

The Effect of Cognitive and Metacognitive Strategy Use on Iranian EFL Learners' Receptive Skills

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Abstract

This study investigated the effectiveness of cognitive and metacognitive strategy use on EFL learners' receptive language skills. The participants of the study were 60 Iranian EFL intermediate students. They were selected from a pool of 90 students (both male and female, between 18 to 31 years old) with different levels of proficiency. At the beginning of the study, the learners took a pretest on general English. All 90 students were invited to take a PET test which included four parts: reading, writing, speaking, and listening test. According to their performance on PET, the 60 students whose scores ranged from 120 to 160 were selected as the participants of the study. In order to find out what cognitive and metacognitive strategies had effects on students' listening and reading performance, a questionnaire was employed. Multiple regressions were also used to analyze the data and find possible answers to the research questions. The findings revealed that both listening and reading comprehension scores of the participants were positively and significantly correlated with cognitive and metacognitive strategy use. The findings are discussed and some pedagogical implications for language teachers are drawn upon.

Keywords: cognitive strategy, metacognitive strategy, receptive skill, listening, reading

INTRODUCTION

Language learning strategies have long been associated with effective language learning (O'Malley & Chamot, 1987; Green & Oxford, 1995; Cohen, 1998; Hsiao & Oxford, 2002). Chamot (2005) clarified the importance of strategies considering two reasons: First, strategies, when used by EFL learners, help teachers get insights into the metacognitive, cognitive, social, and affective processes included in language learning. Second, strategies help teachers understand the knowledge base of EFL learners toward helping the less successful in learning new strategies. Swan (2008) has proposed that teachers need to involve problem oriented strategies in their classrooms which desire conscious attention, and which are not employed automatically with all EFL learners without teaching (p. 265). Metacognitive strategy is a term used in information-processing

theory to demonstrate an “executive” function and it refers to the strategy that is used by EFL learners as the means to manage, monitor and appraise their learning activities. To put it simply, metacognitive strategies are skills, approaches, and thinking and actions EFL learners use to control their cognition and learning process. Regulation of cognition is about planning before accomplishing different tasks (e.g., listening), self-monitoring learning process and problem-solving during the doing tasks, and evaluating the effectiveness of learners' approach after accomplishing tasks.

Livingston (1977) clarified metacognitive knowledge and metacognitive regulation as the two dimensions of the metacognition. He stated that metacognitive knowledge comprises three types of knowledge. 1) Knowledge of person variables refers to how EFL learners process information. 2) Knowledge of task variables refers to having knowledge about the nature of the task. 3) Knowledge of strategy variables refers to having conditional knowledge and knowledge about cognitive and metacognitive strategies, i.e., when and where it is appropriate to use these strategies. The category of receptive skills - also distinguished as passive skills also is demonstrated by reading and listening. In many cases of foreign language learning they developed as the first skills to be understood and comprehended. Foreign language learners mostly start their way of mastering a new language by observing, reading and collecting language experience. Passive language skills do not oblige students to produce anything actively. Furthermore, productive skills (active skills) include writing and speaking. Productive skills do not exist utterly independently from receptive skills. Both types of active skills share some types of activities and some belong merely to one of them. Nowadays, at the age of the Internet there are more innovative and lively ways to practice active skills. However, some of them are accepted only by foreign language users and not by their language instructors (See for example Heidari-Shahreza and Moinzadeh, 2012 for an innovative application of computer software to teach word stress patterns of English). When one starts learning a foreign language, he surely and subconsciously is manifest to both categories of language skill. Reading researchers have paid increasing attention to the role of strategy use in reading comprehension (Pearson, 2009; Pressley & Afflerbach, 1995; Zhang, 2010).

The general consensus is that strategic awareness and monitoring of comprehension, both important sights of metacognition, recognizes skilled readers from unskilled ones (Carrell, 1989; Grabe, 2009; Paris & Jacob, 1984; Paris & Winograd, 1990). It is argued that metacognition comprises three components: metacognitive knowledge, metacognitive experience, and strategy use (e.g., Vandergrift & Goh, 2012; Wenden, 1998). Research demonstrates that strategy use plays an important role in many cognitive activities regarding language use (e.g., Goh, 2008; Mokhtari, Sheorey, & Reichard, 2008; Song & Cheng, 2006). For example, Bachman and Palmer (2010) disputed that metacognitive strategies determine how language is discovered in actual language use. Furthermore, Cohen and Upton (2006) and Cohen (2006) proposed that test takers manage and control their test-taking processes through planning, evaluating, and monitoring. In this paper the effect of cognitive and metacognitive strategy use on EFL learners' on receptive skills has been studied in using questionnaire and PET test.

