

Analyze the Impact of Control Source on Explicit and Implicit Memory

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ABSTRACT

The present research aims to study the effect of control source on explicit and implicit memory of female students. In this study, it was assumed that the internal locus of control has a significant impact on optimal performance of the statistical population in specific explicit and implicit memory assignments. The statistical population of the research includes 183 undergraduate student of Islamic Azad University of Karaj. Also in this study the measurement tools includes Rotter control source questionnaire (I-E), the cued recall test was used for the explicit memory and word stem completion test was used for implicit memory. This study consists of two parts. First, by Rotter control source questionnaire the statistical population was divided into internal and external groups. Then, statistical population's memory was tested by specific explicit and implicit memory assignments in two stages. In the interval time between the tests, unrelated entertaining assignments (20 to 30 minutes) were used. In order to avoid bias irrelevant to the research objectives, first the implicit test and then the explicit test was conducted. To analyze this study, the independent T statistical method in 5% and 1% levels was used. The results were not consistent with predictions and performance of individuals with internal locus of control in explicit and implicit memory tests showed no significant difference compared to those with external locus of control.

KEYWORDS: control source, explicit memory, implicit memory.

1 – INTRODUCTION

Studies about memory and its types in the past three decades attracted a lot of attention and have been enriched by large volume of scientific and laboratory studies in cognitive psychology. These studies were conducted in both normal subjects and in patients with brain damage. On the other hand in the control source impact domain, Julian Rotter (1966), one of the social learning theorists, assumes the interaction of character structure as a behavior orienting aspect and believes that a person's belief system is being developed in relation with the reinforcement source. In other words those who relate their successes and failures to their own ability and effort are expected to have internal locus of control. On the other hand those who relate the results to chance, fate or external factors are expected to have external locus of control (Tulving, 1972). Therefore, to understand the human personality, its constituent components and their effect on each other are very important. Unfortunately, there were few studies in the past few years distinguishing the two types of explicit and implicit memories in various variables such as control source. In general, these studies have shown that control source can have a qualitative and quantitative role in explicit and implicit memory function.

Simon (1963) proved that in memory tests, those with internal locus of control are affected by their life events when reminding a memory. Wolk and Du Cette (1974) found that individuals with internal locus of control perform better in intentional and accidental learning. Ellis and Franklin (1983) studying the effect of control source on explicit and implicit memory concluded that individuals with internal locus of control tend to semantic processing and get lower scores in free recall tests, and individuals with an external locus of control rely on perceptual processing. Thal et al. (1983) found that in all process conditions, those with internal locus of control have got better scores. Brooks and McKelvie (1986) also used the recognition assignment test to study the impact of source control in recalling items. Research results showed that individuals with internal locus of control have recalled items better. Landua and Hajime (1993) continuing the work of Ellis and Franklin and Thal et al. examined the effects of resource control on explicit and implicit memory in two experiments. In the first experiment, they began to examine the impact of source control on implicit memory, and the results showed that those with external locus of control are more talented in cognitive processing, because the implicit memory assignments rely on the obtained information and perceptual processing. In the second experiment they found higher rates in individuals with internal/ external locus of control in the explicit and implicit memory assignment. Results showed that those with external locus of control had higher scores in both tests. Both experiments offer evidence to confirm Ellis and Franklin hypothesis. According to researches on control source and memory, there was no certain result pertaining

one hundred percent correlation between these two variables. So the present study by a pattern tried to explore the effects of control source on explicit and implicit memory performance in the statistical population.

2 - The research hypotheses

In this regard, and given the background of the research, the following two hypotheses were formulated:

- 1 - The explicit memory performance of individuals with internal locus of control is different with the performance of people with external locus of control.
- 2 - The implicit memory performance of individuals with internal locus of control is different with the performance of people with external locus of control.

