

The Effect of Using Metacognitive Strategies on Reading Achievement of Iranian Intermediate Extroverted vs. Introverted Learners

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Abstract

This study reports on an investigation into the effect of using metacognitive strategies to see how EFL learners' reading performance improves. Metacognitive strategies are related to individuals' executive functions; strategies that involve planning for learning, thinking about learning process as it is taking place, monitoring of one's production or comprehension, and evaluating learning after an activity is completed. To conduct this research, 60 subjects were randomly chosen after administering a PET. The subjects were assigned into two groups of 30 students, one of which included introverted learners and the other extroverted learners. The researcher encouraged all learners to use some metacognitive strategies while reading texts. These strategies are as following: 1. Referring meaning through word analysis, 2. Using background knowledge, 3. Guessing the later topic, 4. Centering learning, 5. Arranging and planning leaning, and 6. Elaborating learning. After 10 sessions of using the strategies, a post test was administered and the result showed that introverted students had higher marks and they had better reading performance in comparison with extroverted students.

I. INTRODUCTION

The purpose of this study is to investigate the effect of metacognitive strategies instructions on Iranian intermediate introverted and extroverted learners' reading achievement. Metacognitive strategies or metacognitive regulation are sequential processes that one uses to monitor and control the cognitive activities, and to ensure that a cognitive goal such as comprehending a text has been achieved. The basic premise of this study is that using metacognitive strategies by Iranian intermediate introverted and extroverted learners would help in development of their reading comprehension.

A. Background and Purpose

Many researches and theories in second/foreign language learning suggest that successful language learners use a variety of strategies to help them to learn a new language. In the past two decades, teachers tried to teach those strategies to less successful and less competent learners and they could also promote their role as a teacher in helping students to achieve success. In addition to knowing learning strategies, learners have their own unique learning styles.

Several research studies in cognitive psychology (O'Malley, 1987; Rubin, 1981; Wenden, 1998) have reported that in order to improve learning, it is most effective to teach both cognitive and metacognitive strategies. Vandergrift (2005) argued that successful learners appear to use more metacognitive strategies than unsuccessful learners do. It was introduced in the late 1970s and has received a great deal of attention from cognitive psychologists. "Metacognition" according to Livingston (1997) is one of the latest buzz words in educational psychology. Generally, metacognition refers to thinking about one's own thinking and controlling one's own learning. Metacognition refers to higher order thinking which involves active control over cognitive processes engaged in learning. Activities such as planning how to approach a given learning task, monitoring comprehension, and evaluating progress toward the completion of a task are metacognitive in nature. Because metacognition plays a critical role in successful learning, it is important to study metacognitive activity and how students can be taught to better apply their metacognitive resources through metacognitive control.

Several studies have shown that people show different behaviors in the same educational setting. These differences are originated from individual variations (Busch, 1982; James and Gardner, 1995). Each learner is a complicated person and has psychological, biological, physical, social, cognitive and affective characteristics which identify his/her position and capability toward language learning. Among all these attribution, affective factors, especially one of its particular dimensions, 'personality traits' play considerable role in language learning. According to Busch (1982) "personality is one of the individual differences which is widely accepted to have an influence on learning in general and language learning in particular" (p.1). James and Gardner (1995) define learning style as the "complex manner in which, and conditions under which, learners most efficiently and most effectively perceive, process, store, and recall what they are attempting to learn" (p. 20). Similarly, Griggs and Dunn (1988) define learning style as the way in which each individual starts to concentrate on, process, and retain new information.

Oxford's (1989) classification for metacognitive language learning strategies (MCLSs) is the most comprehensive one. In this classification MCLSs are divided into three types. The first type is "centering your learning"; it refers to learner's attempt to converge attention and it includes "overviewing and linking with already known material, paying attention, and delaying speech production to focus on listening". The second type is "arranging and planning your learning"; it includes "finding out about language learning, organizing, setting goals and objectives, identifying the purpose of a language task, planning for a language task, and seeking practice opportunities. And the third type is "evaluating your

learning' which includes "self-monitoring and self-evaluating". They refer to identifying errors both in understanding and producing the language and try to find the source of errors and eliminate them. Teaching metacognitive strategies is one of the methodologies that has been proposed and researched in recognition of the need for better reading comprehension.

