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A Dynamic Metacognitive Systems Account of Chinese University Students' Knowledge About EFL Reading

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Metacognition, conceptualized as a set of dynamic systems, has been recognized as an important area of academic and pedagogical inquiry in applied linguistics from both theoretical and practical perspectives. Nonetheless, literature on students' metacognition about EFL reading is still cursory, and that is particularly true as regards Chinese EFL students. In response to globalization, many students whose first language is Chinese have become transnationals and are pursuing academic studies in English. The current study focuses on these second language (L2) learners. By reporting findings from an interview study of 20 Chinese students' EFL reading experiences framed within a dynamic metacognitive systems perspective, it attempts to account for the learner behavior and thinking that are normally reported under the rubric of language learning strategy research, which has courted criticism recently. The results suggest that there is a strong relationship between metacognition and successful EFL reading comprehension, and that the successful and the less successful L2 students are different in the amount and the quality of the metacognitive knowledge they possess. These results are discussed for possible insights into research on such learners and the pedagogical practices of teachers working with them.
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Students' metacognition or metacognitive knowledge has emerged as an important area of academic and pedagogical inquiry in TESOL and applied linguistics in recent years after decades of the field being predominantly investigated by researchers in cognitive and educational psychology (e.g., Ridley, Schutz, Glanz, & Weinstein, 1992; Winne, 2005). It has also been well recognized as an important factor that has to be considered seriously when planning and executing learner development programs that are interconnected with language learning/learner strategy (LLS) research (Cohen & Macaro, 2007; Vandergrift, 2005; Zhang, 2008). Vandergrift, for example, emphasizes the importance of

metacognitive strategies in L2 learning, which include overseeing, regulating, and directing the language learning task, and thinking about the process of learning. As dynamic systems, L2 learners' metacognition about language learning plays a significant role in helping them achieve success (Anderson, 2005; Chamot, 2005; Macaro & Erler, 2008; Wenden, 1998).

Despite a plethora of definitions of *metacognition* in the field of psychology, the core elements still pertain to what Flavell (1979) postulated as *metacognitive knowledge systems,* which consist "primarily of knowledge or beliefs about what factors or variables act and interact in what ways to affect the course and outcome of cognitive enterprises" (p. 907; see also Afflerbach, Pearson, & Paris, 2008; Paris, 2002). As applied to second language (L2) research on teaching and learning, Wenden (1991) and Chamot (2005) recognize the significance of students' metacognition about the multifarious aspects of language learning, stressing that this knowledge base can help teachers facilitate L2 students' language development.

Learning strategies, which are an essential component in understanding students' metacognition and which are closely related to self-regulated learning, have been investigated in various disciplines, especially in relation to how students learn to read and write in English as a first language (L1) in academic settings (Harris, Santangelo, & Graham, 2010). In the L2 field, LLS research has also blossomed despite criticisms that the term *learning/learner strategy* lacks a consistent definition (for a systematic review, see Cohen & Macaro, 2007) and that a more feasible way of moving the field forward is to conduct research in the framework of self-regulated learning (Dörnyei, 2005). Equally forcefully, Gao (2007) argued that such criticisms have not taken into full consideration students' metacognition that has been incorporated into the research on self-regulated learning in TESOL and applied linguistics (see, e.g., Chamot, 2005; Cohen, 1998; especially Wenden, 1998). Gao's argument indicates that metacognition is a good lens through which researchers can examine how learners perceive and carry out language learning tasks and deploy LLSs. Unfortunately, except for a few studies (e.g., Cotterall & Murray, 2009; Goh, 1997; White, 1999; Zhang, 2001; Zhang & Goh, 2006), many researchers have examined LLSs without focusing on the connection between EFL students' metacognitive knowledge and their strategy use as dynamic systems in relation to learning achievement.

Given that many tertiary institutions in English-speaking countries (notably, Australia, Canada, New Zealand, Singapore, the United States, and the United Kingdom, among others, where English is the medium of instruction by default in the educational systems), as well as countries where some or most tertiary institutions use English as the medium of

instruction (e.g., Belgium, Demark, India, Malaysia, Pakistan), have seen increasing numbers, in recent years, of Chinese students with an EFL background (e.g., Taiwan, Macau, and Mainland China, where Chinese is offered as the L1 in most government schools), the findings of this study could shed light on the pedagogical practices of English teachers who teach such students. However, despite Wenden's (1998) call for giving more attention to students' metacognition, empirical studies are still cursory (Chamot, 2005; Cohen & Macaro, 2007). The current study attempts to address the paucity of such research.

STUDENTS' METACOGNITIVE KNOWLEDGE SYSTEMS

Metacognition and related research on L2 language learners (i.e., LLS research), particularly studies on L2 reading strategies, comprise the core of the metacognitive knowledge systems under discussion in this study. Given the close relationship between students' metacognition and LLS use, I first review the literature on metacognition and then on LLSs and reading strategies, and in the last section I offer a critique of studies of Chinese EFL learners.

Metacognition

A survey of the literature shows that metacognition embraces a range of beliefs, thinking, understanding, behaviors, and strategies for current and future actions that are most often dynamic and systematic (Dunlosky & Lipko, 2007). An essential element within the metacognitive knowledge systems refers to, but not exclusively, cognitive and sociocognitive dimensions in human development and learning. In contemporary cognitive psychology, research findings corroborate earlier statements such as the one by Flavell (1979) that metacognitive knowledge systems generally entail not only thinking about thinking or cognitions about cognition, but also regulation and execution of cognition typically materialized through students' behaviors and deployment of problem-solving strategies. These processes of execution offer students rich metacognitive experiences that enable them to do similar things more efficiently with clear understandings of what they do and why they do so (Paris, 2002).

Essentially, Flavell's definition (1979) manages to capture not only metacognitive knowledge but also metacognitive experiences and strategy deployment. His distinction between the three key concepts—metacognitive knowledge, metacognitive experiences, and strategy use—is also important for understanding L2 readers' reading processes when learner behaviors are examined. Recent findings show that a key

element in the metacognitive knowledge systems is the students' awareness of the learning process, which is critical to successful learning. Research also shows that expert learners monitor their progress, make changes, and adapt and modify their learning strategies if they realize that they are not on the right trajectories of learning; however, novice learners do not demonstrate these behaviors or mental moves. Harris et al. (2010), Ridley et al. (1992), and Winne (2005) emphasize the belief that taking conscious control of learning, planning for the learning tasks, selecting strategies, monitoring progress, amending beliefs, evaluating the utility and effectiveness of strategies, and modifying strategies according to specific learning tasks are typical manifestations of students' dynamic metacognitive knowledge systems; furthermore, they recommend that teachers facilitate students' learning in light of these findings. Winne, in particular, argues that self-regulated learning (SRL) has become a pivotal construct in contemporary accounts of effective academic learning, of which metacognition is a key element. His interpretations of findings from several investigations suggest that nondeliberative, knowledge-based elements are inherent in the processes of both SRL and in learning more generally. He even suggests that learning effectively by oneself will remain a goal of education.

In L2 research, different scholars have incorporated the concept of metacognition into their own frameworks for researching and analyzing LLSs (see, e.g., Goh, 1997; Oxford, 1990; Vandergrift, 2005; Wenden, 1991; White, 1999). Most often, in these frameworks, the term *metacognitive strategies* is used to reflect metacognitive aspects of learning. However, Wenden's (1998) effort within Flavell's model has been a consistent source of inspiration for researchers and practitioners who are interested in researching students' metacognition for better understanding of L2 students' learning processes and outcomes. Several studies report findings on students' metacognition in the form of learner beliefs about general language learning (e.g., Zhang & Xiao, 2006), L2 listening (Goh, 1997), or L2 reading (Zhang, 2001). The results show that successful language learners possessed a richer repertoire of beliefs about effective language learning, and their less successful peers either did not have clear beliefs about language learning or their beliefs were misguided by their incorrect understanding of the various factors related to learning effectiveness (Cotterall & Murray, 2009). These variables included students' own self-efficacy, their perceptions of the learning tasks, and their knowledge of LLSs. Chamot's (2005) relatively recent review of LLS research reiterates the important role of metacognition in L2 learning and teaching:

> Metacognition is believed to involve both declarative (self-knowledge, world knowledge, task knowledge, strategy knowledge) and procedural knowledge

> (planning for learning, monitoring a learning task while it is in progress, and evaluating learning once a task has been completed); . . . Evidence that language learners actually engage in metacognitive knowledge and processes is reported in most of the research on language learner strategies, both descriptive and instructional. Even young children in language immersion classrooms can often describe their thinking processes, demonstrating metacognitive awareness in their ability to describe their own thinking. (p. 124)

Thus, following Wenden's (1998) recommendations and Chamot's (2005) emphasis on the importance of metacognition in L2 learning, further research needs to investigate students' metacognitive knowledge systems in order to establish theory–practice connections drawing on empirical data to better inform L2 pedagogy.