3 - RESEARCH METHODS

This study is a scientific - comparison or after the event research, which was conducted on two groups of statistical population with internal and external locus of control. In this research, internal and external locus of controls was independent variables. Dependent variables were two levels of explicit and implicit memory. Generally the memory performance of two groups of statistical population with internal and external locus of control were compared and analyzed by memory measurement tests. The distinction between two types of explicit and implicit memory in these two groups was investigated by specific memory measurement tests in two stages. The statistical test used, was the t test for independent groups.

3-1 Statistical population

The statistical population of this research was selected among the students of Islamic Azad University of Karaj. All students were female. Totally 183 people were participated in this study, who were selected using simple random sampling. Rotter control source questionnaire was given to all individuals in the statistical population. Those who achieved a score less than 9, were categorized as internal locus of control, and those who scored higher than 9 were categorized as the external locus of control (156 people had external locus of control, and 27 people had internal locus of control).

3-2 RESEARCH TOOLS

I. Rotter control source Questionnaire

To measure people's expectations, Julian Rotter in (1966) devised a scale that presently is known as the internal /external (I-E) control scale. This scale measures the internal monitoring and external monitoring position. This scale contains 29 articles that each article contains a pair of question (A and B) and people will be asked to mark one. Rutter prepared 23 article of the questionnaire with specifically to clarify the expectations of people about the control source. 6 other articles are neutralized materials that make structure and measured dimension ambiguous. Thus, in the 23 articles designated for grading, questions (a) score one and questions (b) are scored zero and the 6 examination divertive questions do not score. So only those who score 9 or more have external locus of control and those with lower scores have internal locus of control.

II. Explicit memory tests

The test used for explicit memory is cued recall test. In this method, in the learning stage people are faced with some words and in the test stage they should detect these words among other words they had not seen in the first stage. So explicit is the difference between score of recalling the words they had seen before and words they had not seen before.

III. Implicit memory test

The test used for implicit memory in this study is word stem completion.

In this test the final letters of the word are removed i.e. the initial 2 or 3 letters will be presented to the statistical population. Again, people are asked to complete it with the first word that comes to their mind. Here the priming effect is calculated by increasing the likelihood of completion of these words with the words have already been seen.

4 - Validity and reliability

Rotter control source questionnaire: the correlation of this test is obtained by the degree of social desirability in different samples, and its change range has been 35% to 40% (Grown and Marlow., 1964). The average and standard deviation of control source scale score is also calculated in American samples which is on

average, 8.75 and 4 for women and 8.72 and 3.59 for men. The final coefficient of this scale was calculated by Kuder Richardson Split-half method and was more than 70%.

Implicit and explicit memory assessment tests: the ingredients of each implicit and explicit memory test contains 150 words extracted from external sources (Watkins et al, 1992) (Denny and Hunt, 1992) (Matthews, 1989) and then with the help of an MA linguist, as a poll test all words were randomly examined among students of Allameh Tabatabai University and also many office workers affiliated to the Ministry of Health and Medical Education. After result extraction for each category, 30 words which had the highest frequency were selected as the words forming the implicit and explicit memory tests.

5- DATA ANALYSIS

The present study was conducted in two stages and separately for each of the two groups of statistical population. In the first stage, each person was randomly exposed to one of the three batches of cards (A. B. C). The experimenter showed each card for 5 seconds and asked them to remember the words in each card. After the first batch of 30 cards (Group A) and an entertaining assignment (the six-point puzzle), the pre-prepared recall form A was presented to the people and they were asked: "In this form the 2 or 3 letter of a stem of some of the words are written. Fill the above letters with the first word that comes to your mind. No time limit". The recall form A is the implicit memory test of the first step. Then the recall form B was presented and they were asked that with regard to the cards they have seen a few minutes before, complete the missing letters below, no time limit. In fact they were faced with some words and they should have detected the words they had not seen in the first stage. In the second stage, at first like the previous stage a batch of cards (except those used in the first stage) i.e. C cards (30 cards) were randomly selected and presented to the statistical population and after completing the entertainment assignment (visual – motion memory test of Bender Geshtalt) they were asked to complete the recall Form C. Except that in this stage the form C consists of 60 words that 2 or 3 letters of them have been written, of which 30 words were from previously provided words and the other 30 words were words that were not presented in the first and second stage. The experimenter directions to statistical population are the same as the first step.

