

# The Impact of Linguality on the Cognitive and Metacognitive Reading Strategies Awareness and Reading Comprehension Ability

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**ABSTRACT** One major issue in discussions about cognitive versus metacognitive strategies involves separating what is cognitive from what is metacognitive. Cognitive strategies are used to help an individual achieve a particular goal (e.g., understanding a text) while metacognitive strategies are used to ensure that the goal has been reached (e.g., monitoring one's understanding of that text). The major aim of this study having an ex-post facto design was to find out whether linguality has any impact on the awareness and use of metacognitive, cognitive and total cognitive/metacognitive strategies in respective of students proficiency levels. Through out this study the researchers found that Mono and bilingual students differed significantly in their cognitive, metacognitive as well as total cognitive/metacognitive strategy scores, meaning that bilinguals had significantly higher scores than monolingual students. Further, students with high proficiency had significantly higher scores than students with low proficiency in their cognitive, metacognitive and also total cognitive/metacognitive strategies. However, the interaction effect between linguality and proficiency is found to be non-significant in the aforementioned strategies, indicating that the pattern of cognitive strategy scores are similar for students with low and high proficiency irrespective of the lingual background they have.

## 1. INTRODUCTION

Reading cannot be viewed as something that just happens. It is a "constructive process" that uses the students' cognitive and metacognitive strategies to build the understanding of the text (Dole et al. 1991, in Allen 2003, p. 319). Metacognition researchers come from the paradigm that knowledge about cognition is "closely related to and predictive of cognitive performance. *Metacognition* is often simply defined as thinking about thinking and as Flavell (1976, p. 232) mentions it refers to "one's knowledge concerning one's own cognitive processes and products or anything related to them".

Cognitive and metacognitive strategies are relevant to L2 reading performance. Metacognitive strategies are sequential processes that one uses to control cognitive activities, and to ensure that a cognitive goal (e.g., understanding a text) has been met. According to Sheorey and

Mokhtari (2001, p. 433) "the reader's metacognitive knowledge about reading includes an awareness of a variety of reading strategies and that the cognitive enterprise of reading is influenced by this metacognitive awareness of reading strategies". When encountering comprehension problems, accomplished readers take immediate steps by monitoring their reading process carefully. They are aware of their own cognitive and linguistic resources, and are capable of directing their attention to the appropriate clues in anticipating, organizing and retaining text information. Such readers are strategic readers and their reading behavior is referred to as "strategic reading" (Koda, 2005, p. 204). Strategic readers are aware of the nature of the problem, its possible solutions, and available resources to determine what works best. Koda (2005, p. 218) posits that the acquisition of strategic reading depends on the development of cognitive and metacognitive capabilities.

A rich body of empirical studies has investigated the relationships between learners' L2 proficiency and strategy use with the majority indicating that conscious, "tailored" use of strategies is related to language achievement and proficiency, and successful learners employ a

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wider variety of strategies to improve their language skills and performance (Oxford 1996, p. xi). Regarding the relationship between the use of cognitive and metacognitive strategies and language proficiency, Meichenbaum and Biemiller (1998, in Hartman 2001) showed that high achieving students possess more metacognitive awareness and engage in more self-regulatory behavior than low achieving students and that metacognition is an important characteristic of expertise. More proficient language learners also use a greater variety and often a greater number of learning strategies (Bruen 2001; Chamot and El-Dinary 1999; Green and Oxford 1995; O'Malley and Chamot 1990; Wharton 2000). Sheorey and Mokhtari (2001, p. 433) have also found that the reader's metacognitive knowledge about reading may be influenced by a number of factors, including previous experiences, beliefs, culture-specific instructional practices, and, in the case of non-native readers, proficiency in L2. The study of Jordan high school EFL learners by Kaylani (1996, p.75) revealed that the use of Memory, Cognitive and Metacognitive strategies was significantly higher for successful students than less successful ones. Hoang (1999) found more proficient learners use more strategies and more effectively than the ones with lower levels. However, some research findings reveal a different story regarding the relationship between strategy use and proficiency. Green (1991, in Bedell and Oxford 1996, p.49) studied 213 students of English and found that high proficiency students used more strategies than low proficiency ones, but moderately proficient students used more strategies than either high or low proficiency students. Anderson (1991, in Singhal 2001) carried out a study to investigate the individual differences in reading strategy use and found that there was no single set of processing strategies that significantly contributed to success. Both high and low scoring readers appeared to be using the same kinds of strategies while high scoring students seemed to be applying strategies more effectively and appropriately than low scoring students. This finding indicates that strategic reading is not only a matter of knowing which strategies to use, but also the reader must know how to apply strategies successfully.

