

A Pilot Study on Metacognitive Strategies Used by Non-English Majors in Reading Comprehension

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Abstract: This paper applied a pilot study on metacognitive strategies used by 77 sophomores of two classes majored in international trade from Zhixing College of Hubei University through questionnaire. Results of the study revealed that overall frequency of using metacognitive strategies by non-English majors was not high; among the four broad categories of metacognitive strategies, what students used the most frequently was the category of selective attention while the planning category ranked the least. Next, the females and males showed no significant difference in the use of metacognitive strategies in reading comprehension, although the female use metacognitive strategies a little more frequently than their counterpart male. Finally, the study also showed a negative relationship between the frequency of using overall metacognitive strategies and the proficiency of reading comprehension, the high proficiency group uses the strategy less than the low proficiency group.

Key words: Metacognitive strategies; Reading comprehension; Correlation; Gender

1. Introduction

Studies on metacognitive strategies at home and abroad indicate that metacognitive strategies do contribute to second language. However, most of these studies were conducted qualitatively, only a few empirical studies attached importance to the correlation between metacognitive strategies and reading proficiency for non-English majors. Besides, their researches ignored gender difference and college context, which may exert an influence on L2 reading comprehension. Consequently, the generalization power of these studies may weaken. Therefore, more empirical researches in different college contexts with different subjects need to be carried out.

2. Research Methodology

2.1 Research Questions

The research questions in this study are as follows:

- (1) Do non-English majors in secondary rank college often use metacognitive strategies in reading comprehension? Which metacognitive strategies are usually used, and which ones are not?
- (2) Does gender affect these students' selection of metacognitive strategies in reading comprehension?
- (3) Does the reading proficiency have relationship with the use of metacognitive strategies? If it does, what's the correlation between them?

2.2 Subjects

Seventy-seven students of two classes participated in this study, they were sophomores majored in international trade from Zhixing College of Hubei University. Among the 77 students, 16 are male and 61 are female, with the average age 20. All students had studied English for at least seven years by the time of the present study. They have not taken part in the CET4 by the time of the present study.

2.3 Instruments

Two kinds of research instruments were used in this study: one is reading comprehension section of CET4 (2014), the other is questionnaire which concerns the use of metacognitive strategies in reading comprehension. Metacognitive strategies of this questionnaire used here is based on the metacognitive strategies questionnaire of Liu Huijun (2004) and O'Mally and Chamot (2001), its internal reliability is 0.83 and it consists of 24 items, each accompanied with a 5-point Likert scale ranging from 1 (never do this) to 5 (always do this). Metacognitive strategies of this questionnaire were grouped into four broad categories: planning (1-4 items), selective attention (5-13 items), monitoring (14-18 items) and evaluating (19-24 items).

2.4 Data Collection and Analysis

Firstly, the data of reading proficiency is collected from the results of reading comprehension of CET 4 (2014) with total scores is 40 points. According to students' reading comprehension results of CET4 which were arranged from highest to lowest, the students were divided into 2 groups -- high reading proficiency group and low reading proficiency group. Those are at the top twenty-five percent of the 77 subjects will form high reading proficiency group, those are at the bottom twenty-five percent will form low reading proficiency group. The detail information is as follows:

Secondly, the personal information and the data of metacognitive strategies use is collected with questionnaire. And the mean score of each item and four broad categories of metacognitive strategies were classified into three frequency scales: low, media, and high according to Oxford's Frequency Scale (see the following table).

All the raw data are input into SPSS17.0, according to the research purpose, three statistical methods were used: (1) descriptive statistics, (2) correlational analysis, (3) independent sample T-test.

Table 1 high reading proficiency group and lo reading proficiency group

Name of the group	Number of subjects	Range of scores
high reading proficiency group	20	30-40
low reading proficiency group	20	0 -20

Table 2 Freuency Scale (Oxford: 1990)

Mean Score	Frequency	Evaluation
4.5-5.0	High	Always or almost always used
3.5-4.4		Usually used
2.5-3.4	Medium	Sometimes used
1.5-2.4	Low	Generally not used
1.0-1.4		Never or almost never used

3. Results and Discussion

(1) According to the descriptive statistics, the overall frequency use of the metacognitive strategies by the non-English majors is at medium level; among the four broad categories of metacognitive strategies, what the students use the most frequently is the category of selective attention while the planning category ranks the least used. Just as the following Table 1 shows:

