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The role of metacognition in the success of reading and writing tasks across cultures

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Abstract

There are individual differences between students' ways of learning which may impact on their success in responding to the challenge of learning a foreign language. While some students are self-regulating and self-directing, others may understand their own strengths and weaknesses but be unable to make use of this knowledge to increase their success rate, and yet others will lack this level of self-awareness and ability to take control of their own learning. The concept of metacognition, which can be defined as the ability to understand, reflect on and control one's thinking and learning, is known to be important for academic success across a range of subject areas. However, there is little understanding of the role of metacognition within teaching English to speakers of other languages (TESOL) research. This project seeks to fill that gap by comparing the metacognitive awareness of successful and less successful English as a foreign language (EFL) learners in different educational, cultural and social contexts and to explore the similarities and differences between these two groups. The study adopts a two-phase approach, with the first stage being an exploratory cross-sectional design and the follow-up being a case study.

Approximately 500 EFL students studying in different countries and areas completed the Metacognitive Awareness Inventory (MAI) (Schraw and Dennison, 1994) and provided demographic data, including length of learning experience and self-perceived proficiency level. Correlational analysis explored links between success as measured by grade-point average, metacognitive awareness as measured by MAI and other contextual variables. Then ten students (five successful; five less successful) from each of the four contexts were recruited to carry out a think-aloud protocol and retrospective interview regarding the use of metacognitive strategies. The findings suggest that proficient learners and less proficient learners differ in the use of metacognitive strategies when completing the task. MAI scores also suggest that there is a strong relationship between students' MAI and academic success in learning a foreign language. However, contextual and cultural factors did not play a role in the differences. We suggest metacognitive knowledge and strategy training be implemented and integrated in language learning to enhance the development of language proficiency.

About the authors

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Dr Shirley Larkin researches metacognition across subjects and age ranges including adult and teacher metacognition. Her work has resulted in a number of book chapters, articles, conference papers and the single-authored book *Metacognition in Young Children* (Routledge, 2010). She is currently a Senior Lecturer in Education at the University of Exeter.

Introduction

Research suggests that metacognition has a close relationship with learning and attainment (Higgins, Hall, Baumfield and Moseley, 2005). Although much research has been carried out on learning strategies, little attention has been given to the success of second-language learners and the role of metacognitive knowledge and strategy that contribute to their success. Through a systematic literature review, we are unable to find any research which systematically investigates the relationship between metacognition and attainment of second language (L2) learners in EFL contexts across cultures. Our aim in this study is to address the research gap concerning the role of metacognition in the success of second-language learning across cultures. In researching this area we hope to provide knowledge of the metacognitive awareness of students from different sociocultural backgrounds and whether or not metacognition is related to their success or lack of it in second language learning. The project should create the groundwork for further research in this area and as such can be seen as a pilot project from which further research questions can be explored and tested.

In this project, we limit language learning to reading and writing aspects due to the unique feature of listening and speaking requiring spontaneous response, and reading and writing requiring reflective thinking, and deliberate and conscious decision-making. Thus, we aim to explore the relationship between metacognitive knowledge, awareness and strategy use, and success in second language reading and writing.

Literature review

Metacognition

Metacognition as first described by Flavell (1979) refers to the ability to monitor and control thinking during a task and to the longer-term building of knowledge about one's own and others' thinking processes. Metacognition comprises metacognitive knowledge including that related to self, task and strategies; metacognitive experiences; and the ability to regulate and control cognitive processing during a task (Flavell 1979; Nelson and Narens 1990). Different models of metacognition view the dynamic interaction between these features slightly differently, with some emphasising other factors such as motivation (Borkowski, 1996) while others focus on information processing (Kluwe, 1987). A further model on which the Metacognitive Awareness Inventory (Schraw and Dennison 1994) is based is the categorisation of metacognition into declarative (akin to metacognitive knowledge); procedural (akin to regulation and control) and conditional (akin to metacognitive skill). This categorisation is particularly useful in studies of pedagogy because it enables assessment of specific features of metacognition in relation to a learning goal.

