THE RELATIONSHIP BETWEEN STUDENTS' IQ AND THEIR ABILITY TO USE TRANSITIONAL WORDS AND EXPRESSIONS IN WRITING

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1. INTRODUCTION

Teaching a second / foreign language has been a controversial issue during the past decades. There are sets of factors which influence how successful a person is at learning a second language. Littlewood (1984) stated that a person's motivation to learn and the qualities of the opportunities to learn are two of these factors. The third set of factors is those which make up the person's ability to learn. This refers to the intelligence and a set of more specific language learning abilities called "language aptitude".

There is a link between general intelligence and second language learning ability (Gardner & Lambert, 1972). Pimsleur (1971) stated that a school learner's average grade in all school subjects was often a good means of predicting how good he would be at language learning. However it has also become clear that success in second language learning is related not only to general cognitive ability, but also to a more language specific set of learning abilities which are usually called "Language Aptitude". What is clear is that there is a very close relationship between intelligence and acquisition. According to Henmon intelligence is intellect plus knowledge. Intelligence may be defined, in general, as the power of good responses from the viewpoint of truth or fact. Spearman's theory is that any intellectual operation, such as adding a column of figures or translating a passage of French into English, there are two factors involved. First the specific skills or abilities as of arithmetic and language, and a general ability which is common to all the specific abilities, a sort of common fund of intellectual energy. It is this common factor which others have called "general intelligence," which explains the positive correlation between special abilities.

English like other languages, includes four skills, i.e. listening, speaking, writing and reading. Chastain (1988) stated that writing with its unique features, contributes to the overall language learning. As with oral communication, one can classify writing activities as either skill-getting or skill-using. Interaction through the written message is the goal: what is written should be a purposeful communication, at the practical or imaginative level, expressed in such a way that it is comprehensible to another person. Skill-getting for oral or written communication, is based on knowledge of the way the language operates. It must be realized that writing a language comprehensibly is much more difficult than speaking it. When one writes, s/he is, as it were, communicating into space. When one communicates a message orally, s/he knows who is receiving the message.

As cited before there is a close link between intelligence and language acquisition. It seems that writing as a part of language learning has a positive correlation with intelligence. One of the best single measures of overall intelligence as measured by intelligence tests is vocabulary. This result (see, for example, Matarazzo, 1972) has seemed rather surprising to some because vocabulary tests seem to measure acquired knowledge rather than intelligent functioning. The ability to use function words, such as cohesive devices, or transitional words, is said to be directly interwoven with students' intelligence.

This study was conducted to determine whether there is such a positive relationship between intelligence and using transitional words and expressions. Therefore, this research is an attempt to compare the language learners' intelligence and their ability to use transitional words and expressions properly in writing.

In keeping with the purpose of the study, the following questions were posed:

Q1: Is there any significant relationship between language learners' IQ and their ability to use transitional words and expressions properly in writing?

Q2: Is there any significant relationship between language learners' IQ and their sex?

Q3: Is there any significant relationship between the scores obtained by the students on integrative and discrete point tests?

In order to answer the above mentioned questions and keeping the safe side at the same time, the following null hypotheses were proposed:

H1: There is no significant relationship between language learners' IQ and their ability to properly employ transitional words and expressions in writing.

H2: There is no significant relationship between language learners' IQ and their sex.

H3: There is no significant relationship between the scores obtained by the students on integrative and discrete point tests.

2. METHOD

In order to answer the pre-determined questions, the researcher undertook different procedures. Conducting a pilot study as a starting point to come up with a general idea regarding the main questions of the study and validating the cloze test were the first two steps taken by the researcher. In general, first the students' general proficiency level was determined. Second, an IQ test along with a cloze test was administered to measure the students' IQ and their ability to use transitional words and expressions. Third, the same subjects were required to write a passage of normal length (about 300 words) to allow the researcher to determine whether there is any significant difference between their scores on cloze test and their free writing test.

This study was designed to answer the following questions:

Q1: Is there any significant relationship between students' IQ and their ability to use transitional words and expressions in writing?

Q2: Is there any significant relationship between students' IQ and their sex?

Q3: Is there any significant relationship between the scores obtained by the students on integrative and discrete point tests?

A TOEFL test was administered to ninety-seven students. Sixty students who scored more than 70 percent of the total score (100) were selected randomly as the subjects of the study. So they composed a linguistically homogeneous group. They were all Iranian university students both male and female. All of them were studying English as a foreign language as their major field of study at Azad University of Takestan at both junior and senior levels. They had passed more than 80 credits including writing courses which were of prime importance to the present study. These courses demand some practice in using transitional words and expressions on the part of the students. All of the students were aware that they were under experiment; therefore, their writing and their scores were surly affected by their knowledge. Their age range also varied from 20 to 30 years.

Ex post facto designs are often used when the researcher does not have control over the selection and manipulation of the independent variable (Hatch & Farhady, 1982). Here the researcher was concerned with the type and/or degree of relationship between the two variables rather than with a cause-and-effect relationship. The researcher had no control over what the subjects had already acquired in their college courses.