LITERATURE REVIEW

Chamot (1987) offered that “learning strategies are techniques, approaches or deliberate actions that students take in order to simplify the learning and evoke of both linguistics and content area information” (P.71). Oxford (1990) added “Strategies are especially important for language learning, because they are tools for active, self-directed involvement, which is necessary for developing communicative competence” (p.10). Nunan (1999) clarified learning strategies as: The mental and communicative procedures learners use in order to learn and use language.

By the help of cognitive strategies, EFL learners can interact with the new information in a variety of ways (Hedge, 2000). Many researchers have concentrated on metacognitive processes that facilitate knowledge construction as a way to get students to learn with greater understanding (Brown, 1984&179 Palincsar; Flavell, 1979; Schoenfeld, 1987). Meta cognitive knowledge, Wenden (1998) underscores its important role in the self-regulation of learning as language learners plan, monitor, and evaluate their learning. It is trusted that metacognition is basically essential in various aspects of language learning, such as oral, reading, writing, and language acquisition.

The category of receptive skills - also recognized as passive skills – is demonstrated by reading and listening. In many cases of foreign language learning they appear as the first skills to be understood and comprehended. Foreign language learners mostly start their way of mastering a new language by observing, reading and collecting language experience. Passive language skills do not force students to produce anything actively. Many researchers have examined the use of metacognitive strategies in listening comprehension process (e.g. Goh, 2000; Goh & Taib, 2006; Mareschal, 2007; Graham & Macaro, 2008; Cross, 2009; Vandergrift & Tafaghodtari, 2010). All of them agreed that more proficient listeners use more metacognitive strategies and use of these strategies would improve the listening performance of language learners. Therefore, it is useful for language learners to be instructed to hire metacognitive strategies for listening tasks.

Parry (1996) illustrates that there is a relationship between the function of reading strategies and the culture readers are involved. Becoming a more efficient reader is not so easy. Basically, readers are required to have some other complicated skills as readers follow a very complex process in reading by engaging in different models where the aim is to decode the writer’s intended message by referring to background knowledge. Therefore, the present research sought to answer the following question:

- To what extent do cognitive and metacognitive strategies affect receptive language skills?

METHODOLOGY

In this research, the aim was to investigate the effectiveness of cognitive and metacognitive strategies on receptive skills. The scores on the pretest depended on the effectiveness of the cognitive and metacognitive strategies. Therefore, the dependent variable was receptive skill measured by the test of general English. On the other hand,

cognitive and metacognitive strategies served as the independent variable because it was under the control of the researcher and it did not depend on any other variable. In addition to the above mentioned variables, control variables of this study were level of nationality and language proficiency (limited to Iranian EFL learners at an intermediate level). These variables were held constant in order to neutralize the potential effect they might have had on the outcome of the research.

Participants

The participants of the study were 60 EFL intermediate students from Shahreza University in Isfahan, Iran. They were selected from a pool of 90 students (both male and female, between 18 to 31 years old) with different levels of proficiency attained from their performance on the Preliminary English Test (PET). The learners received a general English language test, testing the four skills of listening, reading, speaking, and writing. They also filled out a questionnaire intended to measure their cognitive and metacognitive strategy use.

Instruments

Preliminary English Test

Preliminary English Test (PET) is an English exam that focuses on general knowledge of English. PET is the second level among Cambridge Certificates. It is focused on intermediate learners who are able to handle basic situations, basic English communications, and large vocabulary. Similar to other Cambridge exams, PET covers the four main language skills (i.e., reading, and listening comprehension) as well as grammar and vocabulary knowledge. Notably, it is an intermediate level exam. PET reading part includes: reading part 1 (signs and notices) and it includes three-option multiple-choice instead of four options and samples a wider range of type of notice, to include short personal messages (such as emails and 'post-it' messages). PET listening part 1 and 2 are three-option multiple-choice and speaking part 1 focuses on the personal information.