While metacognition has become an important area of academic investigation in TESOL and applied linguistics over recent years (Zhang, 2010), much of the research is concerned with description of types of metacognitive knowledge second language learners have and use. There is still little information about the role of metacognition in the success of second language learning.

There is growing evidence of the link between metacognition and academic achievement, even though the assessment of metacognition is fraught with problems. In higher education, studies have shown that high-achieving students are both more aware of cognitive strategies and are able to use this knowledge in a more strategic way and more frequently to achieve a goal and to make learning more meaningful (Romainville, 1994; Cornford, 2002; Prins et al., 2006; Van der Stel and Veenman, 2010). In particular, the monitoring and regulating aspect of metacognition has been shown to affect academic performance (Donaldson and Graham, 1999; Hofer, Yu, and Pintrich, 1998).

The link between metacognition and academic achievement is often based on correlational findings and the assumption cannot be made about cause-and-effect relationships. While it may be the case that high-achieving students are successful because of their greater metacognitive awareness and skill, it could also be the case that they are more metacognitive because they are high achieving and that because their cognitive activity is successful they reflect on it more. Research on metacognition and talented students highlights this dilemma (Steiner and Carr, 2003).

Assessment of metacognition is fraught with difficulties and researchers tend to call for multi-method designs when assessing metacognition (Moos and Azevedo, 2009; Veenman, 2005). The most usual ways of assessing metacognition include self-report questionnaires, interviews, think-aloud protocols, observations and various tests that seek to link confidence judgements or predictions of success with actual success on a task. Assessments may also be designed to concentrate on the process of learning or the outcomes of learning (Meijer et al., 2006).

In subjects where there is already considerable work on the link between metacognition and learning, such as mainstream curriculum subjects, a multi-method assessment is necessary to provide robust evidence on which to base future policy and practice decision. However, there is a lack of research in the area of metacognition and success in second-language learning. Thus a first step is to explore whether a link between achievement in language learning and metacognition can be made. One of the most robust and frequently used metacognition assessment instruments for adult learners is the MAI (Schraw and Dennison 1994). This was administered online to the whole sample to provide statistical data for correlational analysis. In order to investigate links between successful language learning and metacognitive strategy use, a detailed micro-level analysis comparing more successful and less successful learners across different contexts was undertaken using qualitative methods of think-aloud protocols and interviews. In exploring metacognitive knowledge and strategy use in language learning, reading and writing have become the focused areas because learners need to engage in deliberate and conscious thinking in order to complete the reading and writing tasks.

Second language reading and writing, and metacognition research

Writing and reading have long been considered to be related activities. For example, teachers use the five-stage reading process – pre-reading, reading, responding, exploring and applying – for a balanced instructional programme, and five stages of the writing process – pre-writing, drafting, revising, editing and publishing to support students to develop their compositions. From a constructivist theoretical perspective, both reading and writing are meaning-making activities (Anderson, Spiro and Montague, 1977; Gregg and Steinberg, 1980). When people write and read, meaning is continually in a state of becoming. Writing and reading involve the development of meaning, thus both are conceptualised as composing activities in the sense that both involve planning, generating and revising meaning and these occur recursively throughout the meaning-building process. From this perspective, reading and writing are considered to be similar activities in that writers and readers use similar kinds of knowledge: knowledge about language, knowledge about content, knowledge about genre conventions, knowledge about organisation and structure, knowledge of pragmatics and extra-linguistic knowledge. Of course, there are differences between reading and writing with regard to activity, strategy and purpose. In researching reading and writing, strategy use has been a focused area in understanding the success of the activities. However, research in this area has been challenged because of a lack of theoretical frameworks and methodological rigour. In response to the criticisms of language learning strategies (LLS) work, researchers (e.g., Dörnyei, 2005; Dörnyei and Skehan, 2003; Tseng, Dörnyei and Schmitt, 2006; Zhang, 2010) have put forward proposals to situate LLS research within the larger framework of metacognition or self-regulated learning. In contrast to previous LLS research which focused on the behavioral aspects of LLS (e.g., frequency of strategy use), these proposals involve a shift towards identifying and measuring the underlying cognitive processes of LLS. Despite this new framework of metacognition and self-regulation appearing to be promising, it has not been sufficiently tested in relation to whether it can be successfully incorporated into the field of second language acquisition (SLA) or whether metacognition has a role in successful L2 learning.

