用放聲思考的方法來蒐集學生後設認知閱讀策略的使用情形。研究結果顯示，儘管學生閱讀母語與外語的後設認知閱讀策略使用情形有不少相似之處，但是學生在閱讀母語時會使用較多的後設認知閱讀策略，他們在閱讀外語時的後設認知閱讀策略使用次數相對較少。除此之外，學生在閱讀母語時也比較能夠使用一些有效的認知閱讀策略，像是掌握重點及做推論的策略。相對的，學生在閱讀外語時，比較需要常常監控自己對文意的了解情形，以及運用額外的策略來幫助他們複習內容。

關鍵詞：後設認知、閱讀策略、英語為外語之閱讀

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## **See How They Read: EFL Students' Use of Metacognitive Reading Strategies in L1 and L2**

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### **Abstract<sup>\*\*</sup>**

The concept of metacognition has been widely applied to learning across different content areas. In the area of second language reading, literature on L2 readers' metacognitive knowledge and use of reading strategies is also voluminous. Nonetheless, findings from cross-linguistic research on students' use of metacognitive reading strategies in L1 and L2 have met with mixed results. The present study attempted to investigate a group of college EFL students' use of metacognitive reading strategies when reading in Chinese (L1) and in English (L2). Ten EFL college students in Taiwan participated in this study. Data regarding students' use of metacognitive reading strategies in L1 and L2 were elicited through a think-aloud reading task. The results showed that while certain similarities in metacognitive strategy use were found between L1 and L2 reading comprehension, students exhibited somewhat different reading behavior between the two languages. One important difference was that students tended to apply far more metacognitive reading strategies when reading in L1 than in L2. Moreover, students were more capable of identifying main ideas as well as making inferences when reading in their native language. When reading in L2, students not only needed to monitor their own understanding more often but also invoked additional strategies to help them review and comprehend the text.

Key words: metacognition, reading strategies, EFL reading

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# **See How They Read: EFL Students' Use of Metacognitive Reading Strategies in L1 and L2**

Hsu, Li-Yuan

## **1. Introduction**

The term “metacognition” was first introduced by Flavell (1979) and defined as “knowledge and cognition about cognitive phenomena” (p. 906). It generally refers to thinking about one’s thoughts (Harris & Hodges, 1995) or thinking about thinking (Anderson, 2002). According to Israel (2007, p. 1), it is a “cognitive process where one is aware of his or her own thinking”. Since its development, the concept of metacognition has been widely applied to learning across different content areas. In the area of reading, metacognition is considered to be a critical aspect of effective reading and reading instruction (Israel, 2007). Skilled readers often use metacognitive information to monitor their comprehension and to distribute attentional resources (Griffith & Ruan, 2005). Research has also found a strong link between students’ metacognitive knowledge and L2 reading achievement (e.g. Zhang, 2010).

One way to describe metacognition in reading is through the study of readers’ strategy use. Over the years, the effective use of strategies has also been well recognized as an important factor contributing to successful reading comprehension. Research conducted in the L1 domain has shown that efficient readers are constructively responsive readers and are able to use strategies more effectively and flexibly than inefficient readers (Pressley & Afflerbach, 1995). In a similar vein, significant differences in the use of reading strategies have also been found among L2 readers with different proficiency levels (e.g. Chern, 1995; Zhang & Wu, 2009). One important finding from these studies of reading strategies is that good or skilled

readers are often more aware of knowledge, procedures, and controls of the reading process (Israel, 2007); in other words, they tend to be metacognitively more skillful at deploying strategies. In light of the critical role of metacognition as well as effective use of strategies in skilled reading, the present study aimed to investigate a group of college EFL students' use of metacognitive reading strategies when reading in their first language (L1, Chinese) and second language (L2, English).

## **2. Literature Review**

The following literature is going to focus on two aspects of research pertaining to students' use of metacognitive reading strategies: (a) a theoretical framework on metacognition and metacognitive reading strategies, and (b) research on L2 readers' use of metacognitive knowledge and reading strategies.