Strategy Inventory for Language Learning (SILL)

Since the "good language learner" studies, which investigated the behaviors and thought processes of good language learners compared with less effective language learners, considerable advances have been made in learning strategy research (Rubin, 1975). The advances of research work on language learning strategies have been in part due to the Strategy Inventory for Language Learning (SILL), one of the most popularly used questionnaires in the domains of L2 acquisition and teaching.

The SILL developed by Oxford (1990) consists of direct and indirect learning strategies depending on the extent to which each strategy item is involved in language learning. Direct strategies include memory strategies for remembering and retrieving vocabulary, cognitive strategies for comprehending and producing text, and compensation strategies for compensating for the lack of knowledge, whereas indirect strategies

include metacognitive strategies for manipulating learning processes, affective strategies for regulating affective state, and social strategies for learning with others. Since then, the SILL has been used worldwide to investigate L2 learners' overall learning strategy use, factors underlying strategy choice, relationship between strategy use and L2 performance, and strategy training (Park, 1997; Green & Oxford, 1995; Griffiths, 2003; Hong-Nam & Leavell, 2006; McMullen, 2009; Nisbet et al., 2005; Nyikos & Oxford, 1993; Riazi & Rahimi, 2005; Wharton, 2000; Yang, 1999). However, the construct validity of the SILL determined by exploratory factor analysis (EFA) has been inconsistent with different factor structures across different learning contexts (Eldib, 2004; Green & Oxford, 1995; Nyikos & Oxford, 1993; Robinson & Midorikawa, 2001; Yang, 1999).

Data collection procedure

At the beginning of the study, the learners took a pretest on general English. All 90 students were invited to take a PET test which includes 2 parts: reading, and listening test. According to their performance on PET, 60 students whose scores ranged from 120 to 160 were selected as the participants of the study. The aim of this pretest was to make sure that all learners were homogeneous in terms of their knowledge of general English. The pretest showed that all the participants were intermediate learners. Reading part consisted of 5 sections and 35 questions. Participants read and understood the main points from signs, newspapers and magazines, and could use vocabulary and structure correctly. Listening part had 4 sections and 25 questions. Participants had to be able to follow and understand a range of spoken materials including announcements and discussion about everyday life. This made test more realistic and reliable.

At the end of the study, in order to find out what cognitive and metacognitive strategies had effects on students' performance, a questionnaire was conducted. Students were instructed to write down the first response that came to their mind. To achieve the objective of the study, multiple regressions were conducted to see which type of cognitive and metacognitive strategy had more effects on which receptive language skill.

RESULTS

To compare the effect of cognitive and metacognitive strategy use on the receptive language skills of listening and reading comprehension, multiple regressions were conducted twice: once for the listening comprehension, and once for reading comprehension. This statistical test shows whether a number of different independent variables (e.g. cognitive and metacognitive strategy use) can account for changes in a dependent variable (e.g. listening comprehension), and that among the independent variables, which one is the best predictors of a dependent variable. The results of multiple regression analysis conducted for the effect of cognitive/metacognitive strategy use on listening comprehension are presented in Tables 1 to 4.

Table 1. Relationship between Cognitive/Metacognitive Strategy Use and Listening Comprehension

		Listening	Cognitive Strategy Use	Metacognitive Strategy Use
Pearson Correlation	Listening	1.00	.43*	.57*
	Cognitive Strategy Use	.43*	1.00	.15
	Metacognitive Strategy Use	.57*	.15	1.00

* Shows a significant relationship at $p < .05$

As could be seen in Table 1, listening comprehension scores of the learners were positively correlated with both cognitive ($r = .43$) and metacognitive ($r = .57$) strategy use, and both these correlations were statistically significant at $p < .05$ level of significance. Thus, the relationship between listening comprehension and cognitive strategy use was a moderate positive one, while the relationship between listening comprehension and metacognitive strategy use was a strong positive relationship. Now multiple regression tables should be checked.