Metacognition has gained substantial attention in recent years in SLA research. For example, Liu, (2013) urges metacognitive awareness should be recognised as an indispensable part of EFL reading and similar claims are observed in EFL writing (e.g. Manchón, 2001). Earlier research in metacognition in L2 reading and writing is largely descriptive and exploratory in nature and the focus was placed on what types of metacognitive knowledge and strategies students use in reading and writing tasks, yet little attention was paid to the relationship between the employment of these strategies and knowledge and L2 success in learning. This kind of research is similar to the early studies that emerged in LLS research (e.g., Wenden, 1983). Some recent studies have examined metacognitive knowledge as one factor among many within larger cognitive models of L2 writing to investigate the relationships between L2 linguistic knowledge, speed of L2 processing, metacognitive knowledge, L1 writing proficiency and L2 writing proficiency (e.g. Schoonen, et al, 2009). Research on metacognitive knowledge in language learning has suggested that there is a mutual influence in terms of second language learning and metacognitive awareness (Zhang and Goh, 2006). In fact, as early as 1998, Wenden pointed out the importance of incorporating metacognitive knowledge in learner training programmes to make learning more efficient. However, much of the research in this area focuses on metacognition about learners themselves, rather than about the tasks and process. Further, very little is known about similarities and differences between learners from different sociocultural contexts in terms of their metacognitive strategy use for successful language learning. Liu and Li (2015) claimed that there is a need to examine the role of metacognition in successful L2 reading and writing across EFL contexts in order to gain evidence of whether metacognition contributes to L2 success, and how metacognition is used by L2 learners across different cultures. Against this background, this research attempts to explore the interrelationship between metacognition and academic success in English language learning, with a particular focus on reading and writing.

Research methodology

In order to explore the interrelationship between metacognition and successful language learning, this research addresses four questions:

- **RQ1:** What is the difference between the metacognition of high-proficient and low-proficient EFL students?
- **RQ2:** Is there a relationship between scores on the MAI index and academic success for these students?
- **RQ3:** What aspects of metacognition are associated with academic success for these students?
- **RQ4:** To what extent do cultural and contextual factors contribute to the relationship between metacognition and academic success?

The research is loosely based on the work of Young and Fry (2008) who examined the metacognitive awareness of graduate and undergraduate teacher-education students in the humanities and found a statistically significant correlation between metacognitive awareness and end-of-course grades. The project adopts a two-phase design, with the first phase being a cross-sectional exploratory study which aims to compare the metacognition of successful and less successful EFL learners across different countries and areas, and the second phase adopting a case study approach to offer insights into the metacognitive knowledge and strategy use between successful and less successful learners using think-aloud protocols and retrospective interviews to explore the similarities and differences between these two groups.

Success was initially defined as a grade point average (GPA) of 80+ per cent (or merit level, according to institution grading bands) for reading and writing. However, due to the difficulty in accessing students' grades for reading and writing during the project, our analysis is based on the individual's self-perceived proficiency level in the analysis.

Participants

Participants were volunteers from four sociocultural contexts, including 512 participants for phase one and 30 participants for phase two. The first phase adopted a convenient snowball sampling strategy through overseas partners. As seen from Table 1 below, the number of participants in these four contexts varied, with 30.9 per cent of the total participants being Chinese, and Saudi students

taking up 19.5 per cent of the total. The majority of participants were between 18 and 24 (six participants were 17 when the data were collected). The average age for these participants is 20. Female student participants accounted for 66.4 per cent (n=512) and male students took up 33.4 per cent (n=512) of the total. Students had, on average, studied English for 10.4 years.

The second phase adopted a convenience sampling strategy. All participants who answered the questionnaire in phase one were asked to volunteer to participate in phase two. Then we applied criteria to select suitable candidates. Criteria included: current students; students who had studied English for more than six years when the data were collected; students were able to conduct think-aloud protocol after training.