Correlational designs are the most commonly used subset of Ex post facto designs. In correlational designs, a group of subjects may give data on two different variables (namely, IQ and cloze test scores in hypothesis one of this research study).

The schematic representation of this design would be:

$$T_1 \qquad\qquad\qquad\qquad T_2$$

Since the investigator was concerned with raw scores in this part of the study and the variables were continuous, the pearson product moment correlation was used here.

In order to measure the relationship between IQ and sex, another ex-post facto design called a criterion group design was adopted in the study. In this design, two groups of subjects (male & female) were compared on one measure (IQ). The schematic representation of this design would be:

$$G_1 \qquad\qquad\qquad\qquad T_1$$
$$G_2 \qquad\qquad\qquad\qquad T_2$$

Since one of the variables in the correlation was nominal (sex), a T-test was run to determine the relationship between the subjects' IQ and sex.

Gathering data for research question, the following instruments were utilized to meet the pre-determined goals: TOEFL test, Raven (non-verbal) Intelligence Test (RIT), Selected Cloze Test and a Free Writing Test.

The procedures followed in this study can be viewed from two different perspectives. First, from the temporal point of view and second from the procedural point of view.

a. Temporal point of view

The whole of the study could be divided into two main parts as far as time was concerned. During the first phase of the study, a pilot study was conducted to bring the researcher into a general idea, especially, regarding the newly developed cloze test. Because of the close similarity between the first phase of the study, and because of the procedures adopted here coincide with the following steps taken in the study, the overall discussion is left to the next part.

b. Procedural point of view

Both during the pilot study and the main part of the study, the researcher undertook various procedures in order to gather data and used different statistical techniques to analyze the collected data. One can bring the different procedures adopted in this study under the following headings:

a. Developing the test

b. Scoring the test and data gathering

c. Analyzing the data

During the different processes of this study, different kinds of tests were utilized among which only one was developed and standardized by the researcher. The other tests, TOEFL test and RIT, had been developed and standardized already.

To measure the subjects' ability in using transitional words and expressions, a controlled writing test in the form of a cloze test was developed. First the approximate level of difficulty of the cloze passage as well as the materials covered by the subjects during their process of study were calculated to be at the same level of difficulty

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(See Appendices A & B). Having a passage with appropriate level of difficulty, then test validation, as well as determining item facility (IF), item discrimination (ID),and choice distribution (CD) were done.

The data gathered on cloze and the other tests were analyzed using Statistical Package for Social Sciences (SPSS) (Hatch & Farhady, 1982).

Three out of four tests were objectively scored. The last test, i.e. the free writing test, was scored using ESL composition profile. Each free writing test was scored three times by three independent raters, including the researcher. Then the mean score of each test was calculated.

To address the three null hypotheses posed by the researcher, two pearson product moment correlations along with a T-test were conducted. For the first and the third hypotheses, the correlation coefficient for IQ and cloze tests along with cloze and free writing tests were used to determine the significance of relationship between these variables.

As to the second hypothesis, a T-test was conducted for the two groups (both male and female) to determine the difference between these two groups as far as IQ was concerned.

3.   RESULTS AND DISCUSSION

As it was pointed out earlier, the main purpose of this study was to determine whether there was any significant relationship between students' IQ and their ability to use transitional words and expressions in writing. However, this was just one part of the study. Investigating the relationship between students' IQ and their sex constituted the next part of the study. At last, the study intended to determine the relationship between the scores obtained by the students on integrative and discrete point tests.

Two different statistical procedures were applied to reject or confirm the three null hypotheses of the study.

3.1 Analysis For Hypothesis I

The first hypothesis in the study was:

H1: There is no significant relationship between language learners' IQ and their ability to properly employ transitional words and expressions in writing. The results of the study indicated that both IQ and the ability in using transitional words and expressions were highly correlated with each other.

The correlational study between IQ scores and that of transitional words and expressions was conducted by utilizing the pearson product moment correlation formula. As it is shown in Table 1, the correlation coefficient existing between IQ and using transitional words and expressions was very high.

Table 1: Correlation of IQ and cloze tests

Variable	Cases	Mean	Std. Dev	Correlation
IQ	60	46.35	6.55	.60
Cloze Test	60	17.62	9.04	
P<.05	d.f = 58	critical value = .25		

It is worthwhile to mention here that the highest possible score for IQ test was 60 and that of cloze test was 25.

The correlation coefficient for IQ and cloze test was .60 ($p<.05$, critical value = .25) showing a statistically significant correlation between the two variables. So the first null hypothesis was rejected.

3.2 Analysis For Hypothesis II

The second hypothesis in the study was:

H2: There is no significant relationship between language learners' IQ and their sex.

To address the second null hypothesis in this research study, a T-test was conducted to determine whether there was a significant difference between the two groups (male and female) as far as IQ was concerned. Table 2 shows the results of the T-test.