Table 2. Model Summary for Multiple Regression Run for Listening Comprehension

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.67	.45	.43	1.75

In Table 2, the value given under the R Square column shows how much of the variance in listening comprehension is explained by cognitive/metacognitive strategy use. The value here is .45, which means that using cognitive and metacognitive strategies explained 45 percent of the variance in the listening comprehension scores of the learners.

Table 3. Statistical Significance of the Multiple Regression Results Run for Listening Comprehension

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	144.61	2	72.30	23.42	.000
Residual	175.92	57	3.08		
Total	320.54	59			

In Table 3, cognitive and metacognitive strategy use could significantly predict listening comprehension of the learners. Now Table 4, should be checked to see which of the independent variables contributed more to the prediction of listening comprehension.

Table 4. Predictive Power of Cognitive and Metacognitive Strategy Use for Listening Comprehension

	Unstandardized Coefficients		Standardized Coefficients			Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta	T	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
Cognitive	.05	.01	.35	3.55	.001	.02	.08	.43	.42	.34	.97	1.02
Metacognitive	.06	.01	.52	5.23	.000	.03	.08	.57	.57	.51	.97	1.02

Looking down Beta column, one could notice that the larger value was the one for learners' metacognitive strategy use (.52). Using metacognitive strategies thus made a stronger contribution to explaining listening comprehension. It could thus be concluded that both cognitive and metacognitive strategy use could significantly predict the learners' listening comprehension. The results of multiple regressions for reading comprehension are presented in Tables 5 to 8.

Table 5. Relationship between Cognitive/Metacognitive Strategy Use and Reading Comprehension

		Reading	Cognitive Strategy Use	Metacognitive Strategy Use
Pearson Correlation	Reading	1.00	.55*	.70*
	Cognitive Strategy Use	.55*	1.00	.15
	Metacognitive Strategy Use	.70*	.15	1.00

* Shows a significant relationship at $p < .05$

Table 5, shows that reading comprehension scores of the learners were positively correlated with both cognitive ($r = .55$) and metacognitive ($r = .70$) strategy use, and both these strong positive correlations were statistically significant at $p < .05$ level of significance.

Table 6. Model Summary for Multiple Regression Run for Reading Comprehension

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.72	.52	.50	1.65

Table 6, illustrates an *R Square* value of .52, which shows 52% of the variance in reading comprehension, and is explained by cognitive/metacognitive strategy use. To examine the statistical significance of this result, Table 7, should be checked.

Table 7. Statistical Significance of the Multiple Regression Results Run for Reading Comprehension

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	169.32	2	84.66	31.01	.000
Residual	155.61	57	2.73		
Total	324.93	59			

The cognitive and metacognitive strategy use could significantly predict reading comprehension scores of the learners. Table 8 reveals which of the independent variables contributed more to the prediction of reading comprehension.

Table 8. Predictive Power of Cognitive and Metacognitive Strategy Use for Reading Comprehension

	Unstandardized Coefficients		Standardized Coefficients			Confidence Interval for B		Correlations		Collinearity Statistics		
	B	Std. Error	Beta	T	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Tolerance	VIF	
Cognitive	.03	.01	.19	1.62	.11	.007	.06	.55	.21	.14	.60	1.65
Metacognitive	.07	.01	.58	4.97	.000	.04	.10	.70	.55	.45	.60	1.65

Taking a look at the values under the *Beta* column under standardized coefficients, one could see that the larger value was the one for learners' metacognitive strategy use (.58). Therefore, it could be construed that using metacognitive strategies made a stronger contribution to explaining reading comprehension. The *Beta* value for cognitive strategy use was .19, which means that cognitive strategy use made less of a contribution.

DISCUSSION

Learning strategies can be categorized and investigated within the perspective of Memory (which relate to how students remember language), Cognitive (which relate to how students acquire knowledge about language), Compensation (which enable students to make up for limited knowledge), Metacognitive (relating to how students manage the learning process), Affective (relating to students' feelings) and Social (which involve learning by interaction with others), variables (see Heidari-Shahreza, Dabaghi & Kassaian, 2012). These strategies can differently affect learning skills.