### **2.1 Theoretical Framework on Metacognition and Metacognitive Reading Strategies**

Flavell's (1979) model of metacognition is the foundation for research in the field of metacognition today. Flavell described (1979) a model of cognitive monitoring that incorporated metacognitive knowledge and metacognitive experiences. In this model, metacognitive knowledge is characterized as combinations of information around three knowledge variables—self, task, and strategies—that will be effective in achieving the goals of the task. The self/person variable is concerned with any knowledge or awareness about how one learns and processes their cognitive activities. For instance, this may include a person's awareness of his/her own abilities (Iwai, 2011). The task variable is knowledge about the nature of the task. The last variable, strategies, involves actions needed for achieving the goals. Another important component in Flavell's (1979) model is metacognitive experiences, which are internal responses that people have regarding their metacognitive processing. They are “items of metacognitive knowledge that

have entered consciousness” (p.908) and can alter a person’s metacognitive knowledge base. For instance, an individual’s awareness of failure, success, uncertainty, or satisfaction about things is included in this category (Iwai, 2011).

One important application of the concept of metacognition into reading was Pressley and Afflerbach’s (1995) work of utilizing metacognitive assessment tools in verbal protocol analysis. In their influential study on reading behaviors of good readers, Pressley and Afflerbach found that highly skilled readers use specific metacognitive strategies before, during, and after reading to aid in their comprehension and understanding of the texts being read. Israel (2007, p.7), based on Pressley and Afflerbach’s (1995) study, divided metacognitive reading strategies into three types: planning strategies (P), monitoring strategies (M), and evaluation strategies (E), which include a list of key reading strategies utilized by metacognitive readers before-, during-, and after-reading processes. These strategies form the basis of Israel’s metacognitive reading framework, which emphasizes the importance of assessing students’ awareness of the strategic reading processes as well as developing metacognitive-oriented reading instruction.

In addition to Israel’s list of metacognitive strategies used by effective readers, Pressley (2002) also described the characteristics of a skilled reader. A total of fourteen reading strategies were characterized in the study. In the phase of preparing to read, a good reader is clear about the goals for reading, skims the text to get information about the length and structure of the text, and activates prior knowledge. In the phase of constructing meaning while reading, a skilled reader reads selectively, identifies main ideas, predicts, makes inferences, interprets and evaluates, integrates ideas into a coherent representation of the text, and monitors understanding. In the phase of reviewing and reflecting on reading, a skilled reader self-questions for understanding, invokes strategies to review the text and comprehension, summarizes, and continues to process the text based on reading

goals. Although Pressley's (2002) list of reading strategies largely corresponds to Israel's (2007) metacognitive reading strategies, they are different in terms of how these strategies were grouped. Israel described these strategies as what metacognitive readers use *before*-, *during*-, and *after*- reading processes, whereas Pressley grouped them in terms of the three phases: *preparing to read*, *constructing meaning*, and *reviewing and reflecting on reading*. While the former categorization may be useful for pedagogical purposes, Pressley's classification seems to better capture the actual reading processes. For example, a strategy like "evaluating the text" would be categorized as a metacognitive strategy utilized by readers after reading based on Israel's list. However, it is common to see that readers sometimes evaluate the text while they read. For this reason, the present study used Pressley's list as an index to assess students' use of metacognitive reading strategies in L1 and L2.

## **2.2 Research on L2 Readers' Use of Metacognitive Knowledge and Reading Strategies**

Over the past two decades, research has shown the substantial impact of metacognitive knowledge on L2 learners' reading comprehension. For instance, Schoonen, Hulstijn, and Bossers, (1998) examined the role of vocabulary knowledge and metacognitive knowledge in text comprehension among young Dutch-English bilingual readers across three grade levels. The results of the study indicated that metacognitive knowledge played a significant role in text comprehension and vocabulary knowledge appeared to be a strong indicator for reading performance. Focusing on Chinese EFL readers, Zhang (2001) looked at students' metacognitive knowledge of strategies. Data were collected through retrospective interviews and were analyzed based on a broad metacognitive perspective within Flavell's model of metacognition. The study found that Chinese EFL readers' metacognitive knowledge of reading strategies had close links to their EFL proficiency. The students from the more advanced group were aware of their strengths and weakness in reading

strategies while those from the less advanced group were not. In a similar vein, Zhang (2010) reported another interview study. The participants were twenty EFL college students from China and their EFL reading experiences were interpreted within a dynamic metacognitive systems perspective. The results of the study also revealed a strong relationship between metacognition and successful EFL reading comprehension. It was found that the successful and less successful L2 students were different in the amount and the quality of the metacognitive knowledge they possessed.