II. REVIEW OF LITERATURE

In this section some previous studies will be examined. First of all, some studies regarding learning style dimensions and also personality styles are presented. Then the distinction between extroversion and introversion are discussed by the authors. After that, some previous studies regarding metacognition and metacognitive strategies are presented and a distinction between cognitive and metacognitive strategies has been made. Studies in the field of metacognitive strategies and achievement and also studies regarding metacognitive strategies and reading comprehension are both included in literature review too.

A. Learning Style Dimensions

In the field of second language learning, learning styles have been thought of as a key factor in learning a new language successfully. Learners have clear preferences for how they go about learning a new language (Reid, 1995). There are many definitions of learning styles. Dunn and Griggs (1988) defined learning style as "the biologically and developmentally imposed set of characteristics that make the same teaching method wonderful for some and terrible for others" (p. 3). Moreover, Reid (1995) stated that the term learning style refers to an individuals' natural, habitual and preferred way of absorbing, processing, and retaining new information and skills. According to Spolsky (1989) learning styles were individuals' identifiable approaches to learning situations. Oxford and Anderson (1995) classified learning styles according to six interrelated aspects: cognitive, executive, affective, social, physiological and behavioral. Based on Oxford & Anderson (1995) Cognitive elements include preferred or habitual patterns of mental functioning, often known as cognitive styles. The executive aspects deal with the degree to which the learner seeks order, organization and manages his or her own learning process. The affective aspects refer to a group of attitudes, beliefs and values that influence what an individual will pay most attention to in a learning environment. The social aspects reflect the preferred extent of involvement with other people while learning. The physiological aspects constitute sensory and perceptual tendencies of the learner. The behavioral aspects relate to a tendency or situations compatible with ones' own learning preferences.

According to Ehrman (1996), the categories and dimensions of learning styles are varied according to preferences and personalities. Keefe (1979) defines learning style under the three broad subheadings of physiological, cognitive, and affective traits. In terms of physiological traits, Reid (1998) identifies the major perceptual style preferences as visual, auditory, and kinesthetic. Lightbown and Spada (1999) identified those people who cannot learn something until they have seen it as visual learners. Others seem to learn when they

hear something once. Those learners are called aural learners. Those who prefer to do physical actions in the learning process are called kinesthetic learners. Cognitive learning styles also include several variables. Ellis (1986) defines cognitive learning style as “the manner in which people perceive, conceptualize, organize, and recall information” (p. 114). Ehrman (1996) divided cognitive learning styles into sequential-random, concrete-abstract, global-analytic, and deductive-inductive dimensions. According to Ehrman (1996), the sequential learner wants to learn step by step, that is, following a logical order, usually that provided by a textbook and curriculum. Random learners, in contrast, tend to find their own learning sequence, making connections between new and old knowledge. Ehrman describes a concrete learner as one who “needs direct sensory contact with the language and its meaning” (P. 68). Abstract learners, however, are likely to show a preference for discussion of abstract topics. For the inductive learning style, induction begins with data and seeks the generalizations that can be extracted from them.

Learning styles consist of three broad categories: cognitive, perceptual, and personality styles. Cognitive styles refer to the manner in which learners perceive, organize, and recall information (Ellis, 1986). Various classifications have been made to categorize the most important cognitive styles. Ehrman (1996) classified them as sequential-random, concrete-abstract, global-analytic, field-dependent versus field-independent, intuitive-random, and concrete-sequential. Nelson (1995) described a global learner as a person who begins with the whole picture, while the analytic learner begins with the separate parts and pieces them to make a whole. Worthley (1987) explained field-independent learners as those who prefer to compete and gain individual recognition, and who are often task oriented. They prefer learning that emphasizes the details of concepts. However, field-dependent learners usually have trouble differentiating specific details in background information. Such learners are holistic and see themselves as part of a larger universe. According to Oxford and Anderson (1995), intuitive-random learners try to construct a mental model of the second language information. They deal best with the big picture in an abstract mode and try to find underlying language components. Concrete-sequential learners, on the other hand, prefer language learning materials that involve sound, movement, sight, and touch that can be applied in a concrete, sequential manner.