As far as linguality is concerned, in a study aimed at describing and understanding the metacognitive knowledge and strategic reading processes of proficient and less proficient bilingual readers, Jimenez et al. (1995) reported

that proficient English and Spanish biliterate readers, like expert monolingual readers, demonstrated remarkable strategic abilities when reading. They also found that bilingual readers tended to have a unitary view of reading and conceive many similarities between reading in Spanish (L1) and English (L2). On the other hand, the less successful readers were found to not have a unitary view of reading. Finally, they found that the successful bilingual readers were aware of the transfer of knowledge across languages.

However, what seems to have been under-researched is the impact of proficiency and linguality on the awareness and use of cognitive/metacognitive reading strategies and the combination of both in an ESL context. Therefore, the following hypotheses are formulated for the present study:

1. Bilingual and monolingual students differ significantly in metacognitive, cognitive and total cognitive strategies.
2. Students with high and low proficiency in General English Knowledge differ significantly in metacognitive, cognitive and total cognitive strategies.
3. There will be significant interaction between linguality and proficiency in meta cognitive, cognitive and total cognitive strategies.

## 2. METHODOLOGY

### 2.1. Subjects

A sample of male and female first year pre-university students (number=157) from private and governmental P.U.Cs with English as medium of instruction in the city of Mysore, India comprised the participants of the present study. They were of 16 to 18 years of age. These colleges were randomly selected.

Through a background questionnaire two groups of students in terms of linguality participated in this study:

*Group A* (47 male and 30 female monolinguals)

*Group B* (53 male and 27 female bilinguals)

In the present project monolinguals are those students who use just one language (except English) as home language and are not able to communicate with others by using more than one language, while bilinguals use more than one language (except English) at home or in their communications.

In this study English has not been considered

as an additional language for those subjects who were not capable of using it as a means of communication in their daily conversations whether inside or outside of their homes.

Participants, in all groups were homogenous, in terms of their age, methodology used at schools, and the number of hours devoted to the teaching of English.

## 2.2. Materials

The following instruments were used:

**a) Language Proficiency Test (Nelson, Series 400 B):** This test was composed of multiple-choice cloze passage, vocabulary, grammar and pronunciation sections. In order to have a reliable test of proficiency at the piloting stage the test was given to 15 students. Its reliability through the K-R21 formula turned out to be .71.

**b) Test of Reading Comprehension in English:** The test of reading comprehension in English was from the reading component of the *Cambridge Preparation for the TOEFL Test* (Gear J 1993, pp. 416-421). The time allowed was 30 minutes as determined at the piloting stage. The reading passages used in this study contained a general content which were of interest to the students. Readability of the reading text is an objective, but not necessarily very valid, measure of the difficulty of a text. Readability formulae look at texts only as products. As Rigg (1986, p.75) puts it, 'the basic assumption underlying any readability formula is that meaning is in the print, in the text. There is no recognition that meaning is created by each reader as the reader engages with the text'. Even leaving aside issues of social context and individual motivation, and looking at texts as products, the criteria used by readability formulae are doubtful. Factors other than word and sentence length are not accounted for. For example, reduced clauses, which tend to shorten sentences, can create greater difficulty for the reader than longer sentences which are easier to 'unpack'. Where this is not used, intuition may be relied on. If materials are perceived as boring or as too easy or too difficult, learners will be unmotivated to do the task (Scarcella and Oxford 1990). A text that is too easy to comprehend furnishes few opportunities for strategy use and in this case students will probably fail to grasp the value of strategy use. On the other hand, a text that is too difficult to understand may not be comprehensible even with the employment of a

variety of strategies. "Metacognitive capabilities become operative only in reading task perceived as hard but attainable. Tasks that offer minimal challenge will not be incentive enough for readers to make extra efforts to manipulate their cognitive resources" (Koda 2005, p. 211).

To have a reliable test it was piloted on 15 students and through the K-R21 formula the reliability turned out to be .68. Then after calculating the correlation coefficient (.75) between the Nelson test of proficiency and the test of reading in English in the piloting stage for the purpose of having a valid test, this test of reading turned out to be suitable for this study.