Apart from metacognitive knowledge, the effective use of reading strategies has also been well recognized as an important factor contributing to successful L2 reading comprehension. Research has also found significant differences in the use of reading strategies among L2 readers with different proficiency levels. For example, Chern (1995) conducted a study to examine students' use of reading strategies. Sixteen Taiwanese EFL college students from two proficiency groups were recruited to perform a think-aloud reading task. The study showed that readers from the high proficiency group tended to apply strategies more frequently than those from the low proficiency group. Moreover, while more proficient readers used more global reading strategies, less proficient readers tended to apply more local reading strategies. Also targeting on EFL students with different L2 language abilities, Zhang and Wu (2009) investigated metacognitive awareness and reading strategy use of a large group of Chinese high school students. Data were collected through the Survey of Reading Strategies (SORS), which consists of three broad types of reading strategies: global, problem-solving, and support. The results of the study showed that the high-proficiency group outperformed the intermediate group and the low-proficiency group in two categories of reading strategies: global and problem-solving; but no statically significant difference was found among the three proficiency groups in using support strategies.

In addition to comparing L2 readers with different reading abilities, another line of research on L2 reading strategies focused on comparing L1 and L2 reading comprehension processes. Block (1992) explored the comprehension-monitoring process used by first and second language readers of English in dealing with two types of language-based problems. The study found that proficient L2 readers performed similarly to proficient L1 readers and less proficient L2 readers performed similarly to less proficient L1 readers. Block suggested that there was a regular process that operated similarly for native speakers of English and second language readers in solving the two specific types of problems. Block's suggestions of possible links between L1 and L2 reading comprehension processes were supported by Yau's (2009) study of young EFL readers. Yau's study examined the knowledge and application of strategic reading among Taiwanese high school students through both questionnaires and interviews. The results indicated a strong link between the perceived use of L1 and L2 reading strategies. While both Block's and Yau's studies indicate a general reading process that operates similarly for both L1 and L2 readers, the issue seems far more complex than it is suggested. For instance, Davis and Bistodeau (1996) examined the use of reading strategies among two groups of readers with different levels of L2 proficiency. Participants were asked to think-aloud and read two texts, one in their L1 and the other in their L2. The results indicated that while no difference was found between L1 and L2 among advanced readers, low-level readers tended to use more bottom-up strategies in L2 and more top-down strategies in their L1. In a similar vein, Stevenson, Schoonen, de Glopper (2007) also utilized the think-aloud method to compare the reading strategies of a group of Dutch high school students reading in Dutch and English. It was found that these adolescent readers applied significantly more language-oriented strategies in English (L2) than in Dutch (L1). They also used more regulatory strategies (e.g. planning, monitoring, and evaluating) when reading in English than in Dutch.



Furthermore, the different L1-L2 reading behavior revealed in these two think-aloud studies is also consistent with findings from two other large-scale studies (i.e., Sheorey and Mokhtari, 2001; Tsai, Ernst, and Talley, 2010). Although both studies employed questionnaires to investigate students' use of reading strategies, Sheorey and Mokhtari (2001) focused on examining the differences between ESL and native English readers. The results showed while readers with high reading abilities from both groups reported using more cognitive and metacognitive strategies than those with low reading abilities, ESL readers, regardless of their reading abilities, applied one type of metacognitive strategies, support strategies, more often than their L1 counterparts. Targeting on one group Chinese EFL readers, Tsai et al. (2010) investigated the relationship between L1 and L2 strategy use in L2 reading comprehension. The study also revealed a cross-linguistic processing difference among readers with low reading abilities. It was found that the less skilled readers tended to employ more strategies in L1 than in L2.

So far, research has indicated that L2 readers' metacognitive knowledge and use of reading strategies have close links to their EFL proficiency; however, findings from those cross-linguistic studies on students' use of reading strategies have met with mixed results suggesting that the issue concerning L1 and L2 reading comprehension processes seem far more complex and remain unresolved. Therefore, the present study attempted to investigate a group of college EFL students' use of metacognitive reading strategies when reading in Chinese (L1) and in English (L2). In order to further examine how these EFL readers employ metacognitive reading strategies to comprehend texts in L1 and L2, two research questions were addressed in the present study:

1. Are there any similarities between L1 and L2 reading comprehension for Chinese EFL learners? If yes, what similarities can be found in the patterns of metacognitive reading strategy use between L1 and L2?

2. Are there any differences between L1 and L2 reading comprehension for Chinese EFL learners? If yes, what differences can be found in the patterns of metacognitive reading strategy use between L1 and L2?

