

How Creativity Impacts Cognitive Strategy Choice in Reading Comprehension

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Abstract

The main objective of this study was to find out how more creative language learners use cognitive strategies more when they read English as a foreign language. The participants of this study were comprised of 60 upper-intermediate language learners selected from one language institute. The selected sample received a creativity questionnaire and was divided into two groups based on their level of creativity. The more creative students were assigned to the experimental group and the less creative students were assigned to the control group. To measure the creativity levels of the participants, Torrance Test of Creative Thinking TTCT (Torrance, 1990) was administered. An Oxford Proficiency Test was also used to determine the students' level of proficiency.

Prior to the treatment, the participants in both groups took a pre-test on reading comprehension. As for the post-test, all participants of the study took a reading comprehension test to see if their scores on the reading comprehension test made any improvement. Finally, both groups' achievements in the reading comprehension were compared to examine the potential effect of creativity on using cognitive strategies applied on this skill.

Findings suggested that the two variables of the creativity level of the participants of the experimental group and their use of cognitive strategies in reading comprehension are significantly and directly related. The results indicate that there is a significant relationship between the creativity level of the participants and the extent to which they apply cognitive strategies in their reading comprehension tasks.

Key words: Reading comprehension; Cognitive strategies; Creativity; EFL learners.

Introduction

Reading comprehension is an active skill which incorporates different reading strategies. Reading process implies an active cognitive system operating on printed material to arrive at an understanding of the message. The reader's task is to activate background and linguistic knowledge to recreate the writer's intended meaning (Chastain, 1988). Reading strategies refer to how readers conceive a task, how they recognize what they read, and what they do when they do not understand. Such strategies are used by the reader to enhance reading comprehension and overcome

comprehension failure. In general, reading strategies are operations or procedures performed by a reader to achieve the goal of comprehension (Kern, 1989). A large body of research has been conducted to determine the factors that directly or indirectly affect reading comprehension. Cognitive strategies are classified as practicing, receiving and sending messages, analyzing, and creating structure for the input and output, such as reasoning, analyzing, summarizing, and practicing (Oxford, 1990). Many researchers and many studies had attempted to find the relationships among these cognitive strategies and

psychological variables such as creativity, motivation, anxiety, and self-esteem (Altman, 1980; Skehan, 1989; Larsen- Freeman & Long, 1991; Ellis, 1994; Segalowitz, 1997; Dörnyei, 2005). As such, the present study aims at figuring out the impacts of creativity on the use of cognitive strategies in reading comprehension.

Research Question

This study was an attempt to answer the following research question. The subsequent null hypothesis was also formed based on the research question:

1. Is there any relationship between Iranian EFL learners' creativity level and their use of cognitive strategies in reading comprehension?

H0-1: There is no relationship between Iranian EFL learners' creativity level and their use of cognitive strategies in reading comprehension.

Literature review

Research on Cognitive Strategies and Reading Comprehension

Different researchers have investigated how cognitive strategies can help language learners be more successful in their language learning process. In an investigation into the effect of cognitive strategies on the reduction of test anxiety among guidance school girls, Shokrpour et al. (2011), for example, concluded that training on cognitive strategies reduces test anxiety and improves educational performance. The findings proved the positive effect of such training on the reduction of test anxiety and the learners' improvement of educational performance.

Similarly, Shokrpour and Nasiri (2011) investigated the use of cognitive and metacognitive reading strategies by good and

poor academic IELTS test takers. The purpose was to see which group used strategies better. Findings revealed that there was not a significant difference between good and poor readers in the use of cognitive strategies. Yet, these two groups differed significantly in using metacognitive strategies. In fact, good readers outperformed the poor readers in employing metacognitive strategies.

Phakiti (2003), through the use of a cognitive questionnaire drawn from the existing literature, retrospective interviews and an EFL achievement test, investigated the relationship between 384 Thai learners' cognitive strategy use and their reading test performance

Song (2004) investigated the extent to which cognitive strategy use accounted for Chinese test-takers' performance in the College English Test Band 4 through regression analyses. Song employed a revised strategy questionnaire mainly based on Purpura (1999). Song found that cognitive strategies accounted for 8.6% of the test score.

Zare-ee (2009) examined the relationships between the use of cognitive strategies on the one hand and EFL reading achievement on the other hand. Results of the analyses indicated that the correlation between reading achievement and cognitive strategies was 0.39 and it was significant at the 0.05 level.