**c) Questionnaire:** Strategic approach, or the process of comprehension, was measured by means of a five-point Likert scale questionnaire (Never/ Seldom/ Sometimes/ Usually/ and Always true of me). All the 27 items (out of which 14 items were metacognitive and 13 items were cognitive in nature) in this study were adopted from different related questionnaires in research validated studies (e.g., Baker and Boonkit 2004; Oxford et al. 2004; Sheorey and Mokhtari 2001; Taillefer and Pugh 1998) and adapted for the purpose of this study (see Appendix 1). The reason behind selecting the aforementioned items refers to their highly common use in a variety of research articles, importance in reading comprehension, and the teaching experience of the present investigators. This instrument offered an immediate retrospective picture of reading behavior. The instrument measures two broad categories of reading strategies, namely, metacognitive strategies that are "intentional, carefully planned techniques by which learners monitor or manage their reading", and cognitive strategies that are "the actions and procedures readers use while working directly with the text (Sheorey and Mokhtari 2001, p. 436). In order to make sure of the internal consistency reliability coefficient of the instrument at the piloting stage it was given to 15 students of the similar group taking part in the study. Based on the data gathered, the reliability coefficient alpha was calculated to be 0.78. The present researchers also asked two experts in the field to rate the instrument in terms of how effectively it samples significant aspects of its purpose for providing an estimate of content validity.

## 2.3. Procedure

The investigators approached the pre-

universities authorities in order to get their consent for conducting the study. The conditions for testing were strictly followed as far as possible. The researchers firstly read instructions printed on the top of the questionnaires (See Appendix 2) clearly and then before the start of each test, the investigators cleared doubts. The way of answering the questions was made clear to the participants and in case of any difficulty they were encouraged to ask question and were provided with help.

The subjects were also informed that their performance will be kept confidential and will not have any effect on their final exam scores.

The administration of proficiency and reading comprehension tests took 60 minutes. The whole study was completed in three phases as follow.

*Phase 1:* First, through administering the Nelson Proficiency test (Series 400B) to 157 pre-university students, two groups of High and Low language proficiency levels were identified, that is, those whose scores were below the medium were taken as Low and those whose scores were above the medium as High group, making 157 students in total. The time allowed as determined

at the pilot study was 30 minutes.

*Phase 2:* Then the reading comprehension test was administered among the student to be completed in 30 minutes as determined at the pilot study in order to have an assessment of their reading ability in English.

*Phase 3:* Soon after completing the reading comprehension test the subjects were given the cognitive and metacognitive reading strategies questionnaire, which was a retrospective measure of their reading strategy awareness and use. There was no time limit to fill out this questionnaire.

#### 4. RESULTS AND DISCUSSION

The two way-ANOVA was employed in order to analyze the collected data. The statistical representation of analyzed data are given in the following tables:

Regarding the first research hypothesis (Bilingual and mono lingual students differ significantly in meta cognitive, cognitive and total cognitive strategies) as indicated in table 2, Mono and bilingual students differed significantly in their total cognitive strategy scores as the obtain-

**Table 1: Mean scores on metacognitive, cognitive and total strategy scores of mono and bilingual subjects with high and low proficiency in general english knowledge**

Parameters	Proficiency	Linguality				Total	
		Monolingual		Bilingual		Mean	S.D
		Mean	S.D	Mean	S.D		
Total Cognitive strategies	Low	58.47	13.61	66.54	13.27	61.76	13.98
	High	69.23	11.83	71.67	12.60	70.77	12.30
	Total	62.10	13.93	69.42	13.07	65.83	13.95
Meta Cognitive	Low	29.51	9.09	33.29	7.26	31.05	8.55
	High	35.96	6.78	37.16	6.74	36.72	6.73
	Total	31.69	8.88	35.46	7.19	33.61	8.26
Cognitive	Low	28.96	6.86	32.97	8.29	30.59	7.69
	High	33.27	6.68	34.22	9.01	33.87	8.20
	Total	30.42	7.06	33.68	8.67	32.08	8.07

**Table 2: Results of two-way ANOVA for mean scores on metacognitive, cognitive and total strategy scores of mono and bilingual subjects with high and low proficiency in general english knowledge**

Parameters	Source of variation	F value	Df	P vale
Total Cognitive strategies	Between linguality (A)	6.030	1, 153	.015 (S)
	Between Proficiency (B)	13.778	1, 153	.000 (S)
	Interaction (A x B)	1.735	1, 153	.190 (NS)
Meta Cognitive	Between linguality (A)	3.828	1, 153	.050 (S)
	Between Proficiency (B)	16.510	1, 153	.000 (S)
	Interaction (A x B)	1.033	1, 153	.311 (NS)
Cognitive	Between linguality (A)	3.692	1, 153	.057 (NS)
	Between Proficiency (B)	4.631	1, 153	.033 (S)
	Interaction (A x B)	1.401	1, 153	.238 (NS)

Note: S-significant; NS-Non-significant

ed F value of 6.03 was found to be significant at .015 level. From the mean values it is clear that bilingual students had significantly higher scores than monolingual students (means 69.42 and 62.10 respectively). Further, students with high proficiency (mean 70.77) had significantly ( $F=13.778$ ;  $P<.000$ ) higher scores than students with low proficiency (mean 61.70). However, the interaction effect between linguality and proficiency is found to be non-significant ( $F=1.735$ ;  $P<.190$ ) indicating that the pattern of cognitive strategy scores are similar for students with low and high proficiency irrespective of the lingual background they have.