According to Oxford & Anderson (1995), perceptual learning styles are another category of learning styles. Perceptual learning styles or sensory preferences refer to learners' preferred way of absorbing, or learning new things through physiological sensory channels. Visual, auditory, and hands-on styles are the primary categories of perceptual styles. Visually oriented students like to read and obtain a great deal of visual stimulation. Lectures and oral direction without visual backup are confusing for them. However, auditory students are comfortable with oral directions and interactions unsupported by visual stimuli. Hands-on or kinesthetic students like to move and enjoy working with tangible objects. They need frequent physical action and dramatic activities (Oxford & Anderson, 1995).

III. METHODOLOGY

The purpose of this study was to investigate the effect of using metacognitive strategies on reading achievement employed by Iranian intermediate introvert vs. extrovert EFL learners. In the other words, it is first and foremost necessary to know how metacognitive strategies can establish and maintain the enhancement of reading comprehension in intermediate introvert and extrovert learners. This part elaborates on the steps taken to this end. Accordingly, the present study is quasi-experimental in nature and it incorporates a quantitative design that involves two groups of introvert learners and extrovert learners which are designated as the experimental groups. This begins with a full description of the participants of the study, followed by introducing instrumentation and materials, procedures, followed by design and data analysis of the elicited data. In the participants section the population from which the researchers selected the sample is presented. The instrumentation and materials section is comprised of the data-gathering devices used to prepare the required data for the purpose of this study. The procedure outlines the research plan and describes what has been done, how it has been done, and what data was required.

A. Participants

In the first step of the study, an institute was selected to do the whole experimental part of the study. So Ayandehsazan English Language institute in Varamin was selected. The subjects participating in this study were 64 Iranian students of intermediate levels. The selected participants were male and female ranged from 15 to 18 years of age. For the researchers to make sure whether the participants were at the same intermediate proficiency level, a PET (Preliminary English Test) for schools proficiency test was administered. In fact, the PET was administered to determine the homogeneity condition of classes. After that Eysenck Personality Inventory was administered to the participants in order to classify them into categories of introverts and extroverts. Each group consists of thirty two students. Group one are learners who have introversion learning style and group two are learners who have introversion learning style.

B. Instrumentation and Materials

Considering the participants of the study, the instruments employed in this study included (a) Preliminary English Test (PET) as a means of estimating the participants' level of proficiency, Eysenck Personality Inventory (EPI) that served to measure extroversion / introversion trait of the participants, (c) A pre-test of reading comprehension which contains four reading comprehension passages followed by twenty five multiple choice items A post-test of reading comprehension which like pre-test contains four reading comprehension passages and it has twenty five multiple choice items .

1. PET

In order to make sure of the homogeneity of the participants, all participants took a Preliminary English Test (PET). The PET for proficiency test has thirty five reading questions in five formats, eight questions in 3 parts for writing, twenty five questions in 4 parts for listening and 4 parts for speaking. It took the test taker about 125 minutes to complete the test. After the test papers were scored, participants were selected in the first step as the homogenized intermediate participants of this study. The PET for schools examination was applied to determine the learners' level of language proficiency. It is part of a group of general English examinations developed by Cambridge ESOL. All five examinations in this suite have similar characteristics but are designed for different levels of English language ability.

2. Eysenck Personality Inventory

Another instrument is the Persian standardized form of adult EPI (Eysenck Personality Inventory, 1986) which was used to measure extroversion vs. introversion trait of the participants. According to Farnia (1993) "The EPI has convenience of administration and scoring" (p.35). Therefore, the researchers used this test in order to measure the intended traits. The number of EPI items was ninety and included Yes / No questions. Hosseini et al. (1971) translated and re-standardized EPI in Iran. The translated version of EPI questionnaire was administered to the testees. All the questions were translated into Persian. The researchers' aims at giving Persian EPI questionnaire to subjects were to prevent any ambiguity for testees and helping them comprehend items as fully as possible. This test quantified four psychological traits of extroversion (E scale), neuroticism (N scale), psychoticism (P scale) and Lie (L scale). It must be stated here that division of the learners into categories of introverts vs. extroverts is a thorny issue and is based on the number of response they provide to the Yes/No questions. In other words, introversion and extroversion are two extremes and people are usually placed somewhere between these two extremes. However for research purpose it is regarded as a convenient measure to view the subjects as either basically introvert or extrovert. Since this study focused on extroversion vs. introversion alone and it was not concerned with other psychological traits, the researchers administered only E scale items to participants. According to Eysenck (1970) it is believed that 16 percent of the participants which are at one side of the extreme below the mean (i.e. two and more Standard Deviation below the mean) are introvert and 16 percent of the participants which are at one side of the extreme above the mean (i.e. two and more Standard Deviation above the mean) are extrovert learners. So, based on the results of participants in the questionnaire, the researchers selected two groups of introvert and extrovert which every of them contains 32 students.