Rezvani and Tavakoli (2013) investigated Iranian test-takers' use of cognitive and metacognitive strategies while performing on IELTS reading tests. Specifically, the study set out to investigate: a) the relationship between Iranian test-takers' use of cognitive and metacognitive strategies and their L2 reading test performance on the reading section of the IELTS test; and b) the role gender might play in Iranian test-takers'

use of cognitive and metacognitive strategies. The results suggested that there was a strong positive correlation between Iranian test-takers' use of cognitive and metacognitive strategies and their performance on the reading section of the IELTS test. It was also found that there was no significant difference in strategy use between male and female Iranian test-takers.

Research on creativity

During the last decades, many scholars (Altman, 1980; Skehan, 1989; Larsen-Freeman & Long, 1991; Ellis, 1994; Segalowitz, 1997; Dörnyei, 2005) have studied the relationship between second language acquisition (SLA) and psychological variables, i.e. individual differences such as motivation, self-esteem, self-efficacy, and anxiety. In comparison, however, creativity has been a somehow neglected variable in the research on individual differences. A number of researchers (Barkoczi and Zetenyi, 1981; Cropley, 1972; Guliford, 1950; Harrington, Block and Block, 1983, all cited in Albert, 2006) believe that the underlying components of creativity are normally distributed in the population. In other words, creativity is ability or some abilities possessed by all people to some degree. Therefore, creativity which implicitly involves imagination, unconventionality, risk-taking, flexibility and creating new classifications and systematizations of knowledge (Sternberg, 1985) can be an important factor affecting language learning acquisition.

The concept of creativity covers different but relevant phenomena such as "the creative performance or product, the creative person, the creative situation, the creative process, and the creative potential" (Brown, 1989; Lubart, 1994; as cited in Albert and Kormos, 2011: 75). Matsouka et al. (2003) believe that

creativity is a multidimensional construct which can be measured as a creative style or a personality trait. Abutalebi and Costa (2008) define it as a unique ability of people and the undiscovered secret of the brain.

Hadley (2003) emphasizes the importance of creative effect in second or foreign language learning and the use of language creatively. He believes that learners must learn to use language creatively to progress beyond the elementary phases.

In the area of second or foreign language learning, however, creativity has almost been under-researched (Dörnyei, 2005) and somewhat ignored (Albert, 2006). To the researcher's knowledge, there are few studies that take into account the role of creativity in language learning achievement (Albert & Kormos, 2004; Meera & Remya, 2010; Otto, 1998; Sutrisno, 2007). Albert and Kormos (2004), for example, have investigated the role of creativity in learners' performance on oral narrative tasks. Three aspects of creativity, i.e. creative fluency, originality, and flexibility, were taken into account by the researchers. Their study came up with divergent findings: While creative fluency proved to be positively correlated with better performance on the part of learners, originality negatively affected their performance on oral narrative tasks. In another study, Meera and Remya (2010) examined the relationship between creativity and achievement in English language and found the following result: The role of creativity on English achievement was found significant. Moreover, Otto (1998) adapted five subtasks from the Torrance test of creativity, namely, consequences, unusual uses, common problems, categories, and associations. The results of correlation analysis showed highly significant relationships between creativity and English grades. Finally, Sutrisno (2007) explored the

relationship between three hundred and twenty-four tenth grade students' creativity and their achievement in learning English in Brebes. The results showed a positive and significant correlation between creativity and scores on the achievement test including reading, vocabulary, and structure.

With regard to the relationship between language learning strategies and creativity, Rezaei and Almasian (2007) attempted to explore the relationship between language learning strategies, creativity, and language proficiency. The participants were 29 freshman students studying English Language and Literature at the Faculty of Foreign Languages at Tehran University. Results showed that creativity and degree of strategy use were correlated. Moreover, a significant correlation was discovered between creativity and language proficiency. However, degree of strategy use and language learning proficiency were shown not to be interrelated. Further, no significant difference was seen between high and low creativity subjects in their use of strategies.