Therefore, the first hypothesis is accepted for total cognitive and metacognitive strategies and rejected for cognitive strategies.

As far as the second research hypothesis is concerned (Students with high and low proficiency in General English knowledge differ significantly in metacognitive, cognitive and total cognitive strategies) mono and bilingual students differed significantly in their meta cognitive strategy scores as the obtained F value of 3.828 was found to be significant at .05 level. From the mean values it is clear that bilingual students had significantly higher scores than monolingual students (means 35.46 and 31.69 respectively). Further, students with high proficiency (mean 36.72) had significantly ( $F=16.510$ ;  $P<.000$ ) higher scores than students with low proficiency (mean 31.05). However, the interaction effect between linguality and proficiency is found to be non-significant ( $F=1.735$ ;  $P<.190$ ) indicating that the pattern of cognitive strategy scores are similar for students with low and high proficiency irrespective of the lingual background they have (see Table 2). Therefore, the second hypothesis is accepted for metacognitive, cognitive and total cognitive/metacognitive strategies.

With regard to third hypothesis (there will be significant interaction between linguality and proficiency in metacognitive, cognitive and total cognitive strategies), mono and bilingual students did not differ significantly ( $F=3.692$ ;  $P<.057$ ) in their cognitive strategy scores indicating that the mean scores were statistically equal. Students with high proficiency (mean 33.87) had significantly ( $F=4.631$ ;  $P<.033$ ) higher scores than students with low proficiency (mean 32.97). However, the interaction effect between linguality and proficiency is found to be non-significant ( $F=1.401$ ;  $P<.238$ ) indicating that the pattern of

cognitive strategy scores are similar for students with low and high proficiency irrespective of the lingual background they have. Therefore, the third hypothesis is rejected for metacognitive, cognitive and total cognitive/metacognitive strategies.

#### 4. CONCLUSION AND RECOMMENDATIONS

Data analysis in this study indicated that linguality as well as general English language proficiency has some impacts on the reading strategy awareness and use of students. Therefore, the following conclusions and recommendations are taken into account.

##### 4.1. Conclusions

This study showed that Mono/bilingual students differed significantly in their meta-cognitive as well as their total cognitive/meta-cognitive strategy scores, meaning that bilinguals had significantly higher scores than monolinguals, while no significant difference was found between monolinguals and bilinguals in cognitive strategies. Further, students with high proficiency had significantly higher scores than students with low proficiency in their cognitive, metacognitive as well as their total cognitive/metacognitive strategy scores. However, the inter-action effect between linguality and proficiency is found to be non-significant in cognitive, meta-cognitive as well as total cognitive/metacognitive strategies.

##### 4.2. Recommendations

Data analyses of the present study indicated that students with high proficiency had significantly higher scores in cognitive, metacognitive and also the combination of both than students with low proficiency. Carrell (1989) has shown that better readers are also better strategy users. A rich body of empirical studies has investigated the relationships between learners' L2 proficiency and strategy use with the majority indicating that conscious, "tailored" use of strategies is related to language achievement and proficiency, and successful learners employ a wider variety of strategies to improve their language skills and performance (Oxford 1996, p. xi). As Singhal (2001) mentions there is a strong relationship between reading strategies and proficiency level. Sheorey and Mokhtarib (2001, p. 433) have found that the