### **3. Methodology**

#### **3.1 Participants**

The participants of this study were ten college students (seven females and three males) enrolled in the same Freshman English course from a university of technology in northern Taiwan. A consent form along with a background survey were given to every student in the class and administered under the supervision of the course instructor. These ten students agreed to participate in a follow-up reading task and were thus recruited in the present study. The participants came from a variety of majors: three from Accounting, two from Interior Design, and five from Finance. According to the results of a practice General English Proficiency Test (known as the GEPT test) offered by the university, the participants' scores on the reading section of the beginning-level of the test ranged from 65 to 85, with an average of 73.5. Since the passing score for the reading section of the GEPT test was 76, the test results indicated that in general the students' English reading ability was at the upper beginning level.

#### **3.2 Reading Materials**

Two reading passages were prepared in the present study, one in students' L1 (Chinese) and the other in their L2 (English). The participants had to read each passage respectively and perform a task while they read. Both of the L1 and L2 passages were expository essays and contained general topics that did not require specific background knowledge from the readers. The procedures for selecting appropriate texts for the reading task were depicted below.

Concerning the English (L2) text, in order to determine the difficulty level of the text, the textbook used by the participants for their Freshmen English course was

examined. The readability of the articles included in the textbook was found to range from Flesch-Kincaid Levels 5 to 8. For this reason, a 189-word English reading passage on the benefits of being a vegetarian, with the Flesch-Kincaid level of 6.7, was chosen. In addition to the analysis of readability level, three students with a similar English proficiency level to that of the participating group were asked to read the passage and assess if the text was readable to them. Based on their responses, the difficulty level of the selected English passage was considered appropriate.

As for the Chinese (L1) text, an article on the topic of comparing the Lao-Tzi and Bible from a local psychology journal was chosen. The adapted passage was 745 characters in length. Although the Chinese text was nearly three times longer than the English text, it was considered appropriate due to the fact that students would have much less difficulty in reading L1 material. In addition, while the L1 passage was mainly written in the contemporary form of Mandarin Chinese, it also contained several quotes written in the classic form (the wen-yen). The presence of the wen-yen text served the purpose of increasing the difficulty level of the L1 text, which could make it more comparable with the L2 text. The benefit of including the wen-yen text was also supported by Yau's (2009) study of Taiwanese high school EFL students. This was mainly because the students in Yau's study considered the reading of English texts more closely resembled the reading of texts written in the classic literary style of Chinese. Finally, the adapted L1 passage was also piloted by asking three students to think aloud while reading it. The students were also interviewed afterwards for their text comprehension and feedback. Based on the information obtained from this pilot work, the passage was considered suitable to be used in the think-aloud task of the study.

### **3.3 Data Collection**

The participants' uses of metacognitive reading strategies in L1 and L2 were elicited through a think-aloud reading task in the present study. The think-aloud task

required the students to verbalize their thoughts while they read. Consequently, each participant met individually with the researcher to perform the task. During the meeting, the students first received a five-minute training on how to think aloud. After that, they were asked to perform the reading task containing two passages, one Chinese and one English text. The order of giving out the two texts was counterbalanced in the study. Additionally, in order to remind the participants to stop and think aloud, a red dot was placed at the end of each sentence in each passage. Students were also allowed to verbalize their thoughts either in English or Chinese so that their English proficiency would not interfere with their ability to report their reading processes. The average time required for each participant to perform the whole task was around 45 minutes. All the verbal reports produced by the participants were audio-recorded.

### **3.4 Data Analysis**

The audio data obtained from the think-aloud task were transcribed verbatim. The resulting data were the verbal protocols. To code the protocols, as described earlier, Pressley's (2002) list of fourteen characteristics of a skilled reader was used in the present study as a coding scheme to assess students' use of metacognitive reading strategies in L1 and L2. Based on the scheme, all think-aloud protocols were coded by the researcher. After repeated comparison, the researcher identified the metacognitive reading strategies appearing in the protocols. After that, the frequency of each metacognitive strategy use was also counted.

## **4. Results**

This section responds to the research questions by presenting findings from the analysis of the think-aloud protocols. Both quantitative and qualitative results will be presented to show students' patterns of metacognitive reading strategy use in L1 and L2.