Table 3 shows the students use metacognitive strategies overall in reading comprehension at medium frequency (mean= 3.1640), it means that they sometimes use it. And the frequency use of metacognitive strategies by the students from most to least rank is as follows: selective attention (mean=3.5397) > monitoring (mean=3.0753)> evaluating(mean=2.9177) > planning (mean=2.7987). The results reveal that the students couldn't use metacognitive strategies systematically in reading comprehension, they use it occasionally and blindly rather than frequently and purposeful. Also, they make a few plans about reading in English, as well as seldom evaluate their reading process and results. The reason could be that non-English majors are examination-oriented rather than interest-oriented in reading comprehension, and the teaching for non-English majors in reading course seldom incorporate such kind practice of using planning and evaluating strategies. The students use selective attention most frequently, the reason could be that the subjects often encounter unfamiliar language and culture references in reading, so they consciously pay attention to the visual features of the text such as typographical features and notes to help them enhance the comprehension of the text.

(2) From descriptive statistics of the independent sample t-test, there is no significant difference in use of metacognitive strategies between female and male, although the overall frequency use of metacognitive strategies by female is a bit higher than male. According to the correlational analysis, there exists certain correlation between gender and use of metacognitive strategies, but the correlation is not significant. Just as the following Table 4, Table 5 and Table 6 Show:

Table 3 the descriptive statistics in overall frequency use of te metacognitive strategies

	N	Mean	Standard Deviation	Variance
Planning	77	2.7987	.68109	.464
Selection	77	3.5397	.69802	.487
Monitoring	77	3.0753	.61988	.384
Evaluation	77	2.9177	.65148	.424
total	77	3.1640	.55542	.308

Table 4 the overall frequency use of metacognitive stratigis by the females and males

	Gender	Mean	Standard Deviation	SE Mean
	Planning	Male	2.4706	.70091
	Female	2.8917	.65154	.08411
Selective attention	Male	3.2876	.84898	.20591
	Female	3.6111	.63927	.08253
Monitoring	Male	2.8941	.68963	.16726
	Female	3.1267	.59486	.07680
Evaluating	Male	2.7941	.73013	.17708
	Female	2.9528	.62969	.08129
Total	Male	2.9461	.66598	.16152
	Female	3.2257	.50946	.06577

Table 4 shows overall frequency use of metacognitive strategies by the females is 3.2257 while the males is 2.9461, it reveals that female use a bit more frequently than male in the whole and each subcategory of metacognitive strategies, it's likely that females have more self-consciousness in metacognitive strategies use and are better at arts and humanities than males.

Table 5 independent sample T-test

		Levene test of variance equation		T-test of mean equations						
								95% confidence interval for the difference		
		F	Sig.	t	df	Sig. (Two-tailed)	Mean difference	SE Mean	lower limit	upper limit
total	Assuming equal variances	.401	.528	-1.862	75	.067	-.27962	.15019	-.57881	.01957
	Equal variances not assumed			-1.603	21.585	.123	-.27962	.17440	-.64170	.08247

Table 5 shows that sig. of Levene variances test is 0.528 > 0.05, and the sig. (two-tailed) is 0.067 > 0.05, it means that there doesn't exist significant difference in use of metacognitive strategies between female and male, moreover, it includes "0" (the lower figure is -0.57881 & the upper figure is 0.01957) within the 95% confidence interval of the difference, it also shows there isn't significant difference in use of metacognitive strategies between female and male. The reason could be that both female and male could use certain kinds of metacognitive strategies to monitor and evaluate their reading process; Also, it may also be caused by unbalanced number in gender in this study.

Table 6 Pearson correlation coefficient between gender and the use of etacognitive strategies

		Gender	Total
Gender	Pearson correlation	1	.210
	Significance (two-sided)		.067
Total	Pearson correlation	.210	1
	Significance (two-sided)	.067	
	N	77	77

Table 6 shows that correlation coefficient between gender and overall frequency use of metacognitive strategies is 0.210, it means that there is positive correlation between gender and use of metacognitive strategies, however, the significance (two-tailed) is 0.067>0.05, it means that the correlation is not significant. Other individual difference such as motivation and attitude toward the language learning should be take account of.