6 – RESULTS

Findings from the questionnaires and tests were studied in the form of descriptive and inferential statistic findings. Table (1) presents the information about the number, average scores of explicit memory test, variance and t-test in the control source variable. As shown, the difference between the compared averages is 1.05. To calculate the significance of the calculated difference with 181 degrees of freedom and in the level of 1% and 5%, it was referred to the table and as the calculated t is smaller than the t in the table 2.57 and 1.96, this difference is not significant (Table 1).

Table 1. Function distribution of the two groups of statistical population in the explicit and inexplicit memory test and control source

Groups	Statistical indicators	N	X	S	t
Internal locus of control		27	5.37	30.78	1.05
External locus of control		156	4.17	28.07	

The data in Table (2) shows the information about inexplicit memory test in the first stage and control source in the two groups of statistical population qualified for internal and external locus of control. As can be seen, the difference between the compared averages in the t test is 0.37. In order to determine the significance of this difference with 181 degrees of freedom and the level of 5% and 1% it was referred to the table and as the calculated t was smaller than the t in the table 2.57 and 1.96, this difference is not significant.

Table 2: Function distribution of the two groups of statistical population in the inexplicit memory test in the first stage and control source

Groups	Statistical indicators	N	X	S	t
Internal locus of control		27	12.67	30.54	0.37
External locus of control		156	12.25	23.82	

The data in Table (3) shows the information about inexplicit memory test in the second stage and control source in the two groups of statistical population qualified for internal and external locus of control. As can be seen, the

difference between the compared averages in the t test is 1.13. In order to determine the significance of this difference with 181 degrees of freedom and in two levels of 5% and 1% it was referred to the table and as the calculated t was smaller than the t in the table 2.57 and 1.96, this difference is not significant.

Table 3: Function distribution of the two groups of statistical population in the inexplicit memory test in the second stage and control source

Groups	Statistical indicators	N	X	S	t
Internal locus of control		27	16.48	28.64	1.13
External locus of control		156	15.23	25.33	

To test the first hypothesis, based on differences in explicit memory performance of individuals with internal locus of control compared to those with external locus of control, t test was used. The observed T (1.05) is smaller than the expected t (1.96 and 2.57) at 5% and 1% levels. Thus the first hypothesis was rejected. To test the second hypothesis, in the first stage based on differences in implicit memory performance of individuals with internal locus of control compared to those with external locus of control, t test was used. The observed T (0.37) is smaller than the expected t (1.96 and 2.57) at 5% and 1% levels. Thus the second hypothesis in the first stage was rejected.

To test the second hypothesis, in the second stage based on differences in implicit memory performance of individuals with internal locus of control compared to those with external locus of control, t test was used. The observed T (1.13) is smaller than the expected t (1.96 and 2.57) at 5% and 1% levels. Thus the second hypothesis in the first stage was rejected.

7 – Debate and conclusion

The aim of this research was study the effect of control source on explicit and implicit memory. The results of this study showed that there is no significant difference between memory performance of the statistical population with internal and external locus of control in the two explicit and implicit memory components. This is inconsistent with the results of Ellis and Franklin (1983). Ellis and Franklin studied the impact of control source on explicit and implicit memory, and concluded that the internal categories compared to external categories more rely on semantic processing. Those who choose perceptual processing (external group) obtain a lower recall scores than those who choose semantic processing (internal group). Following the work of Ellis and Franklin (1983), Landua and Hajime (1993) in a similar research studied the effect of control source on explicit and implicit memory. They also concluded that those with external locus of control are more prepared in perceptual processing than those with internal locus of control. But they emphasized on conducting similar researches in this area. Therefore, as a general conclusion it can be stated that due to the novelty of this research field and the absence of a clear relationship between explicit and implicit memory and control source and contradictions in the midst, more research to clarify the certain relationship between these two variables is suggested.

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