#### 4.1 Similarities between L1 and L2 Reading Comprehension

The first research question focuses on whether there are similarities between L1 and L2 reading comprehension. Table 1 shows the total number of metacognitive reading strategies used by the participants when comprehending texts in L1 and L2. One similar pattern of strategy use between L1 and L2 reading comprehension was the distribution of the three types of metacognitive reading strategies identified in Pressley's list. As shown in Table 1, regardless of which language students read, the most widely employed type of strategies was those categorized under "constructing meaning while reading" (77% for L1; 72% for L2), followed by the category of "reviewing and reflecting on reading" (16% for L1; 22% for L2). The least frequently used type of strategies were those labeled as "preparing to read" (7% for L1; 6% for L2). More specifically, when reading both in L1 and L2, students tended to utilize more strategies that would help them construct meaning from the text. For instance, participants were found to constantly interpret and evaluate the meaning of the text as well as read selectively. Some efforts were also made by the participants to review and reflect on the content through either summarizing parts of text or utilizing other strategies to assist their comprehension.

Lastly, another similar pattern of strategy use between L1 and L2 has to do with those least frequently applied strategies. For instance, students seldom employed strategies such as skimming the text or having clear goals for reading. It seems that students paid less attention to the phase of preparing to read when comprehending texts in both L1 and L2. Moreover, strategies such as predicting, self-questioning and continue to process the text based on reading goals were also rarely used by students when reading across languages.

**Table 1**  
**The Number of Metacognitive Reading Strategies Used**

Metacognitive Reading Strategies		L1	L2
<i>I. Preparing to read</i>	1. Is clear about the goals for reading	2	0
	2. Skims the text to get information about the length and structure of the text	0	1
	3. Activates prior knowledge	6	3
<i>Subtotal for Category I.</i>		8(7%)	4(6%)
<i>II. Constructing meaning while reading</i>	1. Reads selectively, reading quickly irrelevant information or rereading important, difficult, or interesting text	20	5
	2. Identifies main ideas	10	1
	3. Predicts	1	0
	4. Make inferences	8	1
	5. Interprets and evaluates	35	23
	6. Integrates ideas into a coherent representation of the text	4	3
	7. Monitors understanding	7	10
<i>Subtotal for Category II.</i>		85(77%)	43(72%)
<i>III. Reviewing &amp; reflecting on reading</i>	1. Self-questions for understanding	1	0
	2. Invokes strategies to review the text and comprehension	6	8
	3. Summarizes	10	5
	4. Continues to process the text based on reading goals	1	0
<i>Subtotal for Category III.</i>		18(16%)	13(22%)
<b>Total</b>		111	60

*Note.* N=10

Furthermore, the similarities between L1 and L2 reading comprehension could also be readily identified through examining the top five metacognitive strategies employed by the participants. Table 2 presents the five most frequently used metacognitive reading strategies in L1 and L2. As shown in Table 2, the strategy that was most frequently applied in both languages was the strategy of “interpreting and evaluating”.

**Table 2**  
**The Five Most Frequently Used Metacognitive Reading Strategies in L1 and L2**

Languages	Strategies	F	%
L1	(1) Interprets and evaluates	35	32
	(2) Reads selectively, reading quickly irrelevant information or rereading important, difficult, or interesting text	20	18
	(3) Identifies main ideas	10	9
	(4) Summarizes	10	9
	(5) Make inferences	8	7
L2	(1) Interprets and evaluates	23	38
	(2) Monitors understanding	10	17
	(3) Invokes strategies to review the text and comprehension	8	13
	(4) Reads selectively, reading quickly irrelevant information or rereading important, difficult, or interesting text	5	8
	(5) Summarizes	5	8

*Note:* N=10; F=raw frequency

The following two excerpts (Excerpts 1 and 2) show students' use of the most common strategy, interpreting and evaluating, when reading L1 and L2 texts respectively. In Excerpt 1, the participant first tried to interpret the meaning of the L1 sentence with parts written in classic form of Chinese. After explaining the meaning of the text, the participant began to evaluate it by commenting that the text "seems to contract our ordinary ways of thinking." In Excerpt 2, although the student seemed less sure about the meaning of the English sentence she was reading, like the reader in Excerpt 1, she also attempted to come up with a logical interpretation of the text.

Excerpt 1. (Participant #4, reading the L1 text)

「去甚，去奢，去泰，為別人留餘地...喔...我想他說的意思應該是等到你自己處於不利的狀況或弱勢的時候，然後想說好不要跟他人計較了，讓別人就這樣，這感覺跟我們平常想得不太一樣。」

“With no forces, no benefits, and no pride, leaving room for others,...oh...I think it means that when you are being placed at a disadvantage, you decide to let it go and yield to others. This seems to contradict our ordinary ways of thinking.”