reader's metacognitive knowledge about reading may be influenced by a number of factors, including previous experiences, beliefs, culture-specific instructional practices, and, in the case of non-native readers, proficiency in L2". Successful readers have an increased metacognitive awareness of their own use of strategies and what they know, which in turn leads to greater reading ability and proficiency (Baker and Brown, 1984; Garner, 1987; Pressley and Afflerbach 1995, in Singhal 2001). Regarding the relationship between the use of cognitive and metacognitive strategies and language proficiency Meichenbaum and Biemiller (1998, in Hartman 2001) showed that high achieving students possess more metacognitive awareness and engage in more self-regulatory behavior than low achieving students and that metacognition is an important characteristic of expertise. More proficient language learners also use a greater variety and often a greater number of learning strategies (Bruen 2001; Chamot and El-Dinary 1999; Green and Oxford 1995; O'Malley and Chamot 1990; Wharton 2000). The study of Jordan high school EFL learners by Kaylani (1996, p.75) revealed that the use of Memory, Cognitive and Metacognitive strategies was significantly higher for successful students than less successful ones. Hoang (1999) found more proficient learners use more strategies and more effectively than the ones with lower levels. However, some research findings reveal a different story regarding the relationship between strategy use and proficiency. Some research has been conducted in examining the strategies used in reading by bilingual students while reading in their second language (Block 1986; Carrell 1989; Padrón Knight and Waxman 1986). Padrón et al. (1986) found that bilingual students use fewer strategies and different types of reading strategies than English-monolingual students.

Carrell et al. (1989) conducted a study to examine the combined effects of cognitive and metacognitive strategy instruction on L2 reading comprehension and found that the combined effects of cognitive and metacognitive strategy instruction were effective in enhancing reading comprehension. Teaching just metacognitive strategies and not their connection to cognitive strategies does not seem to improve reading comprehension (Garner 1994; O'Neill 1992; O'Neill and Todaro 1991).

It is important that teachers teach their students metacognitive strategies as well as cognitive strategies. Metacognitive strategies, that

allow students to plan, control, and evaluate their learning, seem to have the most central role to play in learning (Graham 1997). "Learners who are metacognitively aware know what to do when they don't know what to do; that is, they have strategies for finding out or figuring out what they need to do" (Anderson 2002, p. 1). As Pressley and Afflerbach (1995, in Sheorey and Mokhtarib 2001, p. 433) in their studies on the available literature on metacognitive awareness of reading strategies found out there is a need to increase our understanding of readers' meta-cognitive knowledge about reading and reading strategies.

As far as the results of this study is concerned it is recommended that monolingual students should be familiarized with metacognitive and metacognitive strategies in order to improve their reading performance. It is also recommended, students with low-proficiency level be taught strategic reading. In strategic reading just the knowledge of strategies is not of much effect. Readers should know how to employ strategies effectively.

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### APPENDIX 1

#### READING STRATEGY QUESTIONNAIRE COGNITIVE STRATEGIES (C)/ METACOGNITIVE STRATEGIES (MC)

##### Pre-reading Activities

- 1- I preview the text before reading. (MC)
  - 2- I use prior knowledge to understand the text. (C)
  - 3- I skim for the main idea(s) (MC)
  - 4- I read the topic or heading of the passage. (MC)
  - 5- I look at the pictures, graphs, maps, diagrams, etc., of the passage. (MC)
  - 6- I read the first sentence of the paragraphs first. (MC)
- While-reading Activities
- 7- I pay attention to the parts of sentences such as phrases and clauses. (c)
  - 8- I pay attention to the sentence structure, such as subjects and objects. (c)
  - 9- I know what each pronoun refers to. (C)
  - 10- I link information in one sentence with information from the preceding ones. (MC)
  - 11- I read the whole passage quickly to understand the main idea. (MC)
  - 12- I try to figure out the main idea of each paragraph. (MC)
  - 13- I continue reading even if I have difficulty. (MC)
  - 14- If I don't understand something such as a word or phrase, I guess its meaning using clues from the text such as a noun, verb, adjective, adverb, etc., surrounding words, verb tense, singular and plural, word elements that is affixes and roots, synonyms and antonyms..
  - 15- I visualize information read. (C)

- 16- I re-read for better understanding. (C)
- 17- I guess the meaning of unknown words. (C)
- 18- I guess what is coming in the next sentences or paragraphs. (MC)
- 19- I take notes, highlight or underline the important notes while I am reading the passage. (C)
- 20- I Predict or guess text meaning. (MC)
- 21- I confirm predictions. (MC)
- 22- I interpret the text (make inferences, draw conclusions, etc). (MC)
- 23- I use punctuations, capitals, etc. (C)
- 24- I do monitoring and clarifying what I read. (MC)

##### Post-reading activities

- 25- I make inferences after finishing reading the passage. (C)
- 26- I check or evaluate my comprehension. (C)
- 27- I go back to read the details of the passage to find the answers of the questions. (C)

### APPENDIX 2

#### Students Performa

- 1- Name of the student: .....
- 2- Gender: a) Male b) Female
- 3- Class studying: .....
- 4- Medium of instruction at high school: a) English b) Non-English
- 5- Language or languages which are used at home (Home language):  
a) Kannada b) Urdu c) Hindi d) Telugu e) Marathi f) Others (specify)