Defining LLSs and Reading Strategies

A dynamic-systems account of language learners' metacognition does not stand firmly without inclusion of their LLSs. There is a consensus that general LLSs and strategies in relation to other skills such as listening, speaking, and writing are essential building blocks of students' metacognitive knowledge systems. Because of this understanding, in the field of L2 research, a large number of quantitative studies on general LLSs have been reported, and specific skills such as reading have been studied both quantitatively and qualitatively (Macaro & Erler, 2008). Many studies on general LLSs were conducted using Oxford's (1990) strategy inventory for language learning (SILL), which has been criticized for not being sensitive to cultural differences. It is also worth noting that reading researchers seldom resort to the general LLS classification systems (e.g., O'Malley & Chamot, 1990; Oxford, 1990), which are commonly used by LLS researchers. For more information, interested readers are referred to Cohen and Macaro (2007).

In the general LLS research literature, O'Malley and Chamot (1990) define *strategies* as "the special thoughts or behaviors that individuals use to help them comprehend, learn, or retain new information" (p. 1). Oxford (1990) recognizes that

> there is no complete agreement on exactly what strategies are; how many strategies exist; how they are defined, demarcated, and categorized; and whether it is—or ever will be—possible to create a real, scientifically validated hierarchy, classification conflicts are inevitable. (p. 17)

and her definition of *learning/learner strategies* is "specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective and more transferrable to new situations" (p. 8). Oxford's

definition shares many features with that of O'Malley & Chamot, and her inclusion of self-directed involvement suggests consciousness and deliberateness in executing learning behaviors or actions.

In the field of L1 reading research, after many years of debate, especially in the United States, leading researchers such as Afflerbach et al. (2008) have since come to terms with what are popular beliefs and views in the research community and concluded that "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). Although it is not a problem in L1 and L2 reading research, criticisms have been leveled against general L2 LLS research, as was briefly stated earlier. I will mention three significant ones so that I can delineate a feasible metacognitive knowledge systems perspective, one in which this study is operationalized. These three criticisms are that (a) different classification systems do not agree with one another; (b) mental activity and overt motor behaviors are not clearly distinguished in the existing definitions of *learning strategies* (Dörnyei, 2005); and (c) the claim that simply using more strategies is indicative of successful language gains needs to be challenged (Macaro & Erler, 2008); rather, the effective use of combinations of context-specific and task-specific strategies that promote learning is more important (Chamot, 2005; Cohen 1998; Macaro, 2006).

Because of these criticisms and a clarification offered by Carrell (1989) that distinguishes *skills* from *strategies*, I decided to identify context-specific and task-specific combinations of reading strategies that Chinese EFL students might use and explore how their metacognitive knowledge systems were related to the reading tasks they completed rather than counting the frequency of each individual strategy use. I also took into consideration the conscious and deliberate nature of strategies. Thus, the term *reading strategies* is used to refer to those directly related to cognitive processes that are essentially deliberate and purposeful (i.e., decoding, processing, and retrieving information when encountering difficulty in reading), and the metacognitive regulation of those processes (i.e., planning, monitoring, evaluating, and making decisions; Macaro & Erler, 2008). All of these strategies can be deployed by readers in combination, and they are available for retrieval from their metacognitive knowledge systems when a deliberate and purposeful action is required.

Research on Chinese EFL Students' LLSs and Reading Strategies

There has been a steady increase in research on Chinese EFL students' LLSs in recent years, although the literature in English does not have a recent systematic review of this body of research (cf. Zhang, 2003). For

example, Gan, Humphreys, and Hamp-Lyons (2004) found that successful and less successful EFL students in universities in China had different perceptions of the utility of LLSs. Their findings suggest that different levels of success among learners may be explained by a complex and dynamic interplay of internal cognition and emotion, external incentives, and social context. They also suggest that there is a need to take a holistic view of variation in language learning outcomes, which is akin to the view that students' metacognitive knowledge systems need to be fully explored. However, how Chinese EFL students conceptualize their understanding, or metacognition, about learning EFL reading has been insufficiently documented.

With specific reference to L2 reading, the number of studies on L2 learners' reading strategies has been increasing in other parts of the world (Anderson, 2005; Carrell, 1989; for recent reviews, see Grabe, 2009; Hedgcock, & Ferris, 2009), but there are few such studies on Chinese EFL readers in environments where the target language input is generally inadequate and the number of learners is enormous. Although there are a few reports which directly address Chinese EFL learners' reading problems in one way or another, these reports are either assertions that have not been validated through empirical data (e.g., Field, 1985) or investigations into strategies for vocabulary learning during reading (e.g., Gu, 2003). As a partial replication of Carrell's study, Zhang (2002a) collected data from 160 Chinese EFL readers enrolled in an intensive English program in Singapore using Carrell's (1989) metacognitive awareness questionnaire (MAQ) and interviews with 20 randomly sampled students. His analysis of the quantitative data indicated that this study generally corroborated what Carrell reported about L2 readers' metacognitive knowledge systems, suggesting that Chinese EFL learners' metacognition about EFL reading had links to their EFL reading proficiency. The percentages of the participants' responses to the four categories of the MAQ further indicated that they generally regarded strategies in the categories of *confidence, effectiveness, repair,* and *perceived difficulty* as important in EFL reading. However, his multiple regression analyses revealed that, of the four categories of strategies, students' metacognition about the reading strategies that fell into the categories of *perceived difficulty* (i.e., students' perceptions of the difficulties in reading) and *effectiveness* (i.e., students' perceptions of the effective strategies for reading) was significantly predictive of successes in EFL reading comprehension (p. 121). One of the drawbacks of these studies is that they did not probe into how learners themselves conceptualized the learning processes, so these EFL students' metacognitive knowledge systems have not been investigated systematically.

So far, the amount of second language L2 research on Chinese EFL students is disproportionate to the economic and commercial value accorded to English in China, given the phenomenal government effort

in publishing various national English language syllabi and the ever-increasing interest in English in society at large (Zhang, 2004; see also, Liu, 2008), especially after the resoundingly successful 2008 Olympic Games in Beijing. These findings are expected to help teachers better understand how these students think, how they look at language learning, and how they demonstrate learning behaviors and strategies. Teachers can use this new understanding to design lessons, activities, and learning tasks that better meet the learning needs of these students.

For easy operationalization, I have decided against using any of the general LLS classification systems (e.g., O'Malley & Chamot, 1990; Oxford, 1990) because they do not adequately describe EFL students' thinking, beliefs, motivation, and strategic behavior; instead, I have attempted to understand students' metacognitive knowledge systems in accordance with what Flavell (1979) terms *metacognitive knowledge* (p. 906) by examining students' awareness, planning, monitoring, and reflections on the learning process, including their thoughts and understandings about the various factors related to learning to read in EFL and their behaviors as they displayed them in their own terms (Afflerbach et al., 2008; Wenden, 1998). I have intended to regard students' metacognitive knowledge as dynamic systems, because this enables me to understand students' beliefs, thinking, and conceptualizations of L2 reading from an emic perspective. Such metacognitive knowledge systems necessarily include students' perceptions of self-efficacy and other socioaffective and sociocultural variables (e.g., motivation and willingness to learn to read in EFL) closely related to the literature on self-regulated learning (see, e.g., Harris et al., 2010). This dynamic systems framework also allows for the change that would take place in students' understanding of language learning processes at different times, different stages, and situated sociocultural locations (for a detailed account of dynamic systems theory, see, e.g., Ellis, 2008). Specifically, I have attempted to answer two overarching questions:

1. What are the metacognitive knowledge systems of the Chinese EFL students who were selected for this study?
2. How do they perceive themselves, the learning tasks and processes, and the utility of reading strategies?

METHOD

Context and the English Courses

The study was conducted in the People's Republic of China, where English was stipulated as a compulsory subject in the school system for at least 6 years and another 2 years at university. The EFL learning situation in China was typical: The students have limited exposure to English, no

adequate reading materials in English, and English is not used in daily life (Gan et al., 2004; Zhang, 2008). All students are required to study a foreign language upon entry into junior middle schools after they complete 6 years of primary school education. Most often, English is the primary option by virtue of teacher availability in schools and the perceived commercial value of English in terms of future employment opportunities. The students study EFL for 3 years in junior middle school and another 3 years in senior middle school until Year 2 at university, when they are required to take the College English Test (CET) Band IV.

The English courses offered to these university students included Intensive Reading, Extensive Reading, Fast Reading, Oral English, and, occasionally, Basic Writing. They had up to 4 hours of curriculum time each week to study English for 36 weeks in two semesters each year. Usually, one teacher was in charge of all the courses if she was assigned to teach English to a particular class. At the end of the first year, all students were required to take the GET Band II, a standardized test, administered by the National College English Test Steering Committee, so that they could monitor their own progress; in another year, they would take the GET Band IV. In the two institutions where the participants were selected, all students were allowed to graduate if they met the passing grade of 60 on a percentile scale on the nation-wide CET Band IV.

