METACOGNITIVE STRATEGY AWARENESS AND READING COMPREHENSION

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ABSTRACT

This paper reports on a study investigating the relationship between metacognitive strategy awareness in reading and reading ability in L1 and L2. Forty Malaysian secondary school students responded to a reading metacognitive awareness questionnaire. They also completed four sets of reading comprehension tests to determine their reading competence in L1 and L2. Results indicate that reading metacognitive strategy awareness significantly contributes to reading ability for both L1 and L2. This suggests that students are aware of what constitutes efficient reading, and the higher their knowledge of efficient reading, the better their reading ability. The paper concludes with a discussion on the pedagogical implications of these results.

Introduction

Metacognitive knowledge refers to "knowledge about knowledge" (Alexander, Schallert and Hare 1991: 328) or thinking about thinking. It is an important reading skill (Anderson 1999) as it helps readers verify their reading strategies so that the necessary adjustments can be made if meaning is not obtained. This is referred to as comprehension monitoring. Metacognitive knowledge can be "acquired formally and informally, deliberately or incidentally " and "learners can become conscious of and articulate what they know" (Wenden 1998: 516). For this reason, many of the studies conducted on metacognitive awareness have relied on the use of interviews or questionnaires which lead readers to reflect on their knowledge about learning.

Devine (1988) found that readers' theoretical orientation towards reading influenced their reading behaviour in that language. In her study, two low/intermediate L2 language proficiency readers seemed to use completely contrasting strategies when reading in L2. One of the readers, who had a Ph. D. and was identified as the more skilled reader, was not able to transfer his higher level reading skills when reading in L2. Low L2 language proficiency seemed to have "short circuited" his reading processes causing him to revert to lower level reading strategies. In contrast, the second reader, who was a housewife and a less skilled L1 reader, was able to

transfer her higher level reading strategies when reading in L2. Such a difference in the readers' behaviour, despite sharing a similar language proficiency and having different L1 reading abilities, seemed to be due to their metacognitive awareness of reading. The readers' metacognitive awareness of reading was assessed through an oral interview conducted to investigate their general views about reading. The reader who, despite being a more skilled L1 reader, could not transfer his higher level reading strategies when reading in the L2 seemed to be a sound-centred reader. He therefore employed lower level reading strategies. In contrast, the second reader, in spite of being less skilled in L1 reading compared to the first reader, was meaning-centred in both languages. She therefore tended to transfer her top-down reading strategies when reading in the L2. Readers' metacognitive awareness or theoretical orientation towards reading seemed to have influenced the reading behaviour of these readers rather than L2 language proficiency or L1 reading ability.

Carrell (1989) carried out a study to investigate the relationship between metacognitive awareness and reading comprehension in L1 and L2. The study involved students from two language backgrounds — Spanish L1 and English L1 university students. The Spanish L1 students were learning ESL while the English students were learning Spanish as a foreign language. To measure the students' reading ability in L1 and L2, they answered two sets of multiple choice reading comprehension questions for each language. Then they completed a metacognitive questionnaire about reading in both languages. The metacognitive questionnaire comprised four sections: self-confidence, repair strategies, effective reading strategies, and finally, reading difficulties.

Results seemed to indicate that for both groups of readers, when reading in L1, top-down strategies were not significantly related to reading ability. Local strategies, however, seemed to negatively correlate to reading ability. This meant that the less local strategies were perceived as effective reading strategies, the more proficient their reading ability.

For L2 reading, however, there seemed to be a difference in the performance of the two groups of subjects. For the English native speakers learning Spanish as a foreign language, some of the local strategies positively correlated to reading ability. For the Spanish L1 and ESL students, some global strategies were found to be positively correlated with reading proficiency. Metacognitive awareness seemed to be related to reading ability in the target language. For the less proficient Spanish as a foreign language reader, there seemed to be a more bottom-up orientation to what were perceived as effective and difficulty-causing reading strategies. In contrast, for the more proficient ESL readers, a more top-down perception of effective and problematic reading strategies was reported.