Excerpt 2. (Participant #9, reading the L2 text)

「他是不是在講一個實驗用在動物上有許多問題？好像是這樣」 (*The participant read, “There is also the question of cruelty to animals.”*)

“Is he saying that there are lots of problems when you perform an experiment on animals? It seems to be the case.

The second strategy that was commonly applied in both languages was the strategy of “reading selectively” though students tended to use it with a higher proportion when reading in L1 than in L2. Notice that this particular strategy, according to Pressley’s (2002) list, actually encompasses two different variations. One is “rereading important, difficult, or interesting text” and the other is “reading quickly irrelevant information.” Students’ applications of these two variations of “reading selectively” are illustrated in the following examples (Excerpts 3 and 4).

Excerpt 3. (Participant #6, reading the L1 text)

「這句好深奧喔，要再看一次。」 (*The participant read, “它是屬於張力型思維格局的產物” “It is the product of intense thinking.”*)

“Because the sentence is so profound, I need to read it again.”

Excerpt 4. (Participant #8, reading the L2 text)

「我剛剛就是前面這幾個字很快地就跳過，沒有看得很仔細，我有時候就是會抓重點之類的看吧」 (*The participant read, “The trend is sweeping across the world and changing diets everywhere.”*)



“I have just quickly skipped the beginning few words. I didn’t look at them very carefully because sometimes I just try to read the important points.”

In Excerpt 3, it seems that the student had trouble grasping the meaning of the L1 sentence he had just read; therefore, he decided to read this “profound sentence” again. While it is common for readers to re-read certain parts of the text, they sometimes skim the text by selecting important words to read. The reader in Excerpt 4 demonstrates the latter scenario by describing how she skipped the beginning few words of the L2 sentence. She further explained that the purpose of such reading behavior was to focus on the important points in the text. Lastly, another metacognitive reading strategy that was commonly used by students in both L1 and L2 reading comprehension is “summarizing,” which is explicated in the two excerpts below.

Excerpt 5. (Participant #7, reading the L1 text)

「看到這裡我覺得這篇文章是在把聖經的倫理觀和老子的思想在做比較，因為他講了耶穌的標準是神的標準，前面又說老子是無為的和」

“So far I think this article tries to compare the Bible’s view of ethics with Lao-Zi’s philosophy. This is because he (the author) has described Jesus’ standard as God’s standard here and Lao-Zi’s harmony as doing nothing in the previous section.”

Excerpt 6. (Participant #9, reading the L2 text)

「到目前為止我想這篇文章大概是在講飲食方面吧，他講到健康、改變飲食、然後還有研究顯示如何如何的」

“So far I think this article is probably about diets because he (the author) has talked about health, changing diets, and how studies have shown this and that.”

In both Excerpts 5 and 6, the readers tried to review the part of text they had read by summarizing the main point as well as its supporting details. For instance, concerning Excerpt 5, the student first pointed out that the main idea of the L1 text

was to compare Bible and Lao-Zi; after that, she went on to summarize the details of how they were different. In Excerpt 6, the student did likewise when reading the L2 text. She not only identified the main point (i.e. diets) but also reviewed several key phrases related to that concept (i.e., *health*, *changing diets*, and *studies*).

In short, the results of this study indicate that certain similarities exist between L1 and L2 reading comprehension in terms of students' use of metacognitive strategies. Regardless of which language they read, students tended to focus on applying those metacognitive strategies that would help them construct meaning from the text. For instance, the strategies of interpreting and evaluating as well as reading selectively were commonly employed by these EFL readers in both L1 and L2. In addition, students also occasionally utilized the strategy of summarizing to help them review and reflect on the content. Lastly, certain types of metacognitive strategies such as predicting and self-questioning were rarely used by students when comprehending texts in both L1 and L2.

#### **4.2 Differences between L1 and L2 Reading Comprehension**

The second research question focuses on whether there are differences between L1 and L2 reading comprehension. One apparent difference is the number of metacognitive reading strategies used by the participants. As shown in Table 1, students applied nearly twice as many strategies in L1 as in L2 (111 for L1; 60 for L2). Notice that although the percentage of strategy use in each of the three categories, as described earlier, was fairly similar between L1 and L2, far more metacognitive strategies were used by students when reading in L1 than in L2. In other words, students tended to read more metacognitively in L1. Students' inclination to be a more metacognitive reader in L1 can also be observed in Table 2. The occurrences of the top two strategies alone in L1 (35 plus 20) were nearly as many as the sum of total strategies used in L2 (60). Students' use of these strategies (i.e., interpreting & evaluating and reading selectively) was displayed in the previous excerpts (Excerpts 1 and 3). Again, although both strategies were employed in L1 and L2, they occurred much often when students read the L1 text.