Participants

The participants were 20 arts and sciences freshmen, with an equal distribution of arts and sciences majors. The gender ratio of the 20 participants was deliberately kept balanced. They were chosen from the 40 participants who had been selected through stratified random sampling for interviews from 899 freshmen at two universities in a major city with a population of approximately 2.5 million. One university was a comprehensive university with an enrollment of about 25,000, and the other specialized in finance, economics, accountancy, and allied disciplines; its enrollment was about 10,000 students. All of the 899 students who were asked to participate in this study were freshmen taking college English as a required foreign language.

Sampling Procedures

Two-layer sampling procedures were adopted in selecting the participants. First, the deans of the college English departments of the two universities asked all the English teachers to submit their class lists. The deans worked closely with me by adopting stratified random sampling procedures, also known as proportional or quota random

sampling (Miles & Huberman, 1994). I divided the total population into homogeneous proficiency subgroups and then took a simple random sample in each subgroup until the quota of 40 participants was met. Specifically, I divided the 899 students into groups based on EFL proficiency, then academic major, and finally gender (i.e., strata) following this equation: N_1, N_2, ... N_i, such that $N_1 + N_2, \ldots + N_i = N$. I then did a simple random sampling of $f = n/N$ in each strata.

EFL Proficiency Measures

With the assistance of the deans of the two universities, I carefully examined their records of the 40 finalists to identify the successful and the less successful EFL readers. The terms *successful* and *less successful* were used for convenience to refer to the high-achieving and relatively low-achieving students in this study, given that they had already been admitted to the universities based on the results of their National Tertiary Matriculation Examinations (NTME), including English. I also reviewed their academic records, other documents, and profiles in consultation with their teachers. As expected, there was an imbalance between successful and less successful readers when they were judged according to their NTME English subject scores and their CET Band II test results, with 24 successful and 16 less successful EFL readers. Altogether, there were 22 men (12 in sciences, 10 in arts) and 18 women (8 in sciences, 10 in arts). Second, based on the principle of quota sampling, the 40 participants who fit into my predetermined categories of *successful* and *less successful* readers of an equal gender ratio were selected. In this process, the participants' academic majors and gender were also considered to ensure that the 20 participants were equally distributed by gender, academic major, and EFL proficiency. As an enhancement measure, I also checked their EFL reading proficiency based on their midterm reading test results to ensure parity for fair comparison in the analysis. So, in the end, 10 students (5 sciences students: 3 men and 2 women; 5 arts students: 3 women and 2 men) whose CET Band II English scores were 65 and above were categorized as *successful* readers, and 10 others (5 sciences students: 3 men and 2 women; 5 arts students: 2 women and 3 men) whose averaged English scores were below 60 were categorized as *less successful* readers. Those whose scores fell in the range of 61 and 64 were excluded. These 20 participants were invited to participate in the interview, and their participation was voluntary. As a gesture of appreciation for their cooperation, I bought a gift for each participant. Given that the study was qualitative in its research design, I knew that particular care had to be taken in presenting these individual cases (Miles & Huberman, 1994).

The data show that the participants began to learn EFL at around age 12 when they were in junior middle school, namely, after they had completed 6 years of compulsory primary school education in which Chinese was the medium of instruction. Their Chinese reading abilities ranged from good to excellent, as measured by the National Tertiary Matriculation Chinese Examination (NTMCE) scores provided by the two universities. NTMCE is a comprehensive examination that tests candidates' overall ability in Chinese, including vocabulary, reading comprehension, and composition. The NTMCE scores of the students participating in this study ranged from 69 to 82 on a percentage scale, which means that they were actually highly proficient Chinese L1 readers. Accordingly, they showed little difference in their Chinese proficiency.

Data Collection and Analysis

A participation consent form was distributed to all 40 participants regardless of whether they would finally meet the selection criteria. All of them were asked to indicate their willingness to participate in the study and to be interviewed. They were informed that they could leave the study at any time. Of the 40 participants, none withdrew when they were informed of the procedures of this study. To ensure that relatively complete data were collected and that the data were not contaminated by any delays, a semistructured interview (see appendix for an English translation of the interview guide) was conducted in Mandarin Chinese immediately after the participants finished reading two texts of about 500 words each. Because the guide was semistructured, additional questions pertaining to the research questions for this study were also asked.

Reading Texts

The participants were asked to read two expository texts of about 500 words each prior to a 20-minute interview for each participant. One passage was taken from a book on social customs published in Singapore (SNP, 1997), and the other one from an English for academic purposes course book, published in the United States (Hartman & Blass, 1998). The books were not available in China, so the participants had never read them before. Both books were expository in genre and informative in nature. The expository texts were preferred over other genres in this study because the majority of texts that these EFL readers were likely to read in their academic curricula were expository and because expository texts were more challenging for them in their reading agendas. The difficulty levels of the two reading passages were set at the upper-intermediate

levels with reference to the *Notional–Functional Table of the College English Syllabus for Non-English-Major Arts and Sciences Students* (Ministry of Education, 1991) and Fry's (1977) graph for estimating readability. It needs to be pointed out that although the 1999 syllabus (Ministry of Education, 1999) specifies an emphasis on developing students' communicative competence, the standards for reading remain unchanged. The difficulty reliability estimates of the texts that were used in the study are presented in Table 1.

To assess the participants' prior knowledge of the texts they had to read, each was asked two background knowledge questions immediately after the interview: (a) Did you ever read or know anything about the two topics/texts? and (b) If yes, can you say anything about them? Results indicated that the 20 interviewees showed no difference in their knowledge of topics presented in the two texts. Their knowledge of the two topics was fair and equitable according to a joint judgement arrived at through a review of the interview transcripts by the researcher and a colleague who shared a similar research interest and who was an experienced university EFL lecturer with postgraduate qualifications from China and overseas.

Interview Procedures

Methodologically, the interview as a data collection instrument has been a topic of immense interest in TESOL, applied linguistics, and social research, and there is much discussion on the potential and challenges in using it. For example, Block (2000) observed that the tendency in applied linguistics research using interview is

> to focus on the content of the words produced by research participants . . . to take research participants "at their word." . . . What most readers encounter, then, is presentation of data plus content analysis, but no problematization of the data themselves or the respective roles of interviewers and interviewees. (p. 757)

Understanding the limitations of interviewing as a research tool for data collection, I bore in mind Holstein and Gubrium's (2004) reminder that

TABLE 1
Reliability Estimates of the Two Reading Texts Used in the Study

	Reading Texts	
Reliability Estimates	"Social Customs"	"Body Language"
Grade level	0.82	0.80

Note. *Grade level* refers to the grade level in the U.S. educational system. Fry's chart was developed for assessing the readability of reading materials in the U.S. school system.

interviews are "active meaning-making ventures . . . [that] provide an alternate way of construing the production and collection of information" (p. 157), so the interview data are collected or elicited instead of being directly made available for the interviewer to use. A real challenge that researchers have to face is to what extent they "carefully consider what is said in relation to how, where, when, and by whom experiential information is conveyed, and to what end" (p. 158). More importantly, researchers must be fair, remain unbiased, avoid contaminating data, and subject the interview data to content or, at best, thematic analysis (Miles & Huberman, 1994). Merits and disadvantages exist for group interviews and individual interviews, but for easier organization of the data, I adopted individual interview procedures, and all the participants were interviewed in one session of about 20 minutes each on average, despite its being labour intensive.

The interview questions were intended to elicit information about the participants' metacognition, that is, their metacognitive knowledge, about various aspects relating to EFL reading. The questions referred to the participants' own perceptions or evaluations of themselves as readers (including motivation, self-efficacy, emotions, and attitude) of the texts that they had read, their strategy-use and problem-solving processes in reading the two texts, and their reactions to the texts. All the questions were phrased within the metacognitive knowledge systems framework based on Flavell (1979) and Wenden (1991), as shown in Table 2.

TABLE 2
Types of Metacognitive Knowledge About EFL Reading as Represented in Students' Metacognitive Knowledge Systems

Person/self knowledge	Task knowledge	Strategy knowledge
• Cognitive factors that facilitate reading	• Purpose or significance of task	• General principles to determine strategy choice
• Affective factors that facilitate reading	• Nature of language and communication	• Effective strategies for developing general reading skills
• Self/self-efficacy	• Need for deliberate effort	
• Problems and obstacles that prevent reading success	• Task demands (factors that influence reading comprehension)	• Effective strategies for completing particular tasks
	• Knowledge required to complete the task	• Steps and strategies
	• Steps and strategies	• Situations for strategy use
	• Level of task difficulty	• Monitoring strategy use
	• Nature of the task	• Evaluating effectiveness of strategy use

Coding the Data

The interviews were tape-recorded and transcribed verbatim in Chinese by the researcher and the research assistant described earlier. A native speaker of Mandarin Chinese, I translated the transcripts into English for presentation in this article. I followed Miles and Huberman's (1994) three procedures for analyzing qualitative data: data reduction, data display, and conclusion drawing or verifying. I also followed their "constant-comparative" principle (p. 19). All the transcriptions of the participants were analyzed and classified according to the tripartite scheme of *person/self*, *task*, and *strategy* within the metacognitive knowledge systems (see Table 2) to address the study's research questions. The data were first sifted to identify typical themes or patterns, on the basis of which they were then categorized into the three major types, which were assigned a broad code each: PK (person/self knowledge), TK (task knowledge), and SK (strategy knowledge).