Schoonen, Hulstijn and Bossers (1998) investigated the relationship of vocabulary and metacognitive knowledge and reading comprehension in both the L1 and L2. The subjects were 416 Dutch students from three grade levels — 6, 8 and 10 — learning ESL in the Netherlands. The subjects first had to complete a metacognitive questionnaire which was divided into four parts — reader self-assessment, reading goals, text characteristics and reading strategies. Then they completed two multiple-choice reading comprehension tests using both narrative and expository texts. The tests were in both Dutch and English for the three grade levels. Finally, they completed the vocabulary knowledge tests for Dutch and English which were also individually prepared for the three levels.

Results for L1 reading seemed to show that L1 vocabulary knowledge was a significant contributor to L1 reading comprehension for all the three grade levels. The role of metacognitive knowledge was only significant from grade 8 onwards. Results of the individual components of the metacognitive questionnaire indicated that knowledge of text characteristics and knowledge of reading strategies seemed to be significant contributors to L1 reading comprehension. It was also found that knowledge of text characteristics seemed to improve as the grade levels got higher. When results for L2 reading were analysed, it was also found that L2 vocabulary was a significant predictor of L2 reading comprehension. However, the strength decreased as the grade level increased and at grade 10, it was not an important predictor. Metacognitive knowledge seemed to be a significant factor from grade 8 onwards. Knowledge of text characteristics and knowledge of reading strategies also seemed to be significant predictors of FL reading ability.

The findings showed that both vocabulary and metacognitive knowledge seemed to be important contributors to L1 and L2 reading ability. Vocabulary knowledge was an important predictor of reading ability in both the L1 and L2 for all the grade levels. However, the importance of its contribution seemed to lessen as the grade level got higher, starting from grade 8. Metacognitive awareness was also found to be a significant contributor to both L1 and FL reading. However, it only contributed slightly at grade 8 for L1 and L2 reading ability. Its contribution to reading in both languages seemed to be more significant only at grade 10. This meant at grade 8 foreign language vocabulary was a more important predictor than metacognitive awareness, but in grade 10, metacognitive awareness was a more important predictor than vocabulary knowledge, especially in L2.

Monteiro (1992) employed Carrells' (1989) questionnaire to investigate if there is a relationship between metacognitive awareness and reading ability. Similar to Carrell (1989) the results seemed to indicate that, for both reading in the L1 and L2, the more readers disagreed with the local strategies the better they performed in

reading. In other words, the less they perceived bottom-up strategies as effective strategies, the higher their reading ability. When different reading abilities were analysed, it was found that for L1, better readers seemed to agree that they needed to keep reading and hope for clarification more than the poor readers. The poor readers, on the other hand, seemed to agree with more local items on reading difficulties compared to the good reader. In L2, there did not seem to be a difference in their perception of global strategies. However, the poor readers tended to be more bottom-up in their perception of effective and difficulty-causing reading strategies compared to the better readers. No significance tests were carried out on the raw data above. Therefore, the reliability and validity of her findings must be treated with caution.

Barnett (1988) investigated the effects of metacognitive awareness and strategy use on reading comprehension. The subjects were 278 university students enrolled in a French course. They were required to complete a prior knowledge questionnaire and read an unfamiliar passage. They then wrote a recall composition on the passage. After that, they read another unfamiliar passage and completed a test which assessed their ability in using contextual information. The test required the students to select the most appropriate phrase, sentence or paragraph to continue the passage. The students then completed a questionnaire on their perceived strategy use.

Findings seemed to indicate that there was a linear relationship between strategy use and reading comprehension. Students who used better strategies in reading performed better than students who did not use effective strategies. Metacognitive awareness also seemed to correlate with reading ability. Students who claimed to use effective reading strategies seemed to perform better on the reading comprehension tests compared to readers who did not. In other words, the relationships between perceived strategy use, actual strategy use and reading comprehension were positive. Students who claimed they used effective strategies seemed to use better strategies at understanding sentences in context and they also seemed to have a higher reading ability.

The results of the L2 metacognitive studies seem to show that there is a positive correlation between metacognitive awareness and reading ability (Carrell 1989, Monteiro 1992 and Barnett 1988). However, this cannot be conclusive because findings from Spoonen et al. (1998) seem to indicate that there is a threshold level that needs to be achieved before metacognitive awareness can play a significant role in reading. More studies need to be conducted to understand the relationship between metacognitive awareness and reading ability in L2.