Table 1: Number of participants for phase 1 by country

Country	Number of participants	Percentage %
China	158	30.9
Taiwan	147	28.7
Iran	107	20.9
Saudi Arabia	100	19.5
	n=512	100%

Methods

In the exploratory phase, the MAI was distributed online to students through overseas partners and contacts. Alongside the MAI, we also distributed a short questionnaire to collect demographic and contextual data including age, years of study, number of years of studying English, percentage grades for recent exams (e.g. IELTS) and gender. At the end of the questionnaire, participants were asked to volunteer to take part in the second phase of the study.

In the second phase, ten students (five high proficient and five low proficient) were selected from the volunteer pool in each of the four countries to participate in an in-depth study. They were asked to complete a language-proficiency paper consisting of reading comprehension and writing tasks. Students were trained in how to undertake think-aloud protocols and then asked to think aloud during the tasks. In taking account of the methodological issues

on researching metacognition, we attempted in this study to provide a detailed protocol for the collection of the think-aloud data. This drew on the work of Ericsson and Simon (1985, 1993), Ericsson (2006), Sasaki (2008), Ferguson et al. (2012), Clinton et al. (2014) and in terms of data analysis on the work of Yang (2003) and Gu (2014). The paper-based task took approximately 75 minutes. Following completion of the paper, students were briefly interviewed with questions based on their think-aloud protocol in order to explore further their metacognitive knowledge and strategy use in completing the paper. Retrospective interviews were conducted either in English or in the students' L1. Special attention was paid to translation in order to ensure accuracy of the data. Overseas partners were actively involved in this process.

Data analysis

Regarding MAI and questionnaire data, each participant was given a unique identifier. The MAI was scored in line with the authors' recommendations. Data was input into SPSS cleaned and then descriptive statistics were run. To explore relationships between factors on the MAI and proficiency level, inferential analysis was undertaken. In order to explore differences in scores on the MAI between students in relation to individual contextual factors, data was subject to analysis of variance and regression analysis.

Think-aloud and retrospective interview data was transcribed for qualitative content analysis. The focus of the analysis of think-aloud and retrospective data was placed on the difference in metacognitive awareness and metacognitive strategies that proficient and less-proficient learners adopted in completing the paper. In addition, differences and similarities across contexts were explored.

As stated above, students were encouraged to use their first language to think aloud while reading and attempting to comprehend the text. Thus the transcribed think-aloud data was a mixture of first language and English. A random selection of three transcripts were provided with the main text translated into English. The first stage of data analysis was to read one of these transcripts and work line by line asking the reflective questions: what does the student mean by this statement? Why is the student saying this? What is this statement enabling the student to do? From this grounded

approach 18 codes were created. These were grouped into 12 categories: comprehension strategies; process strategies; language strategies; monitoring; evaluation; metacognitive knowledge; metacognitive experience; meta-linguistic knowledge; task awareness; content questions; connection questions; and memory.

Each code was given a textual code memo. This framework was applied to two other randomly chosen transcripts and a further two codes were added, although these did not change the categories. The categories were designated metacognitive (M) or cognitive (C) depending on the context in which statements were given. This is an interpretation of what students meant when they uttered the statement. In some cases it was clear that they were focusing their statement on their thinking processes, e.g. 'I need to remember this', which was coded as a process strategy – memory – and categorised under process strategy (M). This can be compared to an example from the same transcript: 'I need to read the questions first', which was coded as a process strategy – function – and categorised under process strategy (C). In some cases the judgement of whether a statement was metacognitive or cognitive was more difficult to ascribe and then contextual cues were used to interpret meaning. In total, nine categories were deemed to be cognitive and nine were described as metacognitive (i.e. referring to another thought process). The final framework of analysis was applied to all transcripts across the four countries.