To maintain consistency and reliability, the same data set was analyzed by the same colleague who assisted me in assessing the participants' background knowledge of the two texts and transcribing the interviews. In cases where disagreements arose, the disagreements were resolved through discussion. The ultimate interrater agreement was about 95%. For a clear illustration, I relied on the purposive selection principle so that typical patterns or themes are presented. Thus, I followed Miles and Huberman's (1994) recommendation that the researcher's role is to "gain a 'holistic' (systemic, encompassing, integrated) overview of the context under study: its logic, its arrangements, its explicit and implicit rules" (p. 6).

RESULTS

The analysis produced three main categories of findings: (a) knowledge about person/self, (b) knowledge about cognitive tasks, and (c) knowledge about strategies for effective reading. Within each category, the most frequently cited themes (and their details) are described and discussed. Pseudonyms are used in reporting individual cases.

Knowledge About Person or Self

Person knowledge, or knowledge of oneself, is students' perceptions of themselves, including inter-individual and intra-individual characteristics that are closely related to their learning motivation and self-efficacy (Flavell, 1979), which are essential to self-regulated learning. The results

showed that, as young adult learners, both the successful and the less successful readers in this study had relatively sufficient metacognitive knowledge about themselves as EFL readers. However, a difference was found between the two groups. Whereas the successful readers had confidence in themselves and declared that they knew how to read—that is, they had the necessary cognitive and metacognitive strategies as resources—the less successful readers did not. Compared with the successful readers, the less successful readers reported that they never dared to project themselves as successful readers and evaluated themselves as ordinary or poor EFL readers. This perception of themselves, which appeared to be related to the general language proficiency, impeded their motivation to read, as Houde, a math major, one of the less successful male readers, reported:

Excerpt 1

I gradually lost interest in English due to my poor examination results, but I had to learn it to satisfy the graduation requirement. I feel that I am cornered. Maybe I don't have the inborn ability for learning a foreign language. But I can do nothing about the university regulations on foreign language learning. So I have to learn it anyway, not because I want to, but because the university wants me to and I need the certificate for future jobs. But I am not sure if I will continue learning English after I pass CET Band II.

Throughout the interview, motivation, interest, and self-confidence were frequently mentioned by the successful and the less successful readers. More interestingly, the successful readers believed most strongly that self-confidence facilitates EFL learning. They reported that success in learning a foreign language depends to a large extent on the confidence one has in oneself. It was equally true of learning to read in EFL. Throughout the interview, proficiency stood out as a strong indicator of reader confidence; the higher the proficiency levels, the easier it was for the students to establish self-rapport and hence exhibit more self-confidence. To cite an example of a successful reader, Jiena, a female student majoring in atmospheric geography, always thought that she was competent in learning English, and her problems in learning English were not severe. She even imagined a community of target language users in English-speaking countries:

Excerpt 2

To me, learning a foreign language is just so natural. I have been doing well since my junior middle school years in English and I do the reading and recite the passages that have sufficient new words for me to learn in order to develop my ability in reading on my own. I am keen on honing my skills so that I hope one day I will be able to read Charles Dickens in its original. I know that to be a cultured [educated] person, I must be well-read and

> well-versed in English. My job prospects will be obviously better if I get good results in English as a required subject at university. If I have a chance, I will go to study or work in English-speaking countries like USA and England. I definitely need good reading skills and vocabulary to talk with people there. The more efforts I put into it, the better I will harvest in English learning at the end of the day. A good reader must be persistent, hardworking, brave enough to ask people for help if he needs it; he should also know how to manage himself/herself—when to relax a bit and the best time to learn things in a day, etc.

The way Jiena phrased her thoughts using words such as *harvest* and *manage* indicates her readiness to take on more challenges, which she could then overcome through expending more effort. Her imagined community in the United States or the United Kingdom gave her much confidence in learning to read well. Learning English and learning to read in EFL was a result of her investment, and its return in the form of a "harvest" propelled her to excel. This knowledge of language learning was absent from the less successful readers in most cases.

Knowledge about Cognitive Tasks

A recurring theme, students' knowledge about cognitive tasks, emerged during the interviews. This theme includes their knowledge about the languages in which they read (Chinese and English), the typical characteristics that defined the two languages, and the essential requirements for successful reading. Twelve participants (9 successful and 3 less successful readers) indicated that reading in Chinese and reading in English were qualitatively similar, despite the fact that the two languages used different orthographies. However, they commented that learning to read in Chinese did not involve learning the grammatical structures of the language as did learning to read in English. The majority of the less successful EFL readers said that they were less successful in EFL reading only because they did not have a large vocabulary, and that English grammar was more complicated than that of Chinese.

It is noteworthy that, although both the successful and the less successful readers knew in varying degrees that vocabulary and grammar knowledge were crucial to successful reading, the successful readers reported that other factors could compensate for their relative insufficiency in vocabulary and grammar; in contrast, the less successful readers felt that without a large vocabulary they could not improve any further. The successful L2 readers wanted to develop a large vocabulary either through reading in English or intensive learning activities, such as studying new word lists. The successful readers considered both vocabulary and cultural background knowledge essential for successful

reading comprehension. They said that knowing more about the material that they were reading and the background or cultural knowledge imbedded in it made the material easier to comprehend. Hongguang, a successful male reader from the Department of International Trade and Finance, observed:

Excerpt 3

I know that reading involves many aspects, including the reader's knowledge of the subject matter at hand, his knowledge of the world, culture, and general patterns in which texts are presented. I need to expand my knowledge to do more successful reading.

The less successful readers appeared to be narrowly focused on linguistic proficiency as the only contributing factor to successful reading comprehension. Lilian, a less successful female reader whose major was biology, commented, for example, that her reading of English texts was less successful because of her limited vocabulary and poor knowledge of grammar:

Excerpt 4

I am trying my best to memorize new words, as I know I don't have enough vocabulary and my grammar knowledge is poor. I cannot make progress in reading because of this.

As is evident, it never occurred to her that she could strengthen her linguistic knowledge base if she resorted to some of the useful reading strategies that would help the less successful readers overcome their difficulties. More importantly, her memorization strategy, which she was not using very effectively, would have been helpful if she had included an analysis of English morphology. Research has shown that students' knowledge of how words can be segmented and analyzed to derive their meanings for more effective memorization is important for ensuring their successful retrieval in meaningful communication (see, e.g., Anderson, 1991; Zhang, 2002b).

The successful and the less successful readers had a shared understanding, however, of the requirements for approaching different genres of reading materials. Both groups commented that they read Chinese novels, *sanwen* (prose, essays, etc.), and poetry without caring too much about grammar, focusing mainly on the meaning of texts. Despite the fact that word order is very important in understanding the Chinese language, the less successful readers, who had never analyzed Chinese grammatical structures, seemed to think that Chinese has no grammar. Qinglin, a successful female reader who majored in economics, had a much clearer understanding:

Excerpt 5

A good reader is someone who knows that reading is not only for learning words; reading for meaning is very important regardless of whichever language you are talking about. Reading in Chinese sanwen and poetry is a joy for me. So, I hope I can do so in English. But he can also pay attention to new words in order to learn them for future use besides knowing something related to the culture in which the material is written. It's important for an EFL student to practice the language in order to use it, like trying reading English language newspapers or magazines if they are available, and then he can learn to read well.

Like Qinglin, other successful readers also reported that reading in English required a great deal of practice in the beginning in order to become acquainted with the English phonetic system and its grammatical structures. As they became more familiar with the grammatical system, that is, as their proficiency level increased, they felt that there was almost no difference in reading in the two languages.

Thirteen readers (10 successful and 3 less successful readers) said that English was easier to learn in the beginning by virtue of its simple orthography. The less successful readers' relatively slower progress in EFL learning might also be related to their perceptions of the two languages. A comment made by Yinghua, a male applied chemistry major, was representative of the majority of the less successful readers:

Excerpt 6

I started learning English in happiness, as it was very easy to start and we all felt great fun in learning to speak a foreign tongue. But as time went on, I felt it was more and more difficult to learn it. There were so many new words, so many grammar rules, so many exercises; I simply felt that completing one text was a big step forward. I almost gave up but finally managed to pass my university entrance examination and got a place at the university. I just memorized new words and practiced through grammar books and reading comprehension tests in order to pass the examinations. A lot of time I had to read these passages word by word.