3. PET reading comprehension

In order to compare the result of our pre-test and post-test in piloting part of the study with a reading comprehension which is standardized, the reading section of PET was selected

and administered to students. The results of this test and pre-tests and post-tests were compared via Pearson Product moment Correlation in order to find the correlation between two tests.

4. Pre-test

After dividing homogenous groups of the participants in to two groups as experimental groups, the researchers administered a pretest of reading comprehension to the students in both classes. The test contained four reading passages followed by 25 multiple choice items. The pre-test was piloted to a group of intermediate learners in order to make sure that the items are standard. Pearson Product moment Correlation was conducted in order to calculate the correlation between the pre-test and PET reading comprehension test. The Pearson Product moment Correlation showed that correlation between Pre-test and PET reading comprehension was .657. For construct of this test, the researchers found the readability of each text through Flesch Readability Formula. It was done with the Word 2007 software and the mean score was calculated.

5. Post-test

After ten sessions of treatment, the researchers administered the post-test of reading comprehension to the students in both classes to get result of treatment. The post-test was piloted to a group of intermediate learners in order to make sure that the items are standard. Pearson Product moment Correlation was conducted and the correlation between Post-test and PET reading comprehension was .459. For constructing this test, the researchers found the readability of each text through Flesch Readability Formula. It was done with the Word 2007 software and the mean score was calculated.

C. Procedure

In the first step, the homogeneity test was used so as to evaluate the students' level and determine whether they are at the same level of proficiency or not. Therefore, a PET was selected since this kind of test is designed for Intermediate levels. Out of 300 learners taking the test, 200 learners were chosen. In the second step, The Eysenck Personality Questions was administered to select extrovert and introvert groups. This test quantified four psychological traits of extroversion (E scale), neuroticism (N scale), psychoticism (P scale) and Lie (L scale). It must be stated here that division of the learners into categories of introverts vs. extroverts is a thorny issue and is based on the number of response they provide to the Yes/No questions. Since this study focused on extroversion vs. introversion alone and it was not concerned with other psychological traits, the researchers administered only E scale items to participants. Then the students were divided into two groups of introverts and extroverts and both groups received the same pre-test and post-test in treatment. The number of students in each group was 32. The students in the two groups received 10 sessions of 45 minute treatment, three sessions of a week which contained teaching reading comprehension

through metacognitive strategies. First of all the pre-test was administered to students in order to check their current level of reading comprehension. The pre-test contained four reading comprehension passages which contained twenty five multiple choice items. After the students answered the pre-test, the main treatment started and the teacher tried to teach reading skill through metacognitive strategies. Strategies which were taught are as follows:

1. Inferring meaning (through word analysis): While I am reading try to determine the meaning of unknown words that seem critical to the meaning of the text.
2. Using background knowledge: While I am reading, I reconsider and revise my background knowledge about the topic, based on the text's content.
3. Guessing the later topics: While I am reading, I anticipate information that will be presented later in the text.
4. Centering learning: I take an overall view of the text to see what it is about before reading it and while I am reading, I pay closer attention to what I am reading.
5. Arranging and planning learning: While I am reading, I try to decide what to read closely and what to ignore (purposeful reading).
6. Evaluating learning: While I am reading, I try to determine which errors are important (those that cause serious confusion), track the source of important errors, and try to eliminate such errors, furthermore, I try to evaluate my own progress in reading, for instance, by checking to see whether I am reading faster and understanding more than 6 month ago, or whether I am understanding a greater percentage of each conversation. After the treatment was done, both groups received the same post-test to assess the effect of treatment session. It was done two weeks after the final session of treatment. The post-test was the same as pre-test. It contained four reading comprehension passages with twenty five multiple choice items. Then the mean obtained from the groups were compared through an independent sample T-Test and the overall result of both groups in pre-test and post-test was analyzed by 'ANCOVA' in order to find the significance difference between two groups.