Ethics considerations

The project was conducted with regard to the Ethical Guidelines for Educational Research (BERA 2011) and reviewed by the Research Ethics Committee (REC) of the College of Social Sciences and International Studies, University of Exeter to gain permission to conduct the research. Participation in the project was entirely voluntary. Participants were informed about the nature of the research and how the research findings would be used before they took the questionnaire. Participants were aware of the right to withdraw from the research at any time and their data would be destroyed. Consent was sought from them before data collection.

Findings and discussion

The data from the questionnaire, think-aloud and retrospective interviews was analysed. In presenting the qualitative data (think aloud and interviews) extracts, we assigned the students pseudonyms in order to preserve anonymity.

The difference between the metacognition of high-proficient and low-proficient EFL students

High-proficient and low-proficient learners seem to have differences when undertaking reading and writing tasks. From the think-aloud data as well as their retrospective interviews, we found that learners employed different strategies and metacognitive strategies to complete the tasks. Below, we will outline and discuss how high-proficient learners differ from low-proficient ones in reading and writing respectively.

Reading

In completing reading tasks, proficient language learners take conscious steps to understand what they are doing by using a wider range of strategies than less proficient learners. In fact, less proficient learners tended to use more cognitive strategies to assist reading comprehension and progressing the task. Specifically, less proficient students used a lot of comprehension strategies, such as summarising, questioning, repetition, language strategy and process strategy. The retrospective interview data suggested that less proficient learners paid special attention to completing the task using strategies they normally use, despite the nature (and potential differences) of the task. For example, Bakhshi (Iranian) reflected:

well, when I got the (reading) paper, I just started to read. I want to make sure that I understand the text so I checked every word and sentence. I noticed that I had some unknown words, which I underlined and came back later because I didn't understand the sentence otherwise. Of course sometimes, I can guess the words because my teacher taught me to do that.

Overall, proficient learners used more metacognitive strategies than their counterparts. On average, a proficient learner used 45 instances of metacognitive strategies whereas less proficient learners used 22 instances of metacognitive strategies in completing the task. In terms of specific metacognitive strategies, less proficient learners mainly used self knowledge, with a focus on their understanding of

the material and the difficulty level of the task in relation to their linguistic competence. This type of metacognitive knowledge was well-evidenced in all the less proficient learners' data. For example, Force (Taiwan) said 'I am not sure I understand this...it is difficult for me.' Occasionally, less proficient learners monitored progress or thinking (task or goal), gave self-instructions, and engaged in self-correction. Nora (Saudi Arabian) commented: 'I haven't found the answer to this exercise yet, so maybe I need to reread the first paragraph?'

Similar to less proficient learners, proficient students also used a wide range of strategies to comprehend the passage and complete the task, including the use of linguistic knowledge to tackle unknown words and metalinguistic knowledge to guide the analysis of complex sentences. Regarding metacognitive strategies, however, proficient learners demonstrated strong awareness and used a wider range of metacognitive strategies. Specifically, they made references to their metacognitive experience and post-hoc evaluation. Proficient learners also tended to use strategies such as recalling and memory.

When students talked about their metacognitive experiences, they did not only talk about the difficulty they encountered, they also made connections with previous experiences, and with other parts of the passage. For example, a proficient learner, Dan's (Chinese), think-aloud data suggested that she consciously made use of her metacognitive experience: 'Oh, this is quite difficult...I think I've read something similar to this idea...let me have another look.'

Proficient learners also constantly monitored their progress on the task and the strategies they used. Proficient learners questioned whether an idea made sense in order to check the clarity of their understanding or expression in the target language. Students were aware of how well a task was progressing and noticed when comprehension broke down. Jack's (Chinese) think aloud illustrated this: 'I am running out of time now...I should get this one done first.'