The purpose of this study is to investigate if there is a relationship between metacognitive awareness and reading ability in both the L1 and L2. To achieve this

aim, the following null hypotheses were tested.

1. H1 There is a significant correlation between metacognitive awareness and reading ability in L1.
2. H2 Metacognitive awareness will significantly contribute to L1 reading.
3. H3 There is a significant correlation between metacognitive awareness and reading ability in L2.
4. H4 Metacognitive awareness will significantly contribute to L2 reading.

Methodology

Subjects

Most ESL students come from government-sponsored schools in contrast to residential schools or privately funded educational institutions, vocational or technical schools. The subjects selected represented a sample of this target population. 40 students were selected as subjects in this study. Their selection was based on their performance on 4 sets of reading comprehension tests which were constructed by the researcher to assess their reading proficiency in the L1 and L2. The internal reliability of the reading tests ranged from $r=0.8 - 0.9$ and the external reliability moderately correlated to highly correlated using the yardstick provided by Cohen and Holliday (1982). Content and concurrent validity were also established to make sure the tests measured what they were supposed to.

Students with a score of 12 and above (out of a possible 15) were regarded as good readers and those with 6 and below were perceived as poor readers. Basically, the students represented four groups — good readers in both languages, poor readers in both languages, good readers in Bahasa Melayu but poor in English language, and poor readers in Bahasa Melayu but good in English which can be summarized as the following:

1. Good L1 and L2
2. Poor L1 and L2
3. Good L1 Poor L2
4. Poor L1 Good L2

Instrument

The reading matacognitive awareness questionnaire was adapted from Carrell's (1989) which was designed to investigate readers' conceptualization of reading or awareness of their reading strategies. This study employed Carrell's (1989) questionnaire because it is more comprehensive and it employed the Likert scale instead of multiple-choice questions). Barnett's (1988) metacognitive questionnaire

has been criticised because it presented the questions using a multiple-choice format in which the subjects were forced to choose only one appropriate answer. This is unsuitable because some of the items may trigger more than one appropriate answer. Furthermore, Carrell's (1989) questionnaire has been successfully used by Monteiro (1992) among school children. The successful use of this questionnaire in two separate studies strengthens the validity of the questionnaire.

Basically, Carrell's (1989) questionnaire consists of four main sections. The first section is on the subjects' confidence as readers and it has six statements (items 1-6) regarding the subjects' perceived ability to read in the language. The second section is on the repair strategies that they employed when comprehension fails which comprises 5 statements (items 7-11). The third section comprises 17 statements (items 12-28) and it is on the students' perception of efficient reading strategies. Finally, the last section is on the factors which make reading difficult. It has 8 statements (items 29-36).

To avoid language difficulties due to lack of English proficiency, the questionnaire was translated into Bahasa Malaysia with the help of a professional translator. The original and Bahasa Malaysia versions of the questionnaire are in Appendix 1.

Reliability

The questionnaire was piloted at another school and revised. Cronbach alpha was used to measure the internal reliability and it was found that the alpha level was 0.7271. The rule of thumb for an acceptable reliability level on the use of a questionnaire is 0.7. This means the questionnaire can be reliably used for this study.

Data Collection

The subjects filled up two versions of the metacognitive questionnaire - on how they read in L1 and L2. There was no time limit imposed on answering the questionnaire and the researcher was there to answer any queries. There were no substantial problems in answering the questionnaire.

Data Analysis

Pearson's r correlation was employed to find out if there is a statistically significant relationship between reading ability and metacognitive awareness for L1 and L2. Pearson's r correlation is usually used for interval data. However, according to Bryman and Cramer (1995), a questionnaire which employs a multiple-item scale can be treated as an interval scale because it has a large number of categories. The

Table 1: Pearson correlation coefficients between the metacognitive awareness questionnaire and reading proficiency

Language	Total score	Confidence	Repair	Effective	Difficulty
L1	r=.4495	r=.1026	r=.1180	r=.3041	r=.5596
	p=.004**	p=.534	p=.474	p=.171	p=.000**
L2	r=.4476	r=.1295	r=.0842	r=.5037	r=.2238
	p=.004**	p=.432	p=.610	p=.001**	p=.060

metacognitive questionnaire used in this study fits this criterion and, for this reason, Pearson's r correlation was employed.