Albert (2006), too, examined the effect of creativity on language proficiency. The participants were 41 1st year English major students who attended language practice or academic skills classes. Results showed that no statistically significant correlations can be found between creativity and language proficiency in this 1st year English-major sample. Creativity turned out to be unrelated to the overall level of proficiency. Seddigh and Shokrpour (2013) explored the relationship between Iranian EFL students' creativity and their use of vocabulary learning strategies. Also, there was an attempt to find out if gender plays any role in this relationship. For measuring the creativity of a group of 101 medical students at Shiraz University of Medical Sciences (SUMS), the Torrance Test

of Creative Thinking (Torrance, 1990) was conducted. Subsequently a VLS questionnaire (Jones, 2006) was given to the participants to identify their VLS employment. The results revealed that the participants possessed a high level of creativity but there was no significant difference in this regard according to gender. A significant correlation was found between creativity and the overall VLS use of female students, but not for males. However, the correlation observed between creativity and the overall VLS use of the participants was statistically significant in general.

To study the effect of creativity on language learning success, it is also worthwhile to investigate its relationship with language learning strategies which play a very remarkable role in language learning. It can be concluded from the literature reviewed above that there is dearth of research on the impact of language learners' creativity on their use of cognitive strategy use in reading comprehension. The present study thus aims to examine the potential impacts of creativity on the use of cognitive strategies in reading comprehension in an EFL context.

Methodology

Participants

The participants of this study were comprised of 60 upper-intermediate language learners randomly selected from one language institute. The age range of these learners, both male and female, varied from 20-25 years of age. All the students in the sample had passed the previous courses successfully. This guaranteed the general assumption underlying the study that they were all at almost the same level of language proficiency to start with. But in order to ensure the optimal homogeneity of the sample, an OXFORD Placement Test was

also administered to both groups prior to the experiment.

These participants were randomly selected from the population of English language learners and assigned to two groups. The selected sample received a creativity questionnaire and was divided into two groups based on their level of creativity. The more creative students were assigned to the experimental group and the less creative students were assigned to the control group. All of the selected participants signed an agreement form to take part in this study and authorized the researcher to issue the findings.

Instruments

To measure the creativity levels of the participants, Torrance Test of Creative Thinking TTCT (Torrance, 1990) was administered. This test has been widely used in different educational studies and its reliability is reported to be 0.80 (Fasko, 2001). The test consisted of 60 questions each followed by three choices that included different hypothetical situations of responding for the participants. The time allocated for this test to be done was 30 minutes. An Oxford placement test was also used to determine the students' level of proficiency.

Before the treatment, the participants in both groups took a pre-test on reading comprehension. The obtained grades from the

pre-test were recorded for the purpose of further comparison. As for the post-test, all participants of the study took a reading comprehension test to see if their scores on the reading comprehension test mark improvement.

Procedures

Before the experiment, all the subjects were given the creativity questionnaire. This instrument was utilized to estimate the creativity level of the participants. The target objective of this was to classify more creative and less creative students. Besides, the participants took a reading comprehension test which served as the pre-test. At the end of the instruction, all the participants took another reading comprehension test which served as the post-test. Finally, both groups' achievements in the reading comprehension were compared to examine the potential effect of creativity on this skill.

Results and discussion

As stated earlier, this study aimed to examine the impact of language learners' creativity on their use of cognitive strategy used in reading comprehension. The main objective of this study was to find out whether more creative individuals use cognitive strategies more when they read English as a foreign language.

Table 1 has provided descriptive statistics of the variable of creativity for both experimental and control groups.

Table 1 Descriptive statistics for the variable of creativity level

Creativity level	N	Mean	Max	Std. Deviation
Experimental group	34	5.95	10	2.57

Control group	26	4.46	10	1.78
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As shown in this table, 34 of the participants of the study were categorized as more creative than the 26 ones remaining. More creative participants were put in the experimental group. The Mean and Standard Deviation of these 34 participants in the experimental group were 5.59 and 2.57 respectively. 26 of the participant were categorized as less creative ones and were put in the control group. The Mean and Standard Deviation of these 26 participants in the control group were 4.46 and 1.78 respectively.

Table 2 provided information on the reading pretest. It has summarized the results of a *t*-test which was calculated between the mean score of the reading pretest in experimental group ($M=26.500$, $SD=3.408$) and the control group ($M=25.250$, $SD=4.078$) to check whether there was any significant differences between the reading means of the two groups. The descriptive statistics of the reading pre-test are presented in the Tables 2 and 3 respectively.

Table 2. Descriptive Statistics of the Reading Pre-test

Groups	N	Mean	SD	SEM	Skewness	Std. Error of Skewness
Experimental	34	26.500	3.408	0.668	-0.538	0.456
Control	26	25.250	4.078	0.832	0.080	0.472

As shown in Table 3 the results of the skewness of the reading pre-test analysis indicated ratio levels of -1.179 and 0.169 for the experimental and the control groups respectively and both fall within the range of -1.96 and +1.96. This indicates that both groups' scores are normally distributed.