Proficient learners also conducted post-hoc evaluation of a task, their performance and the strategies they used. For example, in the think aloud, Lin (Taiwanese) noted 'Oh, yes, I was right.' Similar comments such as 'I've done it now...I think starting with questions worked well for this task' was offered

by Bader (Saudi Arabian). In the retrospective interviews, several proficient learners evaluated their performances without being specifically asked. Luke (Saudi Arabian) reflected: 'I've done well in the reading task and I think the strategies I applied were helpful.' When asked about the specific strategies he did in order to help with the reading task, he said, 'I normally assess the length of the reading, look at any images and highlight words when I get the passage, and then I glanced at the exercises in order to do the reading more effectively. Obviously when I am reading, I normally ask myself whether I know anything about the topic, and how well I have understood the text. If I am in doubt, I will make a mark and read it again once I finish the paragraph.' The metacognitive awareness and knowledge about the task and conditional knowledge about when to use those strategies reflects that Luke is one of the good learners. Also, the awareness of reflection and constant self-assessment contributes to his successful learning of English.

Writing

Again, proficient and less proficient learners demonstrate different metacognitive strategies to complete the writing task. The differences lie in three areas: planning, monitoring and evaluation. It is evident that less skilled writers tended to start writing immediately after a task was assigned. In the retrospective interviews, they reflected that the primary reason for doing so was a perception of lack of time. They were aware that they normally take quite a lot of time to construct sentences. Some participants also pointed out that they constructed the essay in their L1 and then translated it into English. Moreover, they were often frustrated by their lack of appropriate lexical expressions of English; thus, it was important for them to focus on language strategy and start to write as soon as possible. In terms of metacognitive strategies, both types of learners engaged with metacognitive experience by commenting on the difficulty of the task and engaged in assessing their own knowledge. However, less proficient learners differ from proficient learners in planning, monitoring and evaluating.

Planning: both proficient and less proficient learners planned what they needed to do when they received the task. Whereas less proficient learners often made a plan for the outline for the writing task and rushed into writing, proficient learners engaged in thinking about their prior knowledge, which might have been of help with the task. Proficient learners also allocated time for each stage of the writing.

For example, Mia (Iranian) said: 'I have read something like this before, so I think I can use some of what I read here ... I think I should use five minutes to analyse the topic, make an outline and write down key messages, and then perhaps spend 15 minutes to write ... and then, maybe five minutes to revise and check accuracy and grammar structure. The last five minutes I will check the coherence and proofread it. OK, seems I have a good plan now.'

Planning is a very important step in writing a good essay and proficient learners in general are aware of the importance of planning and allocating time and resources in writing. Linda, a less proficient learner from Taiwan, shared her experience of writing in the retrospective interview: 'I didn't realise there were specific things I did that helped the task. When I saw the title of the writing, I just thought about the introduction, the argument and then I started to write. I think it was difficult because I didn't have the words that I wanted to express myself, so I struggled with meaning making. I am not sure how well I did, but I finished it within the time.'

Monitoring: for less proficient learners there was little evidence of monitoring while proficient learners were constantly monitoring their progress, performance and thinking. In addition, proficient learners monitored the task level and the strategies they used. Omar (Saudi Arabian), for example, demonstrated a strong sense of monitoring in his think aloud: 'I think I am doing well now ... I've almost finished it.' Similar reflection such as 'Am I on the right track?', 'Is my argument reasonable and justified?' and 'Do I need more evidence to support my claim?' from other proficient learners were evident in the dataset. Nora (Saudi Arabian) also made corrections on her strategies by monitoring her progress: 'I think I will write the conclusion first and then revise the essay as I think I am running out of time.' The strong sense of monitoring their writing process and products to some extent helped the proficient learners develop their competence in writing and improved the quality of their product.

Evaluation: this type of metacognitive strategy did not appear in data from less proficient learners and not all proficient learners engaged with it after finishing the task. Some proficient learners did evaluate their own performances, especially in relation to their own expectations before conducting the task. In particular, proficient learners assessed how well they did the task by giving themselves comments such as 'I think I've done well', 'I am satisfied with my work'. They also commented on

the areas in which they had done well and suggested that this was an experience they could take forward for future tasks, as well as being aware of areas where they could improve. For example, Joyce (Taiwanese) commented, 'I am not quite happy with what I wrote, but I think I can improve vocabulary choices next time.' Two or three learners also consciously commented on the necessity of redoing the task in order to take advantage of their evaluation. Lei (Chinese), for example, reflected in the retrospective interview: 'If I did it again, I would start to write some key vocabulary against each point I want to make as I found that I struggled with appropriate words later on, especially to avoid repetition. I also need to check the time allocation as I think I spent too much time writing the introduction and I was kind of rushed in the end.'