These 13 students clearly understood the requirements of the reading tasks given to them in that specific setting, as well as the reading tasks in their daily university reading schedules. The other 7 participants did not realize the importance of the task knowledge, nor did they have such metacognitive awareness. When asked about the difficulty of the two passages, however, almost all the participants interviewed were able to distinguish the more difficult text from the less challenging one. However, the two groups used different criteria to determine the level of difficulty. Whereas the successful readers mentioned background knowledge or cultural schemata imbedded in the text, discoursal

knowledge, lexical difficulty, and syntactic complexity as factors determining the texts' level of difficulty, the less successful readers mentioned only vocabulary and grammar as the hurdles they faced.

It is also noteworthy that the successful readers' awareness that knowing vocabulary and grammar helped them comprehend the texts did not conflict with their metacognitive evaluation of the usefulness of readers' schemata or background knowledge. According to the successful readers, when reading in an L2, meaning should be the paramount concern, as is the case in L1 reading, though they also noted that L2 reading is useful in helping them to learn the target language. Successful reader Liling, a female statistics and accounting major, had this to say:

Excerpt 7

As an EFL learner, when I thought of learning English I got excited in the beginning, but then I realized that learning to read was actually difficult. But when I went on with my learning of English, I felt that reading in English and Chinese were very similar. When we read, we need vocabulary and on this basis we can go on reading the text for meaning. This is the essential thing in reading. The only thing I felt different is that Chinese does not have strict grammar rules, but you will have to learn a lot of them in English and they are challenging. I need to read more in English using the knowledge I have about how to read in Chinese. It was the same case for reading the two texts you asked us to read.

Strategy Knowledge

Although the less successful readers demonstrated varying degrees of strategy knowledge independent of specific tasks as well as in relation to the two texts they had just read, they were not as clearly aware of the strategic resources useful for the reading tasks at hand as were the successful readers. The less successful readers reported that, when they were faced with the reading tasks, they did not as easily use any strategies to approach the reading tasks as did their more proficient counterparts, even though their L1 proficiency was as strong as that of the successful readers. The less successful readers did not realize as strongly as did the successful L2 readers that the different reading tasks at hand required them to adopt different reading strategies. They often handled the tasks by paying attention to every linguistic element in print. In addition, they did not accept any ambiguity of meaning and thus resorted to the frequent use of dictionaries, which greatly affected their reading efficiency. Almost all the less successful readers answered that they did not know how to reasonably divide their time on different reading tasks,

and this form of metacognition had close links to their deployment of strategies for meaning construction. For example, less successful reader Nina, a female computer science and engineering major, explicitly mentioned her lack of strategy knowledge:

Excerpt 8
Well, whenever I took up my English textbook, I just read as I wished, without thinking about how much time was needed or how to study the text in a more economic and effective way. I needed to consult all the new words in the text when I read it and I simply could not go on without knowing them all. I must get all the words' meanings clear then I knew how I could continue. By the time I consulted all the new words from my dictionary, I already felt exhausted.

A very strong tendency reported by the successful L2 readers was that they were prepared to solve their vocabulary problems by weighing the contexts and finding their way out either by guessing using contextual clues or consulting dictionaries, although these measures did not always help. However, they also realized the time-consuming nature of contextual guessing and dictionary use in solving vocabulary problems. To assist their understanding, they analyzed grammatical structures of sentences and word morphologies when the need arose. The less successful readers reported using dictionaries more often to solve their language problems, and they seldom used contextual cues to arrive at comprehension. It appears that the strategy knowledge varied substantially between the successful and the less successful readers. One successful reader, Jinbao, who was fascinated by his major, biology, said that he benefited from strategic reading in learning to read in EFL:

Excerpt 9
When I see a new word in reading in English, I read the sentence before and after the one on which I get stuck. I know I will find out something when I look for contextual clues. Many times, the new word will become clear in the next sentence or paragraph. Also, sometimes, I analyze the word to see how it is formed so that the meaning will become clear to me.

The successful and the less successful readers had different metacognitive knowledge bases with respect to when to activate their prior or schema knowledge. The successful readers responded that they knew, when they were able to understand at least 70% of a text, that they could immediately resort to that knowledge base; they also did so the moment they read the title affiliated with the beginning sentences of the texts; the less successful readers were not able to activate their prior or schema knowledge, and as they said, if they were not able to understand what the text said, the schema knowledge simply would not prove useful. For

Zhijun, a male economics major, almost all his reading strategies served the purpose of solving vocabulary problems. He seldom mentioned comprehension-oriented strategies:

> **Excerpt 10**
> In principle, I would look up each new word in the dictionary, as this will make me understand the exact meaning of a text. I have to look up all the new words to make sure that I can understand everything I want to know. The two texts simply have too many new words and I cannot continue reading them after reading a few sentences.

DISCUSSION

This study was designed to investigate Chinese EFL students' metacognitive knowledge systems in relation to their EFL reading experiences. The results suggest that Chinese EFL students' metacognitive knowledge systems about EFL reading are particular in at least three ways.

First, the successful and the less successful readers displayed various differences. The successful readers reported having relatively sufficient metacognitive knowledge about themselves as readers, the cognitive tasks they had to handle in their daily routines as well as the two texts they had just read, and the strategic resources that they could activate for solving problems in EFL reading. The less successful readers did not. The two groups were remarkably different from each other in three key aspects of metacognitive knowledge (person, task, strategy). Second, whereas the successful readers had quite clear knowledge about the conditions necessary for successful meaning-construction in reading, the less successful readers overemphasized the importance of linguistic knowledge, especially vocabulary and grammar. Third, neither academic major nor gender seems to have played a role in determining whether the participants were successful or less successful readers. These two aspects about the participants' metacognitive knowledge systems (inter-individual and intra-individual characteristics) suggest that the successful EFL students' metacognitive knowledge helped them make effective decisions about what to read, how to read, when to read, why to read, and where reading strategies could be deployed to address the purposes at hand, lending support to Wenden's (1998) and Chamot's (2005) claims about the importance of metacognition in L2 learning and teaching.

The results consistently showed that the successful and the less successful readers differed in person-related variables such as motivation, confidence, self-efficacy, and interest in English. As far as the participants' metacognitive knowledge systems about task requirements

and resources for strategic reading are concerned, it seems that there was a knowledge transfer from L1 to L2, particularly for the successful readers, as indicated in their comparison of the two languages. However, this knowledge transfer did not happen frequently among the less successful readers. For example, the successful readers' understanding of reading prose and poetry (Excerpt 7) is a good indication that the successful readers and less successful readers knew that the reading act itself is a higher order mental activity that requires more concerted intellectual attribution (e.g., motivation and emotional input) in addition to linguistic competence that includes phonological awareness, efficiency in matching grapheme–phoneme correspondences, and automatic word recognition skills, among others (Perkins, 1983). The reader has to weigh and deliberate the meanings of words and expressions, and has to make sufficient inferences and be empowered with a rich imagination in order to understand the implied meanings. This might also indicate that they were sometimes comparing the two languages for better comprehension when they were trapped in difficulties while reading in EFL. This kind of comparison based on their metalinguistic knowledge of the two languages might have enhanced their metacognitive knowledge for L2 reading. The less successful readers' metacognitive knowledge about L2 reading and their reading strategies could be also attributed to the L1 literacy practices that they had acquired in Chinese language classrooms, practices that were complicated by their relatively low L2 proficiency when reading in English. As reported in the literature (see e.g., Hu, 2004), in learning to read Chinese as an L1, students are taught by teachers who tend to emphasize traditional instructional practices such as articulation of the Chinese characters and memorization as a learning strategy. Reading aloud is also emphasized.

The finding that the less successful readers were blocked by a lack of metacognitive declarative knowledge of what factors were more important to successful reading comprehension indicates that they found it difficult to activate appropriate reading strategies. Their instrumental motivation for passing the exams may have been another cause of their limitations. In addition, they did not consider much whether their deployment of a strategy such as guessing was effective in helping them to arrive at better comprehension because of their relatively low L2 proficiency. This finding appears to support Clark's (1980) view that their low EFL proficiency level might have "short-circuited" (p. 204) their deployment of effective strategies. This view appears to be already well accepted, because it is clearly synthesized in Grabe (2009) and Hedgcock and Ferris (2009).

Another important theme emerged from the data is the frequent mention of the importance of vocabulary in L2 reading, as was shown in

several excerpts earlier (see Excerpts 4, 6, and 7–10). Whereas most researchers suggest that successful L2 readers can correctly guess the meanings of unknown words while reading (e.g., Carrell, 1989), others question the efficacy of doing so. They posit that guessing in its own right rarely helps comprehension in a constrained context (e.g., Read, 2004; Zhang & Annul, 2008; Zhang & Wu, 2009). Although it is not very clear why some of the less successful readers did not report using the guessing strategy, it can be surmised that they might have doubted the effectiveness of contextual guessing when their comprehension was blocked by new vocabulary items. So they emphasized vocabulary meaning. Their stronger reliance on linguistic knowledge rather than reading strategies might also be related to the way Chinese was taught in schools, as discussed earlier, where teachers allocated a great deal of classroom time for students to close-read texts in order to completely understand them (Field, 1985). Their attempt to transfer this strategy from L1 to L2 reading suggests that they did not have a fundamental understanding of learning to read in EFL: It is not only a language problem where word recognition and sentence parsing are crucial; it is also a reading problem; that is, reading efficiency is expected of a good reader (see Alderson, 1984; Bernhardt & Kamil, 1995; Grabe, 2009).

