

# TRANSFER OR THRESHOLD: THE RELATIONSHIP BETWEEN L1 AND FL COMPREHENSION MONITORING

## Abstract

A crucial area in FL reading research is the transfer of reading skills from L1 to FL. Among all the reading skills, comprehension monitoring plays an important role. This study examines relationship between comprehension monitoring outcomes in L1 and FL reading among Chinese learners of English as a foreign language (EFL) with different FL proficiency measured by scores from a mid-term examination prior to the study. It also investigates the separate contributions of L1 comprehension monitoring and FL proficiency to FL comprehension monitoring. Altogether 126 students in a vocational education program took part in the study. They completed an error detection task in both L1 and FL reading. For each error detection task, they were asked to read two narratives embedded with external and internal errors. The data were analyzed using correlation and multiple regression analyses. The results suggest that there was a moderate positive relationship between L1 and FL comprehension monitoring; and L1 comprehension monitoring made a much larger contribution to FL comprehension monitoring than FL proficiency did.

## Introduction

A central issue in FL reading research is concerned with the transfer of reading skills acquired from L1 to FL, in which metacognitive skills play a significant role (van Gelderen, Schoonen, de Glopper, Hulstijn, Simis, Snellings, & Stevenson, 2004). Among different metacognitive processes in reading, comprehension monitoring is essential for competent reading (Alexander & Jetton, 2000; Auerbach & Paxton, 1997; Pressley & Afflerbach, 1995; Wray, 1994; Zinar, 2000). The present study investigated the relationship between comprehension monitoring in Chinese (L1) and English (FL) reading by Chinese EFL learners; and the separate contributions of L1 comprehension monitoring and FL proficiency to FL comprehension monitoring to test transfer and threshold hypotheses in FL reading.

## Literature Review

In studying the relationship between L1 and FL reading skills, different researchers have proposed different hypotheses, among which the transfer hypothesis (Goodman, 1971) and the threshold hypothesis (Alderson, 1984; Clarke, 1979; Cummins, 1979) are influential. The transfer hypothesis maintains that FL readers generally transfer reading skills acquired in L1 reading to FL reading. According to Goodman (1971), the reading process is “much the same for all languages with minor variations to accommodate the specific characteristics of the orthography used and the grammatical structure of the language” (p. 140). This transfer is especially concerned with the transfer of metacognitive skills. Metacognitive skills in reading are abilities to use strategies to regulate the reading process (Baker & Brown, 1984; Schoonen, Hulstijn, & Bossers, 1998; van Gelderen *et al.*, 2004). Among FL readers, metacognitive skills are thought to be learned in L1 reading and subsequently transferred into FL reading.

Metacognition is defined as “a person’s knowledge and beliefs about the human mind and its doings”, which includes “one’s conscious knowledge, cognitive process and states such as memory, attention, knowledge, conjecture and illusion” (Flavell, Miller, & Miller, 2002, p. 106). Metacognition consists of two components: metacognitive knowledge and metacognitive control. Metacognitive knowledge is what a person knows about his/her own cognitive process; whereas metacognitive control is concerned with one’s ability to achieve different kinds of goals through activities such as planning and monitoring under the direction of one’s metacognitive knowledge (Alexander, Schallert, & Hare,

1991; Baker & Brown, 1984; Westby, 2004).

In the context of reading, metacognitive knowledge includes what readers know about themselves, the reading tasks they face and various reading strategies (Paris, Wasik, & Turner, 1991). Readers' metacognitive knowledge is thought to be the common basis for both L1 and FL reading (Schoonen *et al.*, 1998; van Gelderen *et al.*, 2004). However, whether FL readers are able to use this shared metacognitive knowledge to successfully execute metacognitive control in a FL reading is not guaranteed since FL readers generally have limited grammatical and lexical knowledge. The present study focuses on one kind of metacognitive skill - comprehension monitoring. It aims to test whether comprehension monitoring skills in L1 reading significantly contribute to comprehension monitoring skills in FL reading (transfer hypothesis) or whether FL proficiency significantly contribute to comprehension monitoring in FL reading (threshold hypothesis).