Upon finding a significant correlation between metacognitive awareness and reading ability, the simple linear regression was run. The simple linear regression, just like Pearson's r correlation tests, also requires the use of interval data. The purpose of this test is to find out if the independent variable x influences the dependent variable y. In this case, the independent variable is metacognitive awareness and the dependent variable is reading ability. The simple linear regression is able to provide more information than a correlation because it identifies the precise line which summarizes the relationship between the dependent and independent variable. This is called the line of best fit. From this line, one is able to predict the values of the dependent variable from any given value of the independent variable. The formula for this equation is as follows: $y = a + bx + e$ where y is the dependent variable, a is the intercept, b is the line of best fit and e is the error term for the proportion of variance in the dependent variable that is not explained by the independent variable.

Results

Results indicate that there is a significant correlation between reading proficiency and metacognitive awareness for both L1 and L2 (refer to table 1). Therefore, both the above hypotheses can be accepted. The correlations of the total score of the questionnaire and the reading proficiency tests in L1 and L2 seem to be linear and positive at r=.4495 (p<. 05) for L1 and r=.4476 for L2 (p< 05). The strength of these correlations is modest (Cohen and Holliday 1982). When the four different parts of the questionnaire — the subjects' confidence as readers (confidence), the repair strategies they employ when comprehension fails (repair), their perception of effective reading strategies (effective), and the factors which make reading difficult (difficulty) — were analysed, there seems to be only one section which has a significant
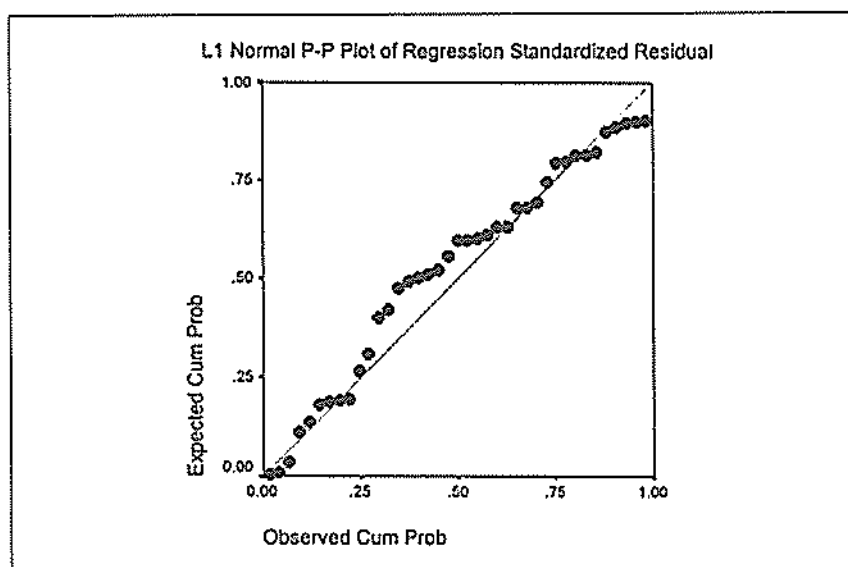
Figure 1: Normal probability plot for the L1

correlation with reading ability for both of the languages (refer to table 1). For L1, it is the factors which make reading difficult section (r=. 5596, p<. 05), and for L2 it is the students' perception of efficient reading strategies section (r=. 5037, p<. 05). The relationship for both of these variables above is positive and linear. The correlations of all the other sections for both L1 and L2 also point in the same direction even though the results are not statistically significant.

Requirements of Simple Linear Regression Tests

Before running the simple linear regression analysis, the data needs to be explored to determine if it is able to fulfill all of the test's assumptions. The first assumption is that both the dependent and independent variable are interval variables. The dependent variable is based on test scores and the independent variable is based on the total scores of a multiple-item scale questionnaire which can be treated as interval variables according to the criteria established by Bryman and Cramer (1995).