The interview data also suggest an intricate relationship between L1 and L2 reading strategies. Even if the less successful readers' metacognitive knowledge systems afforded them an approach to, or strategies for, completing their L2 reading tasks, the specific problems in L2 reading did not seem to have been solved by this basically L1 knowledge, as illustrated in Excerpts 5 and 7. Even if a reader has good metacognitive strategies she or he uses in L1, these will not be of much help in L2 before the reader establishes a solid language base. Chinese EFL students' metacognitive knowledge might help the successful readers in the regulation and monitoring of their comprehension or cognitive strategy use (i.e., the executive control process), but it cannot directly help the less successful readers out of the linguistic problems they face. This interpretation endorses Grabe's (2009) and Hedgcock and Ferris's (2009) recent positions.

As reviewed earlier, quite a number of researchers have postulated recently that metacognition consists of knowledge and regulatory skills that are used to control one's cognition (e.g., Paris, 2002). The results of this study seem to lend further support to this view, in that the successful readers' knowledge of L2 grammatical and discoursal relationships is of clear value for them to arrive at an accurate understanding of the texts. However, for the less successful readers, it seems that cognition and metacognition have clearly very different functions. It should be that cognitive skills are necessary to perform a task, and that metacognition is necessary to understand how the task is performed (Winne, 2005), but

such a mechanism did not seem to work with the less successful readers. Although metacognitive knowledge was important for them, understanding the necessary linguistic elements in the texts was more important, or at least this was what they believed; furthermore, they believed decoding to be crucial in compensating for a lack of sufficient L2 proficiency in reading comprehension. In other words, the induced schema in certain contexts cannot override the role that a linguistic threshold might play in the comprehension process at the very beginning stage or even at the intermediate levels (Hedgcock & Ferris, 2009, p. 33). This finding points to a need for classroom teachers to teach how to read in EFL and illustrate explicitly to these students through specific examples the important relationship between simply decoding words and comprehension-oriented reading strategies.

The results support other research findings about Chinese EFL students. For example, Gu (2003), Zhang (2001), and Zhang and Wu (2009) reported that EFL learners' vocabulary knowledge played a crucial role in reading comprehension because of the fact that these learners were learning EFL in an environment that does not have sufficient target-language input. Field (1985) posits that the reading strategies used by Chinese EFL readers are mainly influenced by their L1 reading habits, coming to the conclusion that these readers do not use conceptual strategies; hence, their reading strategies are more decoding oriented. Although some of Field's observations are correct, she seems to have ignored the fact that reading, for whatever purpose, is ultimately about meaning-construction, and conceptual strategies are basic to reading comprehension. Obviously, she has regarded all the Chinese EFL readers with whom she was familiar as one uniform group, as it were, and has not distinguished the successful from the less successful in terms of their strategic behaviors. More importantly, she seems to have forgotten that the students she described were lower immediate EFL readers, whose decoding skills were not yet on par with their comprehension skills. One explanation for the difference in perspectives on this phenomenon is the fact the Chinese society has been ever changing in accordance with its rapid economic growth in recent years.

The cultures of learning in classrooms at different levels, including universities, are also changing (Huang, 2005). Along with these changes are continuing changes in EFL teacher profiles in Chinese universities. Those students whose teachers were pedagogically better trained would have benefited from the more interactive approaches to language teaching, and this experience might also have helped them modify their metacognitive knowledge base. In this sense, EFL students' metacognition as dynamic systems can be said to be culturally and socially constructed. When Chinese society is influenced by multifarious factors, both internal and external, the impact of the social and cultural factors on the EFL

teaching scene cannot be ignored (Liu, 2008; Zhang, 2008). It is widely acknowledged that metacognition plays an important role in developing reading efficacy and reading strategies (Veenman, Van Hout-Wolters, & Afflerbach, 2006), and, as Paris (2002) and Zimmerman (2002) argue, in order to account for failures and successes in self-regulation in student learning in naturalistic settings, researchers need to expand their views of self-regulation beyond metacognitive trait, ability, or stage formulations and begin treating it as a complex, interactive process involving social, motivational, and behavioral components. Such a perspective reveals not only the complexity of self-regulation but also the human side of it, the role of self-doubts, false beliefs, unproductive self-monitoring, and strategy choice dilemmas. Thus, the interaction between L2 readers' proficiency level and readers' deployment of strategies for meaning-construction can be better understood from a perspective that regards all this as dynamic metacognitive knowledge systems that include the cognitive, socioaffective, and sociocultural dimensions.

LIMITATIONS

The limitations of the study are self-evident, so cautions are in order. The patterns reported in this study only reflect the typical themes of the metacognitive knowledge systems of a small group of Chinese EFL readers in this particular study. Undoubtedly, because of the small scale of this study, the data-collection method of using a semistructured interview guide, and the geographical location of the research site whose demographics were different from other parts of China, the generalizability of the study is restricted. Because regional differences are important considerations (Hu, 2003) when addressing reading strategies and learner metacognition in relation to L2 reading practice, I recommend that future research consider (a) the relationship between consciously enhancing L2 readers' metacognitive knowledge systems in the very process of teacher intervention in reading instruction and their reading comprehension improvement in different sociocultural contexts; and (b) the extent of the impact of bilingual readers' access to two languages as diverse as English and Chinese on their metacognitive knowledge systems and vice versa.

IMPLICATIONS FOR PEDAGOGY

The findings from this study suggest a strong link between students' metacognitive knowledge and L2 reading achievement. Just as educational psychologists have made clear and as was shown in the literature reviewed earlier (see, e.g., Harris et al., 2010), Ellis (2004) also points out from the

perspective of second language acquisition theory that self-efficacy and confidence in language learning "has more to do with how learners perceive their ability as language learners and their progress in relation to the particular context in which they are learning" (p. 543). Therefore, the importance of L2 students' metacognitive knowledge systems in relation to L2 learning achievement means that teachers must consider their L2 students' knowledge base when designing, preparing, and delivering effective language instruction programs and lessons. Teachers can start developing reader autonomy based on an understanding of their L2 students' self-efficacy/confidence, motivation/investment (Norton Pierce, 1995), that is, metacognition about person/self, task, and strategies, which has already been found to be a prerequisite for helping students better exercise their agency in transitioning to a higher degree of autonomy in language learning. Specifically, the following three areas deserve teachers' explicit attention in classroom instruction.

1. Raise L2 students' awareness of metacognitive knowledge. Instead of only focusing on delivering content knowledge to their students, teachers need to consider how to help students become effective, self-regulated learners through raising students' awareness of the importance of metacognitive knowledge. Without any conceptualization of how to extend their students' thinking about their learning, teachers who intend to develop their students into self-dependent, autonomous life-long learners will encounter greater challenges. Because students' metacognitive knowledge is tripartite (person, task, and strategy), teachers may begin the process by exploring their students' person knowledge.

First, teachers can gather information about their L2 students' motivations, goals, aspirations, and beliefs about the effectiveness of L2 reading and attitudes towards L2. Second, teachers can involve L2 students in the reading activities that elicit metacognitive experience by asking them how they completed the reading activities. Third, teachers can help students realize their potential as L2 readers in the reading classroom through interacting with them to build up their self-confidence and self-efficacy. Fourth, teachers must make attempts to understand L2 students' real problems. Asking students how they feel about themselves as L2 readers and what they think the real causes for their reading problems are, including their concerns and worries, will provide valuable insights for the teacher to consider. If students' metacognitive knowledge is faulty, help them reflect on their learning by correcting their misconceptions about L2.

2. Reinforce L2 students' task knowledge. L2 students usually have a rich understanding of their L1. Therefore, it is incumbent upon teachers to share with their students useful strategies that can reinforce their task knowledge. First, teachers can guide them into recognizing the differences between their L1 and L2 at the various stages of L2 reading

development. Teachers can take students' acknowledgement of the obvious differences between their L1 and L2 as an impetus for them to use some of the knowledge base that is applicable to L2 reading. In the event that students have difficulty making the transfer, teachers as experienced readers can provide the necessary support and model successful reading processes to them. Second, teachers also need to think about changing and diversifying their teaching methods and devising efficient ways for developing L2 students' linguistic and reading proficiency. An approach to L2 reading instruction that combines reading strategy instruction in relation to a particular text type (e.g., narratives or expositions) and language training (e.g., increasing students' grammatical competence or vocabulary) could be an effective approach to achieving this objective. Third, teachers can help students set reading goals. Having clear metacognitive goals will make it possible for students to control the reading task according to their own priorities or interests. Naturally, helping learners see the links between reading and writing also helps them develop their more broadly defined literacy skills in the long run (Belcher & Hirvela, 2001; Hirvela, 2004).