Table 3. Comparing Means of the Reading Pre-test

Levene's Test for Equality of variances			t-Test for Equality of Means			
	F	Sig.	T	Sig. (2-tailed)	Df	Mean Difference
Equal Variance Assumed	1.452	0.234	1.179	0.244	48	1.250

As Table 3 above illustrates, with the variance assumed equal [$F=1.452$, $p=0.234$], the *t*-test results indicated that there was no significant difference between the mean scores of the two groups on the reading pre-test, $t(48)=1.179$, $p=0.244$ (two-tailed) and thus, the two groups belonged to the same population before the treatment.

After the treatment, a reading test which was utilized in pre-test again was used for the reading post-test. Again, the results of the skewness analysis signified that both distributions met the normality

assumption (the ratio of -0.151 and -0.224 for the experimental and the control groups respectively falling within the range of -1.96 and +1.96). The descriptive statistics of the experimental group ($M=30.269$, $SD=2.600$) and the control group ($M=26.583$, $SD=2.872$) are demonstrated in Table 4.

Table 4. Descriptive Statistics of the Reading Post-test

Groups	N	Mean	SD	SEM	Skewness	Std. Error of Skewness
Experimental	26	30.269	2.600	0.510	-0.069	-0.106
Control	24	26.583	2.872	0.586	0.456	0.472

The means of the two groups on the reading post-test were compared through another t-test. As Table 5 shows, $F=0.01$, $p=0.970$ confirmed the equality of the variances and $t(48)=4.762$, $p=0.00$ (two-tailed) suggested that the mean difference 3.685 is significant which proves that the treatment of applying a number of cognitive reading strategies has been effective.

Table 5. Comparing Means of the Reading Post-test

Levene's Test for Equality of variances			t-test for Equality of Means				Eta Squared (η^2)
	F	Sig.	T	Sig. (2-tailed)	Df	Mean Difference	0.24
Equal Variance Assumed	0.01	0.970	4.762	0.00	48	3.685	

The results of data analyses demonstrated that there is statistically significant difference in pre- and post-tests of both experimental and control groups' performances in reading comprehension. Therefore, it can be concluded that there is a direct relationship between the creativity level and using cognitive strategies in reading comprehension. As such, the null hypothesis of the study which predicts no relationship between creativity level and the use of cognitive reading strategies is rejected.

The results of this study approve previous research studies which demonstrated that many factors affect the choice learning strategies. Those factors ranged from biological factors such as sex and age to psychological factors such as degree of

awareness, learning style and creativity (Zare & Nooreen, 2011; Khamkhien, 2010; Rahimi, *et al.* 2008; Hong-Nam and Leavell, 2007; Green and Oxford, 1995; Ehrman and Oxford, 1989). Existing research has shown that professional readers make choices as to what to read.

With regard to the relationship between language learning strategies and creativity, the results confirmed the findings of the study conducted by Rezaei and Almasian (2007) which attempted to explore the relationship between language learning strategies, creativity, and language proficiency. The participants were 29 freshman students studying English Language and Literature at the Faculty of Foreign Languages at Tehran

University. Results showed that creativity and degree of strategy use were correlated. Moreover, a significant correlation was discovered between creativity and language proficiency.

Tercanlioglu (2004) proved that when readers encounter comprehension problems, they use both cognitive strategies to overcome their difficulties. Different learners seem to approach reading tasks in different ways and some of these ways appear to lead to better comprehension (Tercanlioglu, 2004, p.2). The rationale behind this connection and the associated results has roots in psychological theories. Creative people tend to focus on more things and to pay attention to unique or different features of them. The primary cognitive task is to filter information so that the individual can react appropriately to the situation. A creative person's filter is often wider, allowing more information to be processed.

Many researchers believe that using both cognitive strategies is essential to make learning meaningful, as stated by Nolan & Morgan (2000). Learners employ these strategies only when their details have been made clear and knowledge about how and when to use them have been specified and the students feel ready to take use of these strategies (Brown & Day, 1983). The reason strategies are instructed to the students is to make them succeed in becoming skillful strategic learners (Lefrancois, 1994). In spite of this fact, Borkowski and Muthagrishna (1992) believe that teachers lack practical samples of metacognition to control their teaching. To them, what is needed for such samples is to prepare structural frameworks to teach basic strategies.

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