(3) According to correlation analysis and independent sample t-test, there exists a negative correlation between reading proficiency and use of metacognitive strategy, furthermore, students with higher reading proficiency use metacognitive strategy fewer frequently than students with the lower reading proficiency, as the following table7, table 8 show:

Table 7 Pearson correlation coefficient betweenreading proficiency and the use f metacognitive strategies

		CET4 reading proficiency	Planning	Selective attention	Monitoring	Evaluating	Total
CET4 reading proficiency	Pearson correlation	1	-.144	-.279*	-.153	-.150	-.241*
	Significance (two-sided)		.210	.014	.184	.193	.035
Planning	Pearson correlation	-.144	1	.494**	.532**	.563**	.726**
	Significance (two-sided)	.210		.000	.000	.000	.000
Selective attention	Pearson correlation	-.279*	.494**	1	.645**	.572**	.890**
	Significance (two-sided)	.014	.000		.000	.000	.000
Monitoring	Pearson correlation	-.153	.532**	.645**	1	.612**	.825**
	Significance (two-sided)	.184	.000	.000		.000	.000
Evaluating	Pearson correlation	-.150	.563**	.572**	.612**	1	.820**
	Significance (two-sided)	.193	.000	.000	.000		.000
Total	Pearson correlation	-.241*	.726**	.890**	.825**	.820**	1
	Significance (two-sided)	.035	.000	.000	.000	.000	
	N	77	77	77	77	77	77

*. Significant correlation at the 0.05 level (two-sided).
 **. Significant correlation at the .01 level (two-sided).

Table 7 reveals that correlation coefficient between reading proficiency and overall frequency use of metacognitive strategies is -0.241*, and it means there exists negative correlation between them, and the significant (two-tailed) is 0.035 < 0.05, the correlation is significant. The correlation coefficients of reading proficiency and four broad subcategories of metacognitive strategies are all negative (-0.144, -0.279*, -0.153, -0.150). The reason could be that the subjects couldn't use metacognitive strategies appropriately and systematically. And the overuse of the selective attention would also have negative effect in reading comprehension. It also reveals that the metacognitive strategies itself doesn't mean high reading proficiency, but it concerns knowing how and when to use metacognitive strategies according to the specific situation, if students use them inappropriately, it may cause negative effect on reading comprehension.

Table8 the overall frequency use of metacognitive strategies between high reading proficiency group and lo reading proficiency group

	Reading groups	N	Mean	Standard deviation	SE mean
Planning	High proficiency	20	2.6500	1.00786	.22537
	Low proficiency	26	2.7885	.45107	.08846
Selective attention	High proficiency		3.1500	.86163	.19267
	Low proficiency	26	3.6111	.55711	.10926
Monitoring	High proficiency	20	2.8500	.75638	.16913
	Low proficiency	26	3.0385	.57137	.11205
Evaluating	High proficiency	20	2.6250	.71097	.15898
	Low proficiency	26	2.8910	.59618	.11692

According to Table 8, the high reading proficiency group use the four broad subcategories of metacognitive strategies less frequently than the low reading proficiency group: (2.6500< 2.7885, 3.1500<3.6111,2.8500<3.0385 2.6250< 2.8910) and the most striking difference between low reading proficiency group and high reading proficiency group is in the use of selective attention (3.1500:3.6111). The reason may be that the low proficiency group pay more attention to superficial and linguistic knowledge than the implied meaning. Another reason may be that low proficiency group overuse the negative metacognitive strategy such as underling, mark-making and typographical features which belong to selective attention.

4. Conclusion

This pilot study had explored the relationship between students' metacognitive strategies and their reading proficiency, as well as the influences of gender and reading proficiency on students' selection of metacognitive strategies. Based on this study, the following implications for further researches are as follows: firstly, studies could employ more instruments (such as interviews, think-aloud and diary) to measure subjects' use of metacognitive strategies and reading proficiency to ensure its quality and credibility. Secondly, studies could take account of whether the negative correlation of the using metacognitive strategies and students' reading ability is influenced by certain variables such as students' language proficiency, motivation, their psychology, etc.

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Project:The Application of the Blended Teaching Approach Based on the Cloud Class Platform in English Grammar---the Online offline Blended Teaching Reform Project in Zhejiang Yuexiu University (2019, Project No. JGH1903).