3. Empower L2 students with strategy knowledge. Ridley et al. (1992) explain that metacognitive strategies include "taking conscious control of learning, planning and selecting strategies, monitoring the progress of learning, correcting errors, analyzing the effectiveness of learning strategies, and changing learning behaviors and strategies when necessary" (p. 295). In light of the research findings from this study, teachers can expedite their students' learning by empowering them with strategy knowledge.

First, teachers can give explicit instructions on the effectiveness and usefulness of reading strategies with which students might be familiar. Second, teachers should have frequent discussions about the usefulness of those strategies with their students so that those who are not familiar with them can expand their strategy repertoire. Some L2 readers have at their disposal various approaches and specific strategies for solving problems in reading. This repertoire of strategies can be transferred from their L1 to L2 and vice versa. If reading teachers clearly understand students' problems and seek an explanation for their reading performance, then students' attention will be directed to this metacognitive aspect. Third, teachers could incorporate reading-strategy instruction in various language-based activities through teacher scaffolding. Teacher scaffolding of effective strategy use in the classroom is deemed essential in situations where students are rather weak L2 readers. During the scaffolding process, the teacher can demonstrate the usefulness and interference of schemata of various kinds so that the importance of activating the right schema knowledge can be

foregrounded. Fourth, teachers could help L2 students use reading strategies in real reading tasks to solve their reading problems so that students will see the value of such strategies. This classroom practice will reinforce students' understanding about what they read, how they read it, why, and when and where they should use a particular reading strategy or a combination of reading strategies so that they will seriously consider flexibility and appropriateness of strategy. Fifth, teachers should play the role of a detective in the classroom by finding out problems and encouraging L2 students to discard their misleading beliefs (e.g., that memorizing a long list of vocabulary words will solve all their reading problems). Teachers' inclusion of strategies in classroom instruction will help students retain them in their long-term memory for future use when the need arises. Ultimately, independence, autonomy, or self-regulation will give students a sense of ownership of the language that they learn and in which they read for acquiring other content or subject matter knowledge. However, given the dynamic nature of learners' metacognitive knowledge systems, teachers need to pay attention to the changes occurring. Thus, it is essential that students' metacognitive knowledge systems be treated as dynamic, that is, ever evolving and situated within their cultural locations. Teachers with this understanding will be rewarded through their students' steady development, over time, toward higher levels of academic and L2 reading proficiency.

CONCLUSION

The findings from the present study suggest that the successful and the less successful Chinese EFL readers' metacognitive knowledge systems differ, irrespective of their gender and academic majors. The successful readers' metacognitive knowledge systems generally indicate their endorsement of comprehension-oriented beliefs, thinking, and behaviors and strategies in reading, whereas their less successful peers appeared to be textbound and focused on basic language processing, such as decoding at the word level, and in most cases they lacked a macrolevel view of EFL reading. It can be suggested that both the changing cultures and the social milieu in China might have influenced the way that these successful individuals formulated their metacognitive knowledge about EFL reading. The less successful readers' lack of intrinsic motivation for mastering EFL could have resulted in their examination-driven modes of learning. The unique features of Chinese society, where daily use of English is an imagined scene, could be a major reason for such differences. Thus, students' metacognition about L2 reading could be viewed in relation to what students in such a society perceive as important for their reading improvement. These students' metacognition about L2 reading, and hence

their thinking about reading as well as their reading behaviors, need to be understood through their lived experiences, because learning is a "situated activity" (Lave & Wenger, 1991, p. 29). Canagarajah (2007) postulates that it is necessary to nestle and reframe a cognitive view of language acquisition within a socially imbedded system so that these commonly used constructs are not treated in isolation but rather as "interactionally open and ecologically situated" (p. 921). The developmental trajectories of these students need to be taken into serious consideration when their reading development, and more broadly, literacy skills development, related to metacognitive knowledge systems are examined in light of this sociocultural understanding. More significantly, the interactive relationship between self-regulated learning and metacognition indicates that L2 learners can draw on their metacognitive knowledge to make decisions which will ensure smoother progress toward higher proficiency in their L2 reading.

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REFERENCES

Afflerbach, P., Pearson, P. D., & Paris, S. G. (2008). Clarifying differences between reading skills and reading strategies. *Reading Teacher, 61*, 364–373. doi:10.1598/RT.61.5.1.

Alderson, J. C. (1984). Reading in a foreign language: A reading problem or a language problem? In J. Alderson & A. Urquhart (Eds.), *Reading in a foreign language* (pp. 1–27). London, England: Longman.

Anderson, N. J. (1991). Individual differences in strategy use in second language reading. *Modern Language Journal, 75*, 460–472. doi:10.2307/329495.

Anderson, N. J. (2005). L2 learning strategies. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* (pp. 757–771). Mahwah, NJ: Erlbaum.

Belcher, D., & Hirvela, A. (2001). Introduction. In D. Belcher, & A. Hirvela (Eds.), *Linking literacies: Perspectives on reading–writing connections* (pp. 1–14). Ann Arbor: University of Michigan Press.

Bernhardt, E. B., & Kamil, M. L. (1995). Interpreting the relationship between L1 and L2 reading: Consolidating the linguistic threshold and the linguistic interdependence hypotheses. *Applied Linguistics, 16*, 15–34. doi:10.1093/applin/16.1.15.

Block, D. (2000). Problematizing interview data: Voices in the mind's machine? *TESOL Quarterly, 34*, 757–763. doi:10.2307/3587788.

Canagarajah, S. (2007). Lingua franca English, multilingual communities, and language acquisition. *Modern Language Journal, 91*, 921–937.

Carrell, P. L. (1989). Metacognitive awareness and second language reading. *Modern Language Journal, 73*, 121–131. doi:10.2307/326568.

Chamot, A. U. (2005). Language learning strategy instruction: Current issues and research. *Annual Review of Applied Linguistics, 25*, 112–130. doi:10.1017/S0267190505000061.

Clark, M. A. (1980). The short-circuit hypothesis of ESL reading—or when language competence interferes with reading performance. *Modern Language Journal, 64*, 203–209. doi:10.2307/325304.

Cohen, A. D. (1998). *Strategies in learning and using a second language*. Harlow, England: Longman.

Cohen, A. D., & Macaro, E. (Eds.). (2007). *Language learner strategies: Thirty years of research and practice*. Oxford, England: Oxford University Press.

Cotterall, S., & Murray, G. (2009). Enhancing metacognitive knowledge: Structure, affordances, and self. *System, 37*, 34–45. doi:10.1016/j.system.2008.08.003.

Dörnyei, Z. (2005). *The psychology of the language learner*. Mahwah, NJ: Erlbaum.

Dunlosky, J., & Lipko, A. R. (2007). Metacomprehension: A brief history and how to improve its accuracy. *Current Directions in Psychological Science, 16*, 228–232. doi:10.1111/j.1467-8721.2007.00509.x.

Ellis, R. (2004). Individual differences in second language learning. In A. Davies & C. Elder (Eds.), *The handbook of applied linguistics* (pp. 525–551). Oxford, England: Blackwell.

Ellis, N. (2008). The dynamics of second language emergence: Cycles of language use, language change, and language acquisition. *Modern Language Journal, 92*, 232–249. doi:10.1111/j.1540-4781.2008.00716.x.

Field, M. L. (1985). A psycholinguistic model of the Chinese ESL reader. In P. Larson, E. Judd, & D. Messerchmitt (Eds.), *On TESOL '84: A brave new world* (pp. 171–183). Alexandria, VA: TESOL.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist, 34*, 906–911. doi:10.1037/0003-066X.34.10.906.

Fry, E. (1977). Fry's readability graph: Clarifications, validity, and extension to Level 17. *Journal of Reading, 21*, 242–252.

Gan, Z., Humphreys, G., & Hamp-Lyons, L. (2004). Understanding successful and unsuccessful EFL students in Chinese universities. *Modern Language Journal, 88*, 229–244. doi:10.1111/j.0026-7902.2004.00227.x.

Gao, X. (2007). Has language learning strategy research come to an end? A response to Tseng et al. (2006). *Applied Linguistics, 28*, 615–620. doi:10.1093/applin/amm034.

Goh, C. (1997). Metacognitive awareness and second language listeners. *ELT Journal, 51*, 361–369. doi:10.1093/elt/51.4.361.

Grabe, W. (2009). *Reading in a foreign language*. Cambridge, England: Cambridge University Press.