Two, the dependent and independent variables must have a linear relationship. This can be either shown graphically by drawing a scatter plot or by running an analysis of variance. For this study, this was ascertained statistically. If the results of the ANOVA tests are significant at 0.05, it is possible to reject the hypothesis that the population coefficient of determination is zero. The results for both L1 and L2 were significant (L1 (F= 6.31437, df=(1,37), p<0.05), L2 (F=5.00962, df=(1,37), p <0.05)) meaning that there is a linear relationship between the two variables for both languages.
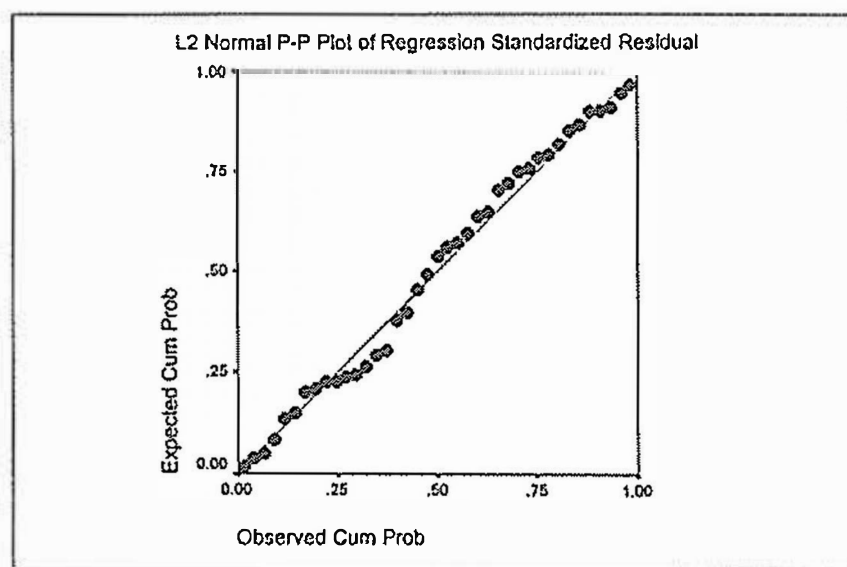
Figure 2: Normal probability plot for L2

Three, the residuals need to have a normal distribution. This can be shown graphically by the use of a histogram with a normal curve superimposed on it or a normal probability plot of the residuals. The normal probability plot was employed because it is less subjective to interpret compared to the histogram of residuals. If the distribution of the residuals in the normal probability plot follows a straight line, this means it has a normal distribution. Both the normal probability plots (refer to figure 1 for L1 and figure 2 for L2) generally show a straight line. However, the L1 normal probability plot seems to show some deviations and discontinuity. For this reason, the results for L1 need to be treated with caution.

Finally, there must be equality of variance. This can be determined by drawing a residual scatter plot with the standardised residuals plotted against the standardised predicted value. Results (refer to figure 3 for L1 and figure 4 for L2) seem to indicate that the points are quite evenly spread about y=0. This means the variance of the residuals is about equal for both languages or that it is homoscedastic.