Table 2: T-test to compare males and females according to their IQ scores

Group	Cases	Mean	Std. Dev	t-observed
Group 1	33	44.58	7.45	
				-1.76
Group 2	27	48.53	4.77	

P<.05	d.f = 58	t-critical = 2.00

Group 1: Male   Group 2: Female

The t-observed for the T-test was estimated to be -1.76. However, the critical value of t at the level of $p<.05$ was 2.00 .

As Table 2 shows, there seems to be no significant difference between the two groups at the level of $p<.05$. Therefore, the results of the T-test in this part verified the second null hypothesis and revealed that there was no significant difference between males and females regarding their IQ scores. So the second null hypothesis was sustained.

3.3 Analysis For Hypothesis III

The third hypothesis in the study was:

H3: There is no significant relationship between the scores obtained by the students on integrative and discrete point tests.

The last hypothesis was mainly concerned with the students' scores on integrative and discrete point tests. Here, like the first null hypothesis, a statistical procedure of correlation coefficient was applied. The pearson product moment correlation formula was utilized to measure the correlation between discrete point and integrative tests which were administered to the same subjects. Table 3 shows the results of this part of the study.

Table 3: Correlation of discrete point and integrative tests

Variable	Cases	Mean	Std. Dev	Correlation
Integrative Test	60	72.05	7.03	
				.53

Discrete-point	60	17.62	9.04

P<.05   **d.f = 58**   **critical value = .25**

It should be mentioned here that the highest possible score for the integrative test was 100 and that of discrete-point test was 25.

Since the observed value of r was .53 (p<.05, critical value = .25) which is higher than the critical value, the third null hypothesis is rejected safely. This showed the positive relationship between integrative and discrete point tests.

4.   CONCLUSIONS AND IMPLICATIONS

There are sets of factors which influence the success of a person in learning a second language. Language learners, like others, face a lot of problems during their long process of language learning. The effectiveness of the education received by the students depends on several factors among which IQ is of main concern to the present study.

It is reinforced that there should be a very close relationship between intelligence and acquisition. It seems that writing as a part of language has positive correlation with students' IQ. The ability to use function words including transitional words and expressions is said to be directly interwoven with students' IQ (Wilkinson, 1989).

In this study, the researcher posed three null hypotheses to determine the relationship between students' IQ and their ability to use transitional words and expressions in writing. On the basis of the three null hypotheses made by the researcher and the findings reached in this research study, several conclusions can be drawn in this part.

First, the test of transitional words and expressions provide a good measure of an individual's IQ. The finding supported the idea that those who performed well on cloze test did also perform well on the IQ test. So a test of transitional words and expressions can be a good indicator of students' IQ.

Second, this study showed that although the shared amounts of IQ by both males and females was not identical, the difference was not statistically significant. Third, the findings showed that both discrete point test and integrative test measured the same trait. The discrete-point approach attempts to assess language abilities through different subtests that sample distinctive elements from each skill, aspects of the skill, and a component of the skill. Integrative test, however, attempts to measure the actual aspects of activities that one must normally perform in using language (Farhady, Birjandi, Jafarpoor, 1994).

The results of the present study have both theoretical and practical implications. The theoretical findings concern with the nature of language learning and the factors which affect language achievement.

The findings of this research have pedagogical implications on both language teaching and language testing as well. The scores obtained on integrative and discrete point tests showed that those who scored high on integrative test did the same on discrete point test. It signifies the fact that both integrative and discrete point tests are highly correlated in a positive way. That is, one of them can be taken for measuring the trait and the other test would similarly come to the same result.

Looking from the teaching viewpoint, teachers, due to the main role played by transitional words and expressions in writing skill should draw students' attention to their usage and getting them to master them through using different tasks and methods. The students should be familiar with the functions played by transitional words and expression in texts. They should also know how differently they are used in a text to make it coherent.

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Appendix A

Difficulty Level of the Cloze Test

Average Readability 25.15

Standard Deviation 3.61

Readability Range 21.54-28.76

Readability of the Cloze Test 24.28

Appendix B

Difficulty Level of the Sample Books along with the Related Page and Paragraph Numbers

TITLE	READABILITY

1.   Teaching English as a Second or Foreign Language

     By: M. Celce-Murcia & Mc Intosh (1979)

     Page: 179   paragraph(s):1...27.8

2.   The Study of Language

     By: G. Yule (1985)

     Page:88   paragraph(s):1..28.04

3.   Testing English as a Second Language

     By: Harris (1969)

     Page: 115   paragraph(s): 1&2...28.03

4.   English though Reading

     By: W. W. S. Bhasker &N. S. Prabhu (1975)

     Page: 108   paragraph(s): 2...19.01

5.   Communicate What You Mean

     By: C. W. Pollock (1982)

     Page: 73   paragraph(s):1&2...23.7

6.   Study Skills

     By: R. Yorkey (1970)

     Page: 179   paragraph(s): 2&3..24.8