Vandergrift (1996) investigated different listening strategies used by students at different levels. She found that intermediate level students used more metacognitive strategies and relied on similar cognitive strategies, although they were able to process a larger number of chunks. She concluded that the main characteristic of successful students is the use of more metacognitive strategies. Jinhong (2011) explored the students' metacognitive strategy use, the relationship between metacognitive strategy use and their performance in a listening comprehension TEM-4 test. The finding revealed that there is a positive relationship between metacognitive strategy use and performance in the listening comprehension test.

The literature of metacognitive strategies in reading comprehension reveals that poor readers in general (Iranian) EFL learners in particular lack effective metacognitive strategies (Brown, 1987; Alderson, 2000) and have little awareness on how to approach reading and deal with difficult L2 vocabulary (Baker and Brown, 1984; Heidari-Shahreza, Moinzadeh & Barati, 2014 a,b). They also have deficiencies in the use of metacognitive strategies to monitor their understanding of texts (Pitts, 1983). In contrast, successful L2 readers know how to use appropriate strategies to enhance text comprehension (Chamot et al., 1989). The research question of the study was "To what extent do cognitive and metacognitive strategies affect receptive language skills?" To compare the effect of cognitive and metacognitive strategy use on the receptive language skills of listening and reading comprehension, multiple regressions were conducted twice: once for the listening comprehension, and once for reading comprehension. The results of multiple regression analysis conducted for the effect of cognitive/metacognitive strategy use on listening comprehension indicated that listening comprehension scores of the learners were positively and significantly correlated with both cognitive ($r = .43$) and metacognitive ($r = .57$) strategy use, and the same was true about the reading skill of the learners. That is, reading comprehension scores of the learners were positively correlated with both cognitive ($r = .55$) and metacognitive ($r = .70$) strategy use, and both these strong positive correlations were

statistically significant. Although a cognitive view of language learning offers that language learning strategies are educable (O'Malley and Chamot, 1990), and although there are those who argue that strategy instruction is an important part of the teacher's role (for instance, Oxford and Nyikos, 1989), the principle of the teach ability of language learning strategies is by no means universally accepted. Learner strategies divided into two types, i.e., learning strategies and use strategies. Strategies that language learners purposefully use to enhance their language learning and acquisition are raise their performance (e.g., to complete a language task, to communicate with others in the target language and to take a test) are use strategies.

CONCLUSION

As it was previously stated, this study was set up to investigate, to what extent cognitive and metacognitive strategies affect receptive language skills. The participants of the study were 60 EFL intermediate students from Shahreza University in Isfahan, Iran. They were selected from a pool of 90 students (both male and female, between 18 to 31 years old) with different levels of proficiency attained from their performance on the Preliminary English Test (PET). The learners received a general English language test, testing the four skills of listening, reading, speaking, and writing. They also filled out a questionnaire intended to measure their cognitive and metacognitive strategy use. Multiple regressions were used to analyze the data and find answer to the research question of the study. It was found that listening comprehension scores of the learners were positively and significantly correlated with both cognitive and metacognitive strategy use, and the same was true about the reading skill of the learners, and also the speaking scores of the learners were positively and significantly correlated with both cognitive and metacognitive strategy use, and this was the case with the writing skill of the learners. In addition, the statistical analyses of the data revealed that cognitive/metacognitive strategy use had greater impacts on receptive, language skills. It is hoped that the following suggestions, which are made based on the results of the current research, help broaden the insights of researchers. Studies can be designed to check to what extent learners recognize cognitive and metacognitive strategies and/or possibly what other advantages could be gained from these strategies for teaching/learning language skills. Moreover, gender as an important variable can be taken into account in future research (see for example Heidari-Shahreza, Vahid-Dastjerdi, Marvi, 2011).

The results of this study, like any other piece of research, should be approached and applied with caution since this study suffered from a number of limitations. First, the population from whom the participants of the study were selected were intermediate learners. The results obtained in this study, thus, might not be generalized to other learners. Second, the total number of the participants might make it hard to form sound conclusions based on the statistical analyses performed in this study. Another limitation refers to the lack of time and budget to conduct the research in different educational settings with different learning materials. The same study could be carried out with the students of differing levels of proficiency or different majors to see if the same results

will be obtained or not. What is more, the above mentioned strategies (cognitive and metacognitive) could be compared with other suggested strategies which were shown to be effective for teaching and learning language skills.

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