The findings above suggest that proficient and less proficient learners think and act differently in terms of metacognition. To some extent the results corroborate previous research which shows that there is a relationship between the use of metacognitive strategies and achievement in English language (e.g. Goh 1998, 1999; O'Malley and Chamot, 1990; Vandergrift 1996, 1997; Abu Shmais, 2003; Yang, 2009). Based on the differences in the range of (meta)strategies that learners utilised when they complete the task, we can assume that high degrees of metacognitive knowledge help learners to be better at processing and storing new information, finding suitable ways to practice and reinforce the knowledge they've learned (Vandergrift et al., 2006). In return, they develop better proficiency and comprehension skills (Costa, 2001).

Relationship between scores on the MAI index and academic success

In order to see whether there exist differences between the high proficient and low proficient learners, independent Samples T-tests were performed.

The Laverne's test of .699 indicates that we should assume equal variances. There was a significant difference in the scores for the high proficient group ($M=39.91$, $SD=8.83$) and the low proficient group ($M=37.90$, $SD=9.27$); $t(509)=2.5$, $p=0.013$. These results suggest that students who are at different proficiency levels achieve different MAI scores. Specifically, our results suggest that the higher-proficient groups achieved better MAI scores. We can assume that there is a relationship between scores on the MAI index and academic success for these students. This result confirms the previous

literature and adds evidence to the literature of the relationship between MAI index and academic success in language learning (Romainville 1994; Cornford, 2002; Prins et al. 2006; Van der Stel and Veenman 2010).

Aspects of metacognition associated with academic success

As the MAI has different dimensions (aspects), we also scored each dimension and ran the same test in order to see where (e.g. in which dimension) the difference exists. As the data suggests, there exist significant differences in some but not all dimensions of MAI between proficient and less proficient learners. As presented earlier in the methodology section, the MAI index consists of eight dimensions. Proficient and less proficient learners differ in their MAI index in the four dimensions, including conditional knowledge, planning, monitoring and evaluation. The Laverne's test results of 1.922, 2.459, 2.216 and 2.120 for each aspect indicate that we should assume equal variances.

- **Conditional knowledge:** successful learners are more aware of when and why to use strategies when doing tasks than less successful learners. There was a significant difference in the scores for the high-proficient group ($M=3.9741$, $SD=1.19$) and the low-proficient group ($M=3.7593$, $SD=1.20$); $t(509)=2.03$, $p=0.043$.
- **Planning:** successful learners are more strategic and regulated in terms of planning, goal setting, and allocating resources than less successful learners. There was a significant difference in the scores for the high-proficient group ($M=5.2259$, $SD=1.63$) and the low-proficient group ($M=4.8714$, $SD=1.70$); $t(509)=2.37$, $p=0.018$.
- **Monitoring:** successful learners are more capable and aware of using online assessment of their learning or strategy use than less successful learners. There was a significant difference in the scores for the high-proficient group ($M=5.3852$, $SD=1.54$) and the low-proficient group ($M=5.0913$, $SD=1.63$); $t(509)=2.10$, $p=0.037$.
- **Evaluation:** successful learners are more regulated in terms of conducting post-hoc analysis of performance and strategy effectiveness than less successful learners. There was a significant difference in the scores for the high-proficient group ($M=4.5926$, $SD=1.37$) and the low-proficient group ($M=4.3402$, $SD=1.49$); $t(509)=2.00$, $p=0.046$.

Previous research suggests that the monitoring and regulating aspect of metacognition has been shown to affect academic performance (Donaldson and Graham, 1999; Hofer, Yu and Pintrich, 1998). This research, based on 512 responses from different sociocultural contexts, highlights the dimensions of metacognition which are responsible for success in EFL learning. This result is further backed up by the qualitative data presented above – that proficient learners in particular used planning, monitoring and evaluation in doing the writing task. Based on the above assumptions, we believe that improving conditional knowledge, planning, monitoring and evaluation can contribute to language learning success.