D. Design

Among several research designs, the one which seems to best fit the purpose of the present study is the quasi-experimental research; pretest-posttest nonequivalent control design (Hatch and Farhady, 1981; Seliger and Shohamy, 1998), since there was no random selection and also there was no control over the enrollment of the participants in the institute or including any member to the groups of the study. Furthermore, a pretest and posttest were administered to the intact groups for the research purpose, respecting the design of the study, both experimental groups had the same condition for the treatment. Then a paired sample T-Test used to compare the mean scores of pre-test and post-test in extrovert group. Also another paired sample T-test was used to compare mean score of pre-test and post-test in introverted group. Then in order to find the exact difference between groups, 'ANCOVA' was used.

E. Data Analysis

The researchers used paired sample T- test to analysis and compare the means obtained from the pre-test and post-test in each group, to determine whether there existed a significant difference between being extrovert or introvert and reading comprehension progress.

At the beginning of the study, in order to determine whether there was any significant difference in the reading comprehension of the learners in the two groups, the statistical technique of paired sample T-Test was used to compare the mean of pre-tests and post-test simultaneously in each group. However, the researchers also benefited from the technique of ANCOVA to compare the mean scores of the two groups on the post-test and pre-test together.

IV. RESULTS

The purpose of this study is to investigate the significant effect of using metacognitive strategies on reading achievement of introverted and extroverted language learners. The data collection procedure was carefully performed and the raw data was submitted to SPSS version 19.0 (SPSS Inc., 1984) to calculate the required statistical analyses in order to address the research questions and hypotheses of this study. This part provides the detailed statistical analyses conducted throughout the research and testing the hypotheses of the study based on the obtained results. Every step which was taken in analyzing the obtained data is presented in form of tables and figures in this part.

In order to meet the above-mentioned objectives of the study, the following research questions were asked:

1. Does the use of metacognitive strategies have any significant effect on reading achievement of extroverted Iranian Intermediate learners?
2. Does the use of metacognitive strategies have any significant effect on reading achievement of introverted Iranian Intermediate learners?
3. Is there any significant difference between the effect of the use of metacognitive strategies on reading achievement of extroverted and introverted Iranian intermediate learners?

Based on the above research questions, the following null hypotheses were proposed:

H0 (1) Using metacognitive strategies has no significant effect on reading achievement extroverted Iranian Intermediate learners?

H0 (2) Using metacognitive strategies has no significant effect on reading achievement of introverted Iranian Intermediate learners?

Ho (3) There is not any statistically significant difference between the effect of the use of metacognitive strategies on reading achievement of extroverted and introverted Iranian intermediate learners.

A. Homogenizing Procedure

As described in the previous part initially a PET was given to the participants of this study (n = 300). The descriptive statistics of these participants' PET scores are presented in Table 1.

Table 1: PET Descriptives for all initial participants

	Statistic	Std. Error
Mean	29.9767	.48813
95% Confidence Interval for Mean	Lower Bound Upper Bound	29.0161 30.9373
5% Trimmed Mean	30.1667	
Median	30.5000	
Variance	71.481	
Std. Deviation	8.45465	
Minimum	7.00	
Maximum	45.00	
Range	38.00	
Interquartile Range	12.00	
Skewness	-.324	.141
Kurtosis	-.549	.281

In order to come up with homogeneous participants in terms of PET scores, those participants who had scored within one standard deviation below and above the mean were chosen as the final participants of the study. Based on Table 1, the mean PET score of all the participants is 29.97, and the standard deviation is 8.45. This means that all the PET scores within 21.52 and 38.42 could be chosen as the homogeneous scores which should be included in the final phase of the study. Figure 1 below displays the distribution of the PET scores on a normal curve.