In addition to the difference in the number of strategies used, two other

important differences can be found between L1 and L2 comprehension. First, concerning the strategies of identifying main ideas (L1:10 vs. L2: 1) and making inferences (L1: 8 vs. L2:1), these two strategies occurred much more frequently in L1 than in L2 (see Table 1). The following two excerpts (Excerpts 7 and 8) illustrate students' use of these strategies in L1.

Excerpt 7. (Participant #9, reading the L1 text)

「倫理觀...感覺是重點」

“The view of ethics,...seems to be the key point.”

Excerpt 8. (Participant #3, reading the L1 text)

「其所造成的結果必然是把信徒推至一個高度張力的身心狀態中...這樣的話壓力應該會很大啊，我覺得作者想說還是老子比較好」

“Consequently those Christian believers will be forced to live under extreme pressure...If this is the case, they should be very stressful. I think the author is trying to say that Lao-Zi's philosophy is better.”

In Excerpt 7, we can see that the reader was able to identify the phrase “the view of ethics” as the main idea of the L1 sentence. In the next excerpt, another student read the L1 text and made comments about the sentence he read. In this example, the student not only just made assumption about being a Christian but also pointed out the author's intention of favoring Lao-Zi, which was not explicitly stated in the text. The reader was able to go beyond the surface layer of the text and infer possible meaning. While students were able to process the text in L1 at a deeper level, they were less able to do so when reading in L2. The excerpt below demonstrates how the same student (Participant #3) read the L2 text.

Excerpt 9 (Participant #3, reading the L2 text)

「這個問題...答案...但是..有些人...選擇...veg...」 (*The participant read, “That question has yet to be answered, but many people are choosing to go vegetarian.”*)

“This question...answer...but...some people...choose...veg....”

In Excerpt 9, the student tried to translate the sentence in a rather word-by-word or phrase-to-phrase manner. The translation stopped until he came across an unfamiliar word (i.e., *vegetarian*). Notice that in the previous example (Excerpt 8), this participant was found to make the inference about the writer's stance when reading in L1. In contrast, when reading in L2, he began to read the text in a very bottom-up fashion. It seems that the predominance of students' bottom-up processing style in L2 might have inhibited them to transfer those metacognitive reading strategies from L1.

Another important difference in the pattern of strategy use between L1 and L2, also shown in Table 2, is the strategies of monitoring understanding as well as invoking strategies to review the text and comprehension. Although these two strategies were the second and third most commonly applied strategies in L2, they were not among the top five strategies students used when reading in L1. Excerpts 10 and 11 present the two examples.

Excerpt 10 (Participant #1, reading the L2 text)

「唸過去一遍還是不太懂...這段我都不太懂」

“I still don't understand the meaning (of this sentence) after reading it. Actually, I don't quite understand the whole paragraph.”

Excerpt 11 (Participant #8, reading the L2 text)

「我看完了又回去看這段，我想看看這句的意思可不可以連貫到前面」

“I went back to read this whole paragraph. In particular, I wanted to see if I could connect the meaning of this sentence to the previous part.”

In both examples, we can see that the readers seemed to have trouble comprehending the text. They both stopped the reading processes and began to monitor and evaluate their understanding of the text. However, the reader in Excerpt 10 only indicated her inability to comprehend the meaning without finding ways to solve the problem. On

the contrary, the reader in Excerpt 11 tried to fix the comprehension problem by utilizing two additional strategies, re-reading (i.e., *went back to read the whole paragraph*) as well as connecting or integrating ideas (i.e., *connect the sentence to the previous part*). Since reading in L2 is in general a more challenging task for most students, it is not surprising to see that the participants applied these strategies more frequently in L2 than in L1.

To sum up, the results of the study also reveal that L1 and L2 reading comprehension is considerably different in terms of the number of metacognitive strategies used by the participants. Students tended to apply far more metacognitive reading strategies in L1 than in L2. Moreover, they also exhibited somewhat different reading behavior between reading in L1 and L2. For instance, when reading in L1, students were more able to identify main ideas as well as make inferences from the text. However, when reading in L2, they not only needed to monitor their own understanding more often but also invoke additional strategies to help them review and comprehend the text.