Cultural and contextual factors

A multiple regression was run to predict metacognition awareness and knowledge from gender, country, current year of study and opportunities to travel abroad. These variables do not statistically significantly predicate metacognition scores: $F(4, 507) = 1.891, p = 0.111$ ($p > 0.0005$), $R^2 = 0.015, p > 0.05$ (gender = .834; country = .008; travel = 0.93; year of study = .610). Specifically, this study finds that there is no significant difference in the use of metacognitive strategies between male and female students. The result is in parallel with Salim's (2008) finding. Moreover, the analysis reveals that ethnicity and experience of travelling abroad, and year of study have no effect on the use of relevant metacognitive strategies.

Conclusion and recommendations

The main value of this study and its contribution to English language teaching and learning is that we have provided empirical evidence that metacognitive knowledge and strategies play a significant role in foreign language learning, despite the differences in sociocultural backgrounds. Our research aim was to establish or reject the link between metacognitive knowledge and strategies used by learners and their success in language learning, and find out in particular what metacognitive strategies were responsible for academic success and whether there exist any cultural differences across different contexts. The results suggest a strong link between metacognitive knowledge and L2 success, and in particular that some aspects of metacognition are more important than others in accounting for the success.

This research has important implications for second language learning research and practice. The TESOL research community will benefit from the project's contribution to the knowledge of the role of metacognition for successful second language learning.

In many EFL contexts, language learning still by and large focuses on enhancing learners' linguistic knowledge and very little attention has been paid to developing and improving students' learning strategies, especially metacognitive knowledge and strategies. There are perhaps various reasons why cognitive and metacognitive knowledge and strategies are left out of English teaching and learning, despite the evidence from research showing the importance of it in enhancing academic success. This is beyond this study but certainly more research needs to be carried out to investigate factors influencing teachers' use of metacognitive strategies. Here, we focus on implications derived from the current study. As our findings show, there are significant differences between proficient and less proficient English as foreign language learners in terms of their use of metacognitive strategies and metacognitive knowledge. We recommend that metacognitive knowledge and strategy should form part of English instruction. In order to integrate metacognitive knowledge and strategies into teaching and learning, there are various aspects worth considering.

There is a strong pedagogical implication: metacognitive knowledge can be shared among individuals because it explains individuals' approach to language learning activities and reflects a sense of being in control of one's own learning. Such knowledge and awareness in the development of an individual's approach to language learning activities helps learners to stand back and observe themselves to see what they have learned, and provides a base for the negotiation of meaning in the many different types of social interaction in a learning environment (Lehtonen, 2000). This interactional dimension can help learners shape their regulatory learning activities in terms of metacognition (Gillette, 1994, as cited in Wenden, 1998). Thus, the pedagogic implications of metacognition in becoming more self-regulating are considerable and should encourage learners to develop autonomy. Language classrooms can become a 'strategic' learning environment in which the teacher is responsible for awareness-raising activities related to learning to read in English. Learners can be supported on their individual learning journeys, and through developing metacognition pursue a programme of self-managed language learning activities which may be developed outside the classroom as well.

In terms of instruction, language teachers should be more aware of the role of metacognition in successful language learning and perhaps actively integrate teaching and assessing students' metacognitive awareness in their instruction. The inventory used in this study is a reliable and valid assessment of metacognitive awareness. This can be adapted by teachers and used diagnostically to highlight areas of potential weakness which may impact on second language students' success. This will, in turn, enable teachers to provide remedial interventions for students to enable them to develop self-regulation and metacognitive skills.

The project thus has the potential to impact on teacher development. One particular area for teacher education programmers and training may be raising awareness of the importance of metacognition in second language education: teachers can actively and deliberately integrate raising students' metacognitive awareness in instruction. As a concluding remark, although there is much research in metacognition, it is still an under-researched yet important area in TESOL and we hope the study will provide TESOL researchers with an evidence base and methodology to explore metacognition further.

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