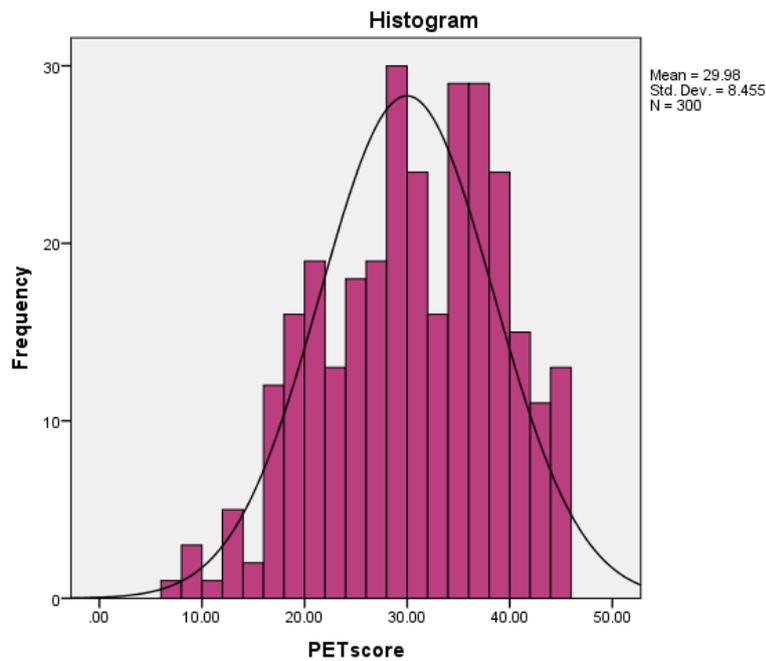


Figure 1

B. Readability of Pre-Test and Post-Test

Readability is defined as “a measure of understandability of written text as given by an analysis of a variety of factors including syntax, vocabulary, thematic expression and continuity of themes”.

In this study the readability indexes of 8 reading passages of pre-test and post-test were calculated through Flesch Readability formula. The score in this formula is on a scale of 0 to 100, the lower the score the more difficult the writing passage is to read. Table 2 shows the readability of reading comprehension texts in pre-test.

Table 2: Readability indexes of pre-test reading comprehension based on Flesch readability formula

Text	1	2	3	4	mean
readability	64.3	52.7	63.3	66.1	61.6

As the result shows the obtained mean score of four reading comprehension passages is 61.6 which shows the texts are standard according to Flesch readability formula.

Table 3: Readability indexes of post-test reading comprehension based on Flesch readability formula

Text	1	2	3	4	mean
readability	61.3	59	58.3	63.3	60.47

Table 3 shows the readability of reading comprehension texts in post-test. As the result shows the obtained mean score of four reading comprehension passages is 60.473 which shows the texts are standard according to Flesch readability formula.

C. Pilot Study

In order to determine validity of pre-test, both pre-test and PET reading test were given to a group of 20 people in a pilot study, and then the researchers study the reliability of reading comprehension through Pearson Product moment correlation. It is a measure of the strength of the relationship between two sets of data. According to this, correlation coefficient between two variables result in a value that ranges from -1.00 to +1.00, the more the value is close to +1.00, the more reliable the text is. As the table 4 shows the reliability analysis of pre-test reading comprehension and PET reading test.

Table 4: The reliability analysis of pre-test reading comprehension and PET reading test

Correlations		PET-test pilot	pre-test pilot
	Pearson Correlation	1	.512*
PET-test pilot	Sig. (2-tailed)		.021
	N	20	20

*. Correlation is significant at the 0.05 level (2-tailed).

Also the table 5 shows the reliability analysis of post-test reading comprehension and PET reading test.

Table 5: The reliability analysis of post-test reading comprehension and PET reading test

Correlations			
		PET-test pilot	post-test pilot
PET-test pilot	Pearson Correlation	1	.459*
	Sig. (2-tailed)		.042
	N	20	20

*. Correlation is significant at the 0.05 level (2-tailed).

The reliability of both pre-test and post-test are shown in the above tables which are both reliable.