Comprehension monitoring is defined as "a metacognitive process...essential for competent reading, which directs the reader's cognitive processes as he/she strives to make sense of incoming textual information" (Wagoner, 1983, p. 328). It is a crucial aspect of metacognitive control in the context of reading (Hacker, 1997; Oakhill, Hartt, & Samols, 2005). Comprehension monitoring involves a series of activities, which can be categorized into three behaviours: evaluation, planning and regulation (Baker, 1985; Otero, 1998; Paris & Myers, 1981). Evaluation allows readers to evaluate their current understanding of the text and helps them decide whether there is a need to take compensatory actions. If there is, it requires planning to select strategies relevant to the comprehension problem. Regulation then implements the appropriate strategies to fix up comprehension breakdown (Casanave, 1988). For proficient readers, they may re-allocate attention, slow down the speed of reading, re-interpret certain chunks in the text, re-evaluate the hypothesis they have made, and move backward or look ahead in the text in order to solve the ambiguity (Casanave, 1988; Otero, 1998; Palincsar & Brown, 1984).

There are a great number of studies on comprehension monitoring in L1 reading. These studies normally required readers to detect the errors embedded in a text (Garner, 1987). Previous studies examined comprehension monitoring with children (e.g. Zabucky & Ranta, 1992) and adults (e.g. Pressley & Ghatala, 1990); comparing good and poor readers (e.g. Zabucky & Moore, 1989); using different text types, such as narratives (e.g. Ruffman, 1996) and expositions (e.g. Knudsen, 2001); and manipulating and creating different types of errors (e.g. Kinnuen & Vaurus, 1995), such as lexical (nonsense words), external (information that contradicts general world knowledge); and internal errors (information that are contradictory within a text) (Han & Stevenson, 2008; Oakhill, Hartt, & Samols, 2005).

The results of these studies indicate that comprehension monitoring develops over time (Baker, 1984; Garner & Taylor, 1982; Kolić-Vehovec & Bajšanski, 2001). Younger and poorer readers do not monitor their comprehension successfully (Flavell, 1981; Garner, 1990; Garner & Anderson, 1982; Markman, 1981; Yuill & Oakhill, 1991; Zabucky & Moore, 1989; Zabucky & Ranter, 1992). There was a general trend that younger and less skilled readers noticed more lexical errors than the other types since they tended to evaluate their comprehension on a lexical level (Westby, 2004). Poorer readers had particular difficulty in the detection of internal errors (e.g. Ehrlich, 1996; Ehrlich, Remond, & Tardieu, 1999), and this could be attributed to the increased difficulty of detecting internal errors than external errors, as detection of internal errors require readers to compare the incoming information with a recently constructed representation of the text, which is less stable than readers' general knowledge about world (Baker & Zimlin, 1989; Ehrlich, 1996; Ehrlich, Remond, & Tardieu, 1999; Markman, 1985; Oakhill, Hartt, & Samols, 2005; Otero & Kintsch, 1992).

Compared with the amount of research on comprehension monitoring in L1 reading, only scant attention has been paid to comprehension monitoring in FL reading. Most of FL comprehension monitoring studies adopted a process orientation using a think-aloud method. These studies compared how native and non-native readers monitored comprehension (Block, 1992); compared bilingual

readers' comprehension monitoring processes in reading in their stronger language and weaker language (Jiménez, García, & Pearson, 1996); compared what proficient and less proficient EFL readers did to monitor comprehension in English reading (Yang, 2002); and compared how high reading proficiency and high metacognitive awareness (HPHM) readers and low reading proficiency and low metacognitive awareness (LPLM) readers monitored their comprehension to detect internal errors during English reading (Khonamri & Kojidi, 2011).

These studies showed that: comprehension monitoring was more likely influenced by reading proficiency than by language background because both proficient L1 and FL readers tended to monitor their comprehension efficiently (Block, 1992; Jiménez *et al.*, 1996); good EFL readers were more successful at integrating information they previously encountered to interpret the meaning and to monitor their thinking, whereas poor EFL readers seemed to only process sporadic information and did not know how to integrate it (Yang, 2002); and HPHM readers used nearly double the amount of comprehension monitoring strategies when compared to LPLM readers (Khonamri & Kojidi, 2011). However, all the above studies only examined the process-oriented comprehension monitoring - uses of comprehension monitoring strategies rather than the outcome-oriented comprehension monitoring - how successfully the readers monitored their comprehension (e.g. the rate of error detection). Besides, these studies did not compare comprehension monitoring in L1 and FL reading.