Simple Linear Regression Tests

Results of the simple linear regression test for L1 (refer to table 2) show the multiple R-value to be .44949. This is the magnitude of R or the estimated slope of the regression line. The results indicate there is a positive, linear relationship between the two variables. The R Square value which is .20204 represents the proportion of variation in the dependent variable that is explained by the independent variable. The adjusted R-square is .18048. This is a more conservative figure as it takes into
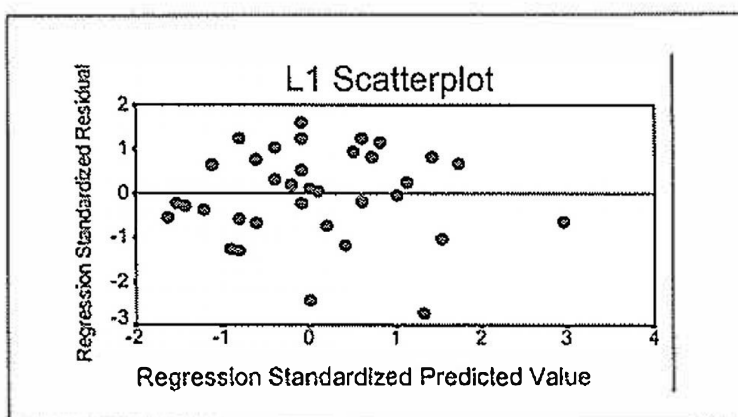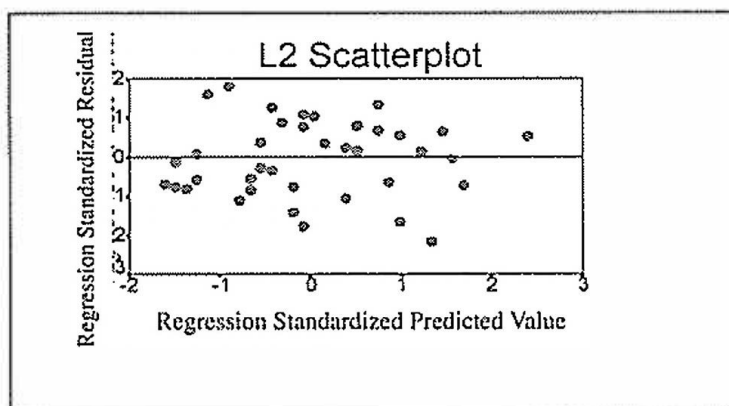
Figure 3: L1 residual scatterplot

Figure 4: L2 residual scatter plot

account the number of independent variables and sample size. This means about 18% of the variance in the dependent variable or reading proficiency is explained by the independent variable. This result is significant at 0.05 (F (1, 37)= 9.36851, p=0.041). These results confirm hypothesis 2 that metacognitive awareness significantly contributes to L1 reading.

When rounded down to two decimal places, the intercept B is -6.43 and the regression coefficient is .14. The negative value of the intercept indicates that the line of best fit has a tendency to be vertical as it intersects with the horizontal axis. When this value is fitted into the equation y= a + bx + e it becomes: reading score = -6.43 + .14 x + e

The Beta value which is .449494 represents the standardised regression coefficient of both the dependent and independent variables. The results are found to be statistically significant at 0.05 (t=3.061, p=.0041).

Table 2: L1 simple linear regression results

Multiple R	.44949	B =	.139989
R Square	.20204	Constant (A)	-6.432068
Adjusted R Square	.18048	Beta	.449494
F=	9.36851	T=	3.061
Sig. F=	.0041	Sig. T=	.0041
	DF		
Regression	1		
Residual	37		

Table 3: L2 simple linear regression results

Multiple R	.44759	B =	.181300
R Square	.20034	Constant (A)	-10.422844
Adjusted R Square	.17873	Beta	.447593
F=	9.26962	T=	3.045
Sig. F=	.0043	Sig. T=	.0043
	DF		
Regression	1		
Residual	37		

In the case of L2 (refer to table 3), there also seems to be a positive and linear relationship between the two variables which is shown by the multiple R-value of .44759. The R Square is .20034 and the adjusted R Square is .17873. This means there is also about 18% of variation of the dependent variable that can be explained by the independent variable. The L2 finding is significant at 0.05 (F=9.26962, p=. 0043). Therefore, hypothesis 4 which states that metacognitive awareness will significantly contribute to L2 reading can be accepted.

To estimate the regression coefficients, the value of B is again rounded down to two decimal places for ease of calculation. The B value is .18 and the intercept is A=-10.42. Like L1, the intercept for L2 also has a negative value indicating that the line has a tendency to be vertical. When these numbers are placed into the equation, the result is as follows: reading score = -10.42 + .18 x + e. The standardised beta value is -. 447593 and the results are also significant at 0.05 (t= 3.045, p=. 0043).