Gu, P. Y. (2003). Fine brush and freehand: The vocabulary learning art of two successful Chinese EFL learners. *TESOL Quarterly, 37*, 73–104.
Harris, K. R., Santangelo, T., & Graham, S. (2010). Metacognition and strategy instruction in writing. In H. S. Waters & W. Schneider (Eds.), *Metacognition, strategy use, & instruction* (pp. 226–256). New York: Guilford.
Hartman, P. K., & Blass, L. (1997). *Quest: Book 3*. Boston, MA: McGraw-Hill.
Hedgcock, J., & Ferris, D. (2009). *Teaching readers of English: Students, texts and contexts*. New York, NY: Routledge.
Hirvela, A. (2004). *Connecting reading and writing in second language writing instruction*. Ann Arbor: University of Michigan Press.
Holstein, J. A., & Gubrium, J. F. (2004). The active interview. In D. Silverman (Ed.), *Qualitative research* (pp. 140–161). London, England: Sage.
Hu, G. (2003). English language teaching in China: Regional differences and contributing factors. *Journal of Multilingual & Multicultural Development, 24*, 290–318.
Hu, Y. (2004). The cultural significance of reading instruction in China. *Reading Teacher, 57*, 632–639.
Huang, J. (2005). Metacognition training in the Chinese university classroom: An action research study. *Educational Action Research, 13*, 413–434. doi:10.1080/09650790500200309.
Lave, L., & Wenger, E. (1991). *Situated learning*. Cambridge, England: Cambridge University Press.
Liu, J. (2008). Beyond communicative competence: A pedagogical perspective. In J. Liu (Ed.), *English language teaching in China: New approaches, perspectives and standards* (pp. 201–220). London, England: Continuum.
Macaro, E. (2006). Strategies for language learning and for language use: Revising the theoretical framework. *Modern Language Journal, 90*, 320–337. doi:10.1111/j.1540-4781.2006.00425.x.
Macaro, E., & Erler, L. (2008). Raising the achievement of young-beginner readers of French through strategy instruction. *Applied Linguistics, 29*, 90–119. doi:10.1093/applin/amm023.
Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis* (2nd ed.). London, England: Sage.
Ministry of Education, China. (1991). *Notional–functional table of the college English syllabus for non–English-major arts and sciences students*. Beijing, China: Author.
Ministry of Education, China. (1999). *English syllabus for colleges and universities*. Shanghai, China: Foreign Language Education Press.
Norton Pierce, B. (1995). Social identity, investment, and language learning. *TESOL Quarterly, 29*, 9–31. doi:10.2307/3587803.
O'Malley, M. J., & Chamot, A. U. (1990). *Learning strategies in second language acquisition*. Cambridge, England: Cambridge University Press.
Oxford, R. L. (1990). *Language learning strategies*. Boston, MA: Heinle & Heinle.
Paris, S. G. (2002). When is metacognition helpful, debilitating, or benign? In P. Chambers, M. Izaute, & P. Marescaux (Eds.), *Metacognition: Practice, function, and use* (pp. 105–120). Boston, MA: Springer.
Perkins, K. (1983). Semantic constructivity in ESL reading comprehension. *TESOL Quarterly, 17*, 19–27. doi:10.2307/3586421.
Read, J. (2004). Research in teaching vocabulary. *Annual Review of Applied Linguistics, 24*, 146–141. doi:10.1017/S0267190504000078.
Ridley, D. S., Schutz, P. A., Glanz, R. S., & Weinstein, C. E. (1992). Self-regulated learning: The interactive influence of metacognitive awareness and goal-setting. *Journal of Experimental Education, 60*, 293–306.
SNP. (1997). *Reading comprehension practice for secondary students*. Singapore: SNP.

Vandergrift, L. (2005). Relationships among motivation orientations, metacognitive awareness and proficiency in L2 listening. *Applied Linguistics, 26*, 70–89. doi:10.1093/applin/amh039.

Veenman, M. V., Van Hout-Wolters, B. H., & Afflerbach, P. (2006). Metacognition and learning: Conceptual and methodological considerations. *Metacognition & Learning, 1*, 3–14. doi:10.1007/s11409-006-6893-0.

Wenden, A. L. (1991). *Learner strategies for learner autonomy*. London, England: Prentice-Hall.

Wenden, A. L. (1998). Metacognitive knowledge and language learning. *Applied Linguistics, 19*, 515–537. doi:10.1093/applin/19.4.515.

White, C. (1999). Expectations and emergent beliefs of self-instructed language learners. *System, 27*, 443–458. doi:10.1016/S0346-251X(99)00044-5.

Winne, P. H. (2005). A perspective on state-of-the-art research on self-regulated learning. *Instructional Science, 33*, 559–565. doi:10.1007/s11251-005-1280-9.

Zhang, D., & Goh, C. (2006). Strategy knowledge and perceived strategy use: Singaporean students' awareness of listening and speaking strategies. *Language Awareness, 15*, 199–219. doi:10.2167/la342.0.

Zhang, L. J. (2001). Awareness in reading: EFL students' metacognitive knowledge of reading strategies in an acquisition-poor environment. *Language Awareness, 10*, 268–288. doi:10.1080/09658410108667039.

Zhang, L. J. (2002a). Exploring EFL reading as a metacognitive experience: Reader awareness and reading performance. *Asian Journal of English Language Teaching, 12*, 65–90.

Zhang, L. J. (2002b). Metamorphological awareness and EFL students' memory, retention, and retrieval of English adjectival lexicons. *Perceptual & Motor Skills, 95*, 934–944. doi:10.2466/PMS.95.7.934-944.

Zhang, L. J. (2003). Research into Chinese EFL learner strategies: Methods, findings, and instructional issues. *RELC Journal, 34*, 284–322. doi:10.1177/003368820303400303.

Zhang, L. J. (2004). Reforming a teacher education program for PRC EFL teachers in Singapore: Sociocultural considerations and curriculum evolution. *International Journal of Educational Reform, 13*, 223–252.

Zhang, L. J. (2008). Constructivist pedagogy in strategic reading instruction: Exploring pathways to learner development in the English as a second language (ESL) classroom. *Instructional Science, 36*, 89–116. doi:10.1007/s11251-007-9025-6.

Zhang, L. J., & Annual, S. (2008). Vocabulary and reading comprehension: The case of Singaporean secondary school students learning to read in English. *RELC Journal, 39*, 56–78. doi:10.1177/0033688208091140.

Zhang, L. J., & Wu, A. (2009). Chinese senior high school EFL students' metacognitive awareness and use of reading strategies. *Reading in a Foreign Language, 21*, 37–59.

Zhang, L. J., & Xiao, Y. (2006). Language learning strategies, motivation and EFL proficiency: A study of Chinese tertiary-level non-English majors. *Asian Englishes, 9*, 20-47.

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory Into Practice, 41*, 64–71. doi:10.1207/s15430421tip4102_2.

APPENDIX
A Semistructured Interview Guide

1. Are there any differences or similarities between reading in Chinese and in English? If so, in what way, as you perceive? Do you see these differences or similarities as deep-rooted or as superficial?
2. If you have already realized the problems we have just talked about, do they have any influence on your EFL learning? Under such circumstances, do you or do you not think that reading in English and reading in Chinese are intrinsically different?
3. Do you know the strengths you have as an EFL learner? If yes, can you say something about them?
4. Do you read a lot of English books, for example, storybooks, newspapers, and magazines? Do you read other English books which are outside your academic specialization? If so, what kind of books and for what reasons?
5. What do you think is the most important objective in reading in EFL, for example, learning English grammar, vocabulary, phonetics, grasping main idea of text, or something else? Based on your perception you have just mentioned, what do you think is the biggest obstacle that makes your EFL reading difficult?
6. Do you have a dictionary? If so, is it an English-English or an English-Chinese dictionary? Do you like using a dictionary during reading? Can you tell me when you think you should use a dictionary and when not?
7. You have just read two texts. Do you think they are of the same difficulty level? Why do you think so?
8. Did you feel anxious just now when you were reading the two texts? Do you have this feeling in your daily language learning schedule? What do you do when you read a sad or a happy scenario? Do you usually have any special way of relieving your emotional tension, e.g., drinking something or listening to music? What do you think of the role played by self-confidence in EFL learning?
9. When you were given the two texts, what did you do first? Did you have a lot of new words? How did you deal with them generally? Frankly, how many percent have you understood of the texts? What are the most difficult aspects?
10. Did you have enough time for reading the two texts? How did you distribute your time for the two passages? Are you happy with your recall performance? Did you pay attention to main ideas or details? Did you see how the texts were arranged, e.g., the logical relations within the texts?
11. What did you do when you met such a long sentence: "Exercising my faculties of observations this way, I soon became able to estimate the station in life of a fair number of Englishmen, although my ability in this area was nowhere near the native's"?
12. In addition, in Passage 2 you had a long sentence: "We draw messages from body language, whether it is the "no" that the shake of head conveys, or the "Hey, I'm bad" statement Richard Pryor and Gene

Wilder expected their swaggers to make in Stir Crazy." Tell us how you approached the sentence.

13. How do you evaluate your EFL reading ability, and your Chinese reading ability? Did your teacher teach you any reading strategies, skills or things like these? For example, how to solve a problem you encounter in reading? Do you think these strategies apply to EFL reading only or any other languages?
14. Do you believe reading strategies can help you improve your reading efficacy? Do you have any good reading strategies that you want to share with us?

Translated from the Chinese by the author.