Two studies compared L1 and FL comprehension monitoring outcomes. Morrison (2004) compared Canadian English-speaking undergraduates' comprehension monitoring in English and French (FL) by asking students to detect lexical errors and information errors (i.e. internal and external errors). She found that students were more successful in the detection of information errors than lexical errors. Han and Stevenson (2008) pointed out that the poorer performance on the detection of lexical errors compared to information errors could be partly attributed to FL readers' limited lexical knowledge. In order to truly examine FL readers' comprehension monitoring, Han and Stevenson (2008) used only information errors (i.e. internal and external errors) to compare Chinese EFL readers' comprehension monitoring in Chinese and English reading. They found that participants performed significantly better in comprehension monitoring in L1 reading than that in FL reading. However, this study did not investigate the relationship between L1 and FL comprehension monitoring, and how L1 comprehension monitoring and FL proficiency predict FL comprehension monitoring. These are the two aims of the present study. The study addresses the following research questions:

1. What is the relationship between comprehension monitoring in L1 and FL reading?
2. How do L1 comprehension monitoring and FL proficiency contribute to FL reading comprehension monitoring?

## Method

### Research Design

The study adopted a quantitative approach to collect data. A quantitative approach is "outcome-oriented" and it collects "hard, replicable" numerical data (Nunan, 1992, p. 4). Since the present study was mainly concerned with outcome-oriented comprehension monitoring in L1 and FL reading, therefore, quantitative data were collected.

In order to collect quantitative data, an error detection paradigm, which is the most commonly used approach to study comprehension monitoring (Garner, 1987; Morrison, 2004; Oakhill, 1996; Otero, 2002; Zabrocky & Ranter, 1992), was employed. In this approach, texts are premodified and inconsistent information is embedded to trigger readers' conscious attention of monitoring (Brown, 1987; Oakhill, 1996).

## Setting and Participants

The study was conducted in the Vocational Department in a provincial university in Shaanxi Province, China. Forty-one male and 85 female students in year 2, participated in the study. Their mean age was 18 years old and on average they had received 4.5 years English education.

Students' mid-term examination scores in English were collected as indicators of their English proficiency. The mid-term examination tested students' vocabulary, grammar, reading, writing and spoken English. Students' scores ranged from 31 to 95 out of a maximum achievable score of 100.

## Instruments

Participants' L1 and FL reading comprehension monitoring performance were measured via a Chinese and an English error detection tasks. Each task asked students to read two narrative texts and to underline information errors in them. The two error detection tasks were adopted from Han and Stevenson (2008). In the L1 error detection task, the two texts were *An Old Father and His Three Sons* (704 words) and *A Young Pretty Girl and Her Lover* (674 words) (Chen, 2007). The texts were two Aesop's fables (Chinese version). In the FL error detection task, *the Poor Man and His Three Sons* was a Philippine folktale (601 words), and *Anya's Garden* was an Indian folktale (580 words) (Bedjos, 1993). The decision was made to use narratives because participants read English narratives more often than other text types. To ensure that the chosen texts were suitable for the participants' English reading proficiency, their English teachers were consulted for the difficulty of linguistic features of the two texts. The two Chinese texts were longer than the two English texts, as the participants' L1 reading proficiency was better than their FL reading proficiency.

As mentioned earlier, because using lexical errors could examine FL readers' vocabulary knowledge rather than their comprehension monitoring, the error detection tasks used solely information errors: namely external and internal errors. One example of external errors was "He eats water", in which "eats water" was contradictory to general world knowledge. An example of internal errors was "Alice could not open the kitchen door because her key was bent. She walked through the kitchen door", in which "walked through the kitchen door" violated the information "could not open the kitchen door". Five external errors and 5 internal errors were scattered throughout each text for a total of 10 external and 10 internal errors in each task. Each correct error detection received 1 point, and the maximum scores for each error detection task were 20. The reliability analyses showed that both of the two tasks were quite reliable, with the Cronbach's alpha coefficient being .79 for L1 task and .82 for FL task.