Discussion

Findings from the Pearson's r correlations and simple linear regression tests seem to indicate that there are significant relationships between metacognitive awareness and reading ability. The Pearson's r correlation tests indicate positive, linear and significant relationships (r=.4495, p=.004) for L1 and (r=.4476, p=.004) for the L2. The values of the correlations are very similar for both the languages. The strength of the correlations is modest (Cohen and Holliday 1982). When the correlations between the four individual sections of the questionnaire and reading ability were analysed, positive, linear, statistically significant findings were found for one section in each language. For L1 the significant finding was on the reading difficulty section and for L2 it was on the reading effectiveness section. The trend of the results for all the other sections for both the L1 and L2 also points in the same direction even though the results are not statistically significant. This means the more students perceive that they use top-down reading strategies, the better they perform in their reading ability tests. Conversely, the more bottom-up strategies were perceived to be used, the less proficient their reading ability. Therefore hypotheses 1 and 3 which state that there is a significant relationship between metacognitive awareness and reading ability in L1 and in L2 can be accepted. This supports the findings of Barnett (1988) who also found that there is a significant correlation between perceived strategy use and reading comprehension among FL readers where students who claimed they used effective reading strategies also seemed to have higher reading ability.

It is interesting to note that there seems to be a difference between the type of metacognitive awareness that significantly correlates with reading ability for L1 and L2. Flavell (1987) classified metacognitive knowledge into three: self-knowledge, task knowledge and strategic knowledge. Self knowledge refers to the subjects' perception of themselves, task knowledge concerns knowledge of the purpose of the tasks and the tasks' demands, and finally, strategies knowledge refers to learners' knowledge about strategies — what they are, when and how to use them, and why they are useful. In LI, it is the section which measures the students' perception of what caused reading to be difficult which significantly correlated with reading ability. These items can be considered as assessing students' knowledge on the demands of the tasks. On the other hand, in L2, it is the reading effectiveness section that assesses students' perception of efficient reading strategies. This section is considered as students' knowledge of strategies. The results of the difficulty-causing items for L2 are almost significant (p=.060). These results suggest that knowledge of the tasks is an important contributor to both L1 and L2 reading.

However, when reading is less automatic, both knowledge of the effective strategies that students need to employ and knowledge of the task are related to reading ability. Since more conscious attention needs to be given to L2 reading, L2 readers appear to be more aware of the difficulty-causing factors in their reading.

The simple linear regression tests for both languages also consistently provide evidence that there is a positive, significant contribution of metacognitive awareness to reading ability. For L1, the R-square value is .20204 and the adjusted R-square is .18048 and the results are significant at 0.05. This means that 18% of the variance in the dependent variable or reading ability can be explained by the independent variable which is metacognitive awareness. For L2, the R-square is .20034 and the adjusted R square is .17873. This also suggests that 18% of the variance of L2 reading comprehension scores can be explained by students' metacognitive awareness. These results further indicate that metacognitive awareness significantly contributes to reading ability for both the L1 and L2. Students' perception of the reading strategies that they employ can significantly predict their reading comprehension scores. These results support the findings of Carrell (1989) and Schoonen *et al.* (1998) who also found that metacognitive awareness of reading strategies can significantly predict reading ability. It is interesting to note that, again, the strength of the contribution of metacognitive awareness to reading ability is similar for both languages.

To summarise, the results of the correlation and simple linear regression tests consistently indicate that there is a significant relationship between students' metacognitive awareness and reading ability. Results of the correlation tests indicate that there are positive, linear and statistically significant correlations between students' perception of the positive reading strategies that they use and reading comprehension scores for both the L1 and L2. This suggests that the more they agree they employ top-down reading strategies, the better their reading comprehension scores. The strength of the correlation is similar for both the languages. Results of the simple linear regression tests also indicate that there is a statistically significant relationship between metacognitive awareness and reading ability for both the L1 and L2. Students' perception of reading strategies they employ can significantly predict their reading comprehension scores. It is found that, for both languages, metacognitive awareness can explain approximately 18% of the variance in reading comprehension scores. This provides more evidence that hypotheses 1 and 3, which state that there is a significant relationship between metacognitive awareness and reading ability, can be accepted.