## 5. Discussion

The finding that L2 readers tended to apply more metacognitive strategies in L1 is in line with Tsai et al.'s (2010) study in which the less skilled readers in their study were also found to employ more strategies in their L1 than in L2. One possible explanation postulated by Tsai and her associates was that less skilled readers were less capable of transferring their reading strategies from L1 to L2, which might result in their fewer number of strategies used when reading in L2. This seems to be true for the participants of the present study since they were also readers with limited L2 reading abilities (i.e., as indicated by their performance on the reading section of the beginning-level GEPT test). Moreover, the present study also found that these students tended to heavily rely on lower-level processing such as word-by-word translation when reading in L2. Students' predominant use of the bottom-up processing style in L2 might have inhibited them to transfer those metacognitive

reading strategies from their L1. Such speculation is also supported by the finding from Davis and Bistodeau's (1996) study in which their low-level readers tended to use more bottom-up strategies in L2 and more top-down strategies in L1. Taken together, these findings seem to lend support to the linguistic threshold hypothesis proposed by Clarke (1980), who stated that a certain threshold level of L2 language proficiency is necessary before L1 reading ability can be transferred to L2 reading.

Another important finding of the present study is that despite the apparent difference in the number of metacognitive strategy used between L1 and L2, significant similarities were also found in students' patterns of strategy use between the two languages. More specifically, regardless of which language they read, students tended to focus on applying those metacognitive strategies that would help them construct meaning from the text. They prefer using strategies like interpreting and evaluating, reading selectively, and summarizing. These results are consistent with findings from Block's (1992) and Yau's (2009) studies in which a similar reading process seems to be at work when students read across languages. Furthermore, based on L1 reading literature (e.g. Pressley and Afflerbach, 1995; Pressley, 2002), the goal of a skilled reader is to achieve successful reading comprehension through making use of specific metacognitive strategies during the whole reading process. The findings of the present study also provide evidence for EFL readers' use of such strategic reading process when reading both L1 and L2 texts.

Put together, the findings of this study suggest that although there seems to be a common reading process that operates similarly in both L1 and L2 reading in terms of students' use of metacognitive reading strategies, it is definitely not uniformly automatic for them to transfer all the skills they knew from L1 to L2 (Urquhart & Weir, 1998; Yau, 2009). As shown in the present study, this seems to pose particular challenges for less proficient students. As a consequence, one pedagogical

implication that can be drawn here is the necessity of instructions on metacognitive reading strategies for L2 readers. L1 reading researchers such as Baker (2005) and Israel (2007) have long advocated the importance of metacognitively oriented reading instruction. A number of L2 studies (e.g. Fung, Wilkinson, & Moore, 2003; Salataci & Akyel, 2002) have also suggested that intervention for metacognitive strategies is advantageous for EFL/ESL readers. Iwai (2011) suggested teachers to teach metacognitive reading strategies explicitly via using diverse metacognitive reading techniques such as semantic mapping and graphic organizers. As Iwai (2011, p.156) put it, although many “teachers regularly use metacognitive reading strategies with their students”, we cannot expect “students to also use them independently.” The present study provides evidence to support the importance of teaching metacognitive strategies in L2 reading classrooms.

## **6. Conclusion**

The present study set out to investigate students' use of metacognitive reading strategies when reading in their L1 and L2. The results showed that while certain similarities in metacognitive strategy use were found between L1 and L2 reading comprehension, students exhibited somewhat different reading behavior between the two languages. One important difference was that students tended to apply far more metacognitive reading strategies when reading in L1 than in L2. Moreover, students were more capable of identifying main ideas as well as making inferences when reading in their native language. When reading in L2, students not only needed to monitor their own understanding more often but also invoked additional strategies to help them review and comprehend the text.

Although this study has shed some light on Chinese EFL learners' reading comprehension processes between L1 and L2, the findings reported in this article need to be interpreted with caution. The study has a number of limitations. First,

since the number of participants was relatively small and the study only focused on a group of students with limited English proficiency, additional research carried out on large numbers of students with different language abilities is needed. Another limitation of this study has to do with the analysis of the think-aloud data. Since the current research utilized Pressley's (2002) list of the characteristics of a skilled reader to assess students' use of metacognitive reading strategies, future research may include other coding schemes to avoid possible bias in the data analysis. Lastly, an additional limitation of this study is related to the issue of L1 reading ability. Note that instead of taking students' various L1 reading abilities into consideration, this study assumed a unitary L1 reading ability of the participants. Future research should incorporate more specific measures to assess students' L1 reading ability so that relationship between L1 reading ability, L2 proficiency, and reading strategy use in L1 and L2 can be further investigated.

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