## Data Analysis

Data were entered into SPSS 20 to perform both descriptive and inferential statistics. Descriptive statistics are valuable in the general observation of a data set (Coakes & Steed, 2007; Field, 2009). These include Means, Standard Deviations, minimum and maximum scores, and highest achievable scores.

In order to answer the first research question, bivariate correlation analyses were carried out. As scores for the two error detection tasks were continuous variables, Pearson product moment correlation analysis was chosen (Coakes & Steed, 2007). Two-tailed tests were selected since the direction of the relationship was not predicted (Morgan, Leech, Gloeckner, & Barrett, 2004). It is generally agreed that correlation coefficient  $r$  from .00 to .40 indicates a weak relationship; from .40 to .60 is a moderate relationship; and from .60 to .80 is a strong relationship (Neil, 2008).

To answer the second research question, a multiple regression analysis was conducted using FL

comprehension monitoring as a dependent variable, and L1 comprehension monitoring and FL proficiency as independent variables. There are two ways to enter independent variables into a regression, namely forced entry and hierarchical entry (Larson-Hall, 2010). While forced entry method puts all predictive variables into a regression equation simultaneously, hierarchical method relies on researchers to decide the order of entry. Researchers can emphasize the importance of any predictive variables by entering it first (Field, 2009; Larson-Hall, 2010; Tabachnick & Fidell, 2001).

The present study adopted a forced entry method, as the transfer hypothesis (Goodman, 1971) and the threshold hypothesis (Alderson, 1984; Clarke, 1979; Cummins, 1979) are disputed about the importance of L1 reading skills (i.e. L1 comprehension monitoring) and FL proficiency to FL reading skills (i.e. FL comprehension monitoring). Effect size was computed using the equation:  $f^2 = R^2 / 1 - R^2$ , and the interpretation of effect size followed the guideline:  $f^2 = .02$  is a small effect;  $f^2 = .15$  is a medium effect; and  $f^2 = .35$  is a large effect (Cohen, 1988).

## Results

The descriptive statistics are presented in table 1. It shows that students' performance in L1 comprehension monitoring was higher than that in FL comprehension monitoring, and paired t-test revealed that the difference was significant ( $t(125) = 7.69$ ,  $p < .01$ ). Likewise, a paired t-test demonstrated students' L1 comprehension monitoring of external errors was higher than that in FL ( $t(125) = 11.49$ ,  $p < .01$ ). The same pattern was also observed for the comprehension monitoring of internal errors: a paired t-test suggested that students' performance of detection of internal errors in L1 reading was significantly higher than those in FL reading ( $t(125) = 17.42$ ,  $p < .01$ ).

Table 1 Descriptive Statistics of L1 and FL Comprehension Monitoring Tasks and English Proficiency

Variables	M	SD	Min.	Max.	Maximum Achievable Scores
L1 (overall)	14.95	3.35	4	19	20
L1 (external errors)	7.69	2.01	1	10	10
L1 (internal errors)	7.26	1.73	1	10	10
FL (overall)	9.10	4.43	1	17	20
FL (external errors)	5.10	2.28	1	10	10
FL (internal errors)	4.00	2.28	0	8	10
FL proficiency	74.78	12.52	31	95	100

To answer the first research question, a series of two-tailed Pearson product moment correlation analyses were performed, and the results are presented in table 2.

Table 2 Results of Pearson Product Moment Correlation Analyses

Variables	FL overall	FL external	FL internal
L1 overall	.52**		
L1 external		.40**	
L1 internal			.45**

\*\* $p < .01$  (2-tailed)

Referring to table 2, there was a significant positive medium correlation between students' overall comprehension monitoring in L1 and FL reading ( $r = .52$ ,  $p < .01$ ). Students' comprehension monitoring of external errors in L1 reading was also found to be positively and moderately correlated with their comprehension monitoring of external errors in FL reading ( $r = .40$ ,  $p < .01$ ). Similarly, a positive and medium correlation was also obtained between students' comprehension monitoring of internal errors in L1 and FL reading ( $r = .45$ ,  $p < .01$ ).