D. Extroversion vs. Introversion Questionnaire

The Persian standardizes form of adult EPI (Eysenck Personality Inventory, 1986) was used to measure extroversion/ introversion trait of the participants. Since in this study we needed Extroversion/ Introversion scale and we did not need any other personality traits so, the E scale of the questionnaire was administered to 200 students in order to select the extrovert and introvert groups of the study. Table 6 shows the descriptive statistics for Extroversion vs. Introversion scale.

Table 6: Descriptive statistics for Extroversion vs. Introversion scale

		Statistic	Std. Error
Mean		17.9500	.33795
95% Confidence Interval for Mean	Lower Bound	17.2836	
	Upper Bound	18.6164	
5% Trimmed Mean		18.0333	
Median		18.0000	
Variance		22.842	
Std. Deviation		4.77930	
Minimum		5.00	
Maximum		28.00	
Range		23.00	
Interquartile Range		6.00	
Skewness		-.266	.172
Kurtosis		-.013	.342

Table 6 shows that the mean score of students in the questionnaire was 17.95 and the standard deviation was 4.77. According to Eysenck (1970) it is believed that 16 percent of the participants which are at one side of the extreme below the mean (i.e. two and more Standard Deviation below the mean) are introvert and 16 percent of the participants which are at one side of the extreme above the mean (i.e. two and more Standard Deviation above the mean) are extrovert learners. So, based on the results of participants in the questionnaire we selected two groups of introvert and extrovert which every of them contains 32 students.

V. CONCLUSION

The main concern of this study was to investigate this assumption that whether or not using metacognitive strategies can affect reading achievement of extrovert vs. introvert Iranian intermediate learners.

To assure and determine any significant change in the reading achievement of our group of subjects, in particular, extrovert and introvert learners after receiving treatment, the result of the performance of each group at the pre-test was compared with the result of its performance at the post-test stage through applying paired sample t-test. It revealed a significant difference in reading achievement of extrovert group; that means that the extrovert students benefited significantly more from the treatment which was conducted. In addition, the result of the paired sample t-test in extrovert group enabled the researchers to reject the first null hypothesis and therefore, the first research question was answered appropriately.

Performing paired sample t-test between pre-test and post-test scores in introvert group revealed no significant effect of treatment on reading achievement of learners. So, the second null hypothesis was supported and therefore, the second research question was answered appropriately.

Performing ANCOVA between the post-tests of two groups by including the pre-test means of the two groups as well as the covariate since it was not clear whether the groups were equal on their pre-test or not. The result of ANCOVA revealed that the pre-tests were significantly the same and the post-test were significantly different. So, the extrovert group had a better mean in post-test which showed the significant effect of metacognitive strategies on reading achievement. So, the third null hypothesis is rejected and therefore, the third research question was answered appropriately.

A. Summary of the Findings and Results

To test the hypotheses, two groups of Iranian intermediate learners were selected through the administration of a standardized PET. 200 students whose score fell one standard deviation above and below the mean were selected. Then, they were given Eysenck personality style inventory to answer. The questionnaire contained four scales and 90 items that students answered E scale items as extroversion vs. introversion. 64 students were selected from the two extremes of the scores which were divided into two groups of extrovert and introvert each contained 32 students. Then a pre-test which contained 25 multiple choice

items was prepared. The same process was done for the post-test. Before administering the pre-test and post-test in the study, the researchers piloted the test. In order to pilot the test, the researchers administered them to a group of 20. Then, the group answered PET reading comprehension test. Their reading comprehension scores were correlated with PET reading comprehension scores using Pearson Product moment correlation. The results showed that the correlation for pre-test was .512 and for post-test was .459. Next, the pre-test was administered to determine if there was any significant difference between two groups. The mean score of extrovert group was 18.06 and the mean score of introvert group was 17.15. After that, ten sessions of treatment were done and they contained teaching reading comprehension through using metacognitive strategies. After treatment the subjects of both groups took the post-test. The mean score of extrovert group was 21.34 and the mean score of introvert group was 17.34. Then, paired sample t-test was utilized to compare the mean score of pre-test and post-test in each group. The results showed that there is a significant difference between the mean score of pre-test and post-test in extrovert group. After that ANCOVA was used to compare the post-test of the experimental groups to see which has improved more on the post-test in comparison to its pre-test. The result of ANCOVA also showed that metacognitive strategies effect reading achievement of extrovert learners.

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