Conclusion

Metacognitive awareness of reading strategies significantly contributes to L2 reading ability. If students are aware of the array of strategies that they can use, they can learn to select the appropriate strategies that can help them in obtaining meaning from the text they are reading. One way to create awareness of strategy use is by using the think aloud technique. Think-alouds may induce students to become more aware of what they are thinking, what they understand and what they do not, and what they need to do when misunderstanding occurs. Teachers themselves may want to think aloud as they read to model competent reading so that students may learn to adopt such behaviour.

Other than think-alouds, pair work can be carried out where students share reading problems and strategic resources in overcoming such difficulties. Group work comprising mixed ability students can also be organised so that poor readers may learn to use some of their existing strategies more efficiently and learn to employ new strategies from the good readers.

ESL instruction should also seek to provide strategy training lessons in reading. This can be carried out as integrated language tasks under the Malaysian KBSM syllabus or as a component of the CRP. Teachers will first need to identify the strategies underlying their classroom practices before deciding what strategies need to be taught, developed and enhanced. Then, materials need to be prepared, ample opportunities need to be provided and a conducive environment should be created for students to practise using the strategies taught. According to Carrell (1989: 129):

Effective second language reading pedagogy must include not only training and practice in the use of task-specific strategies (i.e. strategy training), instruction in orchestrating, overseeing, and monitoring these skills (i.e. self-regulation training), but, more importantly, information about the significance and outcome of these skills and the range of their utility (i.e. awareness training).

This means other than providing students with a tool kit of strategies, teachers also need to provide training on when, where and how the strategies should be used. Furthermore, students also need to learn to evaluate their use of strategies so that a positive and optimum outcome of strategy use can be achieved. Effective reading is gained not only by employing task-specific strategies, but also by the ability to use the strategies which are appropriate to the situation. Readers need to learn to plan, monitor and evaluate their reading.

Previous studies on the effect of strategy training seem to provide evidence that it positively contributes to learning processes. O'Malley *et al.* (1985) conducted a study on the effects of learning strategies training in a natural classroom setting. The subjects were 75 ESL high school students in the United States. About 60% of the students were Latin American and Asian. The students were randomly divided into three instructional groups. One was the metacognitive group, the other the cognitive group and the last group was the control group which received no strategy training. To control for teacher effects, the three participating teachers alternated presenting the three treatments. The data collected comprised teachers' observations, notes and assessments of the strategies students employed. Pre and post-tests on different types of listening and speaking tasks were conducted and analysis was done using t-tests. The results indicate that training in both metacognitive and cognitive learning strategies in a natural classroom setting seems to significantly improve speaking skills. O'Malley *et al.* (1985: 576) report "Students were extremely adept in learning and applying functional planning, the metacognitive strategy, and gained in judged organisation and comprehensibility." The findings for the listening tasks, however, did not reach the significance level. The authors explained that this might be due to certain listening tasks that were too difficult for the students to comprehend or to apply their strategies. However, results on the effects of strategy training for both the metacognitive and cognitive strategies on the less difficult listening tasks seem to point in a positive direction. Even though O'Malley *et al's* study focussed on listening and speaking skills, the results may be used to infer to the development of reading skills.

Nunan (1997) investigated the effects of strategy training on four aspects of students' learning processes, namely motivation, knowledge of strategies, perceived use of strategies and actual use of strategies. The study involved 60 undergraduate students in Hong Kong. The students were randomly assigned into four classes. Two of the classes were the experimental and the other two were the control groups. The experimental groups were provided with strategy training which was incorporated into the language teaching program. The control groups were not. Data was mainly collected through the use of questionnaires administered at the beginning and the end of the semester. The questionnaires assessed students' motivation, knowledge of strategies, use of strategies and attitude towards the use of strategies in language learning. Interviews that aimed at tapping students' perception of studying the course and studying the English language in general were also conducted throughout the course. The results indicate that strategy training significantly enhanced students' motivation, knowledge of strategies, and perceived value of strategies. There was

no significant difference in the use of strategies between the two groups as both groups increased their use of strategies by the end of the semester.

In conclusion, this study indicates that a comprehensive ESL reading programme should aim at developing comprehension monitoring skills s for both the L1 and L2. Peer teaching and reading strategy training could also be carried out so that learners can become competent readers in both the L1 and L2. There is also an urgent need for a better understanding of reading on the part of Malaysian educators.

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