In order to answer the second research question, a multiple regression analysis with forced entry method was used. Before carrying out the regression analysis, the assumptions for regression analysis were first checked. The results of correlation analyses indicated there was a significant relationship between FL and L1 comprehension monitoring ( $r=.52, p<.01$ ), and a significant relationship between FL comprehension monitoring and FL proficiency ( $r=.24, p<.01$ ); and there was no multicollinearity between the L1 comprehension monitoring and FL proficiency ( $r=.18, p<.05$ ). The above results ensured a multiple regression to be carried out. The results of the multiple regression analysis are displayed in table 3.

Table 3 Results of Multiple Regression Analysis

Model	B	$\beta$	<i>t</i>	<i>p</i>	$f^2$
Constant	-4.74	---	-2.02	.04	---
L1 comprehension monitoring	-0.64	<b>.49**</b>	<b>6.31</b>	<b>.00</b>	<b>.41</b>
FL proficiency	0.06	<b>.16*</b>	<b>2.04</b>	<b>.04</b>	<b>.05</b>

$R^2=.29$ ,  $**p<.01$ , for L1 comprehension monitoring, and  $R^2=.05$ ,  $*p<.05$ , for FL proficiency  
B=unstandardized regression coefficient;  $\beta$ =standardized regression coefficient

Table 3 shows that, both L1 comprehension monitoring and FL proficiency are significant contributors to FL comprehension monitoring: L1 comprehension monitoring could explain around 29% of variance and the effect size is large ( $\beta=.49, R^2=.29, p<.01, f^2=.41$ ), and FL proficiency could explain only about 5% of variance and it has medium effect size ( $\beta=.16, R^2=.05, p<.05, f^2=.05$ ). This means that L1 comprehension monitoring made a much larger contribution to FL comprehension monitoring than FL proficiency did. Altogether L1 comprehension monitoring and FL proficiency could predict about 34% of variance in FL comprehension monitoring.

## Discussion

The present study used Chinese and English error detection tasks to examine the relationship between comprehension monitoring in L1 and FL reading; and the contribution of L1 comprehension monitoring and FL proficiency to FL comprehension monitoring. It was found that there was a significant and positive relationship between overall L1 and FL comprehension monitoring and also between the monitoring of both external and internal errors in the two languages. It seemed that the participants were able to transfer part of their comprehension monitoring skills from L1 reading to FL reading, although the results based on correlation analysis do not mean causality. Morrison (2004) found a stronger relationship between comprehension monitoring in L1 and FL reading than that in the present study. This might be that Morrison's participants have higher FL proficiency compared with the present participants, who only studied English for approximately 4.5 years in a FL learning context. This seemed to suggest that the higher FL proficiency readers have, the more they can transfer their comprehension monitoring skills from L1 to FL reading.

The fact that students significantly performed better on overall comprehension monitoring in L1 reading than in FL reading; and no matter comprehension monitoring of external or internal errors, students were more successful in L1 reading than in FL reading. Although the present participants did not fully transfer comprehension monitoring skills from L1 to FL reading, the results of the multiple regression analysis that L1 comprehension monitoring made a much bigger contribution than FL proficiency did seem to provide more evidence to support the transfer hypothesis than to support the threshold hypothesis.

## Conclusion

The present study examined the outcomes of comprehension monitoring in L1 and FL reading among

Chinese EFL learners and a positive relationship was found. The result that L1 comprehension monitoring made contributed much more substantially to FL comprehension monitoring than FL proficiency did indicates that L1 reading skills maybe more important than FL proficiency for the transfer of FL reading skills for the learners at lower-intermediate level. Since only narratives were used in the present study, future studies could use additional ext types, such as expository texts, to examine L1 and FL comprehension monitoring. Such studies would add to the knowledge of the relationship between L1 and FL comprehension monitoring, just as this study has done for narratives.

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