Chapter 2

METHODOLOGY AND STATISTICAL TESTS EMPLOYED

2.1 METHODOLOGY

As we briefly discussed in the previous chapter, we have adopted the methodology taken by Poulisse and Schils (1989), Nijmegen Project, but we have made a departure from this model by extending and expanding it to the writing skill and translation from Persian to English. The methodology applied is discussed as follows:

2.1.1 Subjects

In this study, there were two groups of thirty adults at the intermediate and advanced levels of learning English language. Subjects were the students of BA English Language Teaching at the Islamic Azad University, Tabriz Branch, in Tabriz. The subjects in the first group were fifteen students who had formally completed a six-year studying English at secondary and high school levels for at
least two hours per week, and had appeared in a national level university entrance examination and had been selected based on their performance in English papers and their interest to pursue English as their major for higher education. At the time of testing the subjects in the first group were mainly in the second semester of their eight-semester program. The second group consisted of fifteen students of English major who were in the seventh or eighth semester. They, too, had the same schooling and almost four years of intensive training of English. They were on the verge of graduation. Both groups came from high middle or high class of the society. They spoke Turkish and Persian side by side since childhood as they noted in their answer sheets. In the university, they were taught English Literature, Writing Skills, Linguistics, Comparative Linguistics, Teaching Methodology, Testing, etc at length, as already discussed in Chapter One. The students were selected at random and their proficiency level was determined on the basis of the national university entrance test plus four years of studying at the university in the case of second group.

2.1.2 Tasks

To get a clearer picture of the cognitive decisions and psychological processes, manifested and depicted in the communication strategies used to overcome linguistic hindrances while communicating a concept or involving in a descriptive or expository task or interacting with someone or writing in the second language, we expanded the work on communication strategies done by
Poulisse and Schils (1989) to include the examination of the problems in five tasks instead of three, and explore the reduction strategies. We explain the procedure employed in each task separately as follows:

2.1.2.1 Task One: To Refer to Twenty-Five Photographs of the Objects and Abstract Nouns

Accomplishing reference or concept communication (referring to nouns) was explored in Task One. The items shown in the twenty photographs (appendix I) are:

1. Eggplant
2. Armpit
3. File or Rasp
4. High Chair
5. Squirrel
6. Try-Square
7. Mouse Trap
8. Walker or Trolley
9. Swing
10. Big-Wheel
11. Dulcimer
12. See-Saw
13. Stool
14. Weighing-scale
15. Reed-Pen
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16. Iron Brush
17. Fox Cap
18. TV Table
19. Pincer
20. Denim Jacket

Along with the above concrete nouns there were five abstract nouns as:

21. Resistance or Strength
22. Trust
23. Obey
24. Industrious; Hard working
25. Merciful

The latter concepts, written in Persian on separate cards, were shown one at a time.

2.1.2.2 Task Two: To Produce a Short Story Based on Pictorial Story

This task was constructed to examine the problems in an expository context. The story was taken from an elementary pictorial story book (appendix II). Each picture consisted of several items which students were asked to explain, following the sequential order of the story. Here, the concepts were not in isolation. Deliberately, the learners were given opportunity to skip or more strategically to avoid the items for which they didn’t have a linguistic symbole in English. The groups acted as their own control group as they were
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asked to produce the story first in English and then in Persian. Both versions were compared, later on, while coding the data. The utterances produced in Persian were assumed to be more comprehensive, and detailed.

2.1.2.3 Task Three: To Retell Four One-Minute Short Stories in English Based on the Stories Told to the Learners in Persian

Four passages of the book by Alexander (1965) were selected for this task (appendix III). The passages were translated into Persian and recorded on a tape and then played thrice to the learners. Translation was used as another method to investigate the creativity of the subjects. Each short story, again, consisted of some references to be communicated in full detail.

2.1.2.4 Task Four: Interview

This task was constructed with an eye to create an atmosphere extremely similar to the natural context of the real-time L2 communication. Every individual was interviewed for fifteen minutes, in order to delve into the problems stated in the hypotheses. The main difference of this task with the other tasks was the presence of an interlocutor and the potential feed backs form the interviewer that the learner might have received during the interview. Designation of this interactive factor provided a potential source of appealing for the assistance in situations where the learner fails to express the ideas.
2.1.2.5 Task Five: To Write the English Version of a Story Given to the Learners in Persian

The composition of this task was based on two ideas, (a) translational aspect of the task, (b) amassing evidences in the writing skill. Similarly, another text from Alexander (1965) was selected and translated into Persian and then was given to the learners to be translated into English. The full text along with its phonemic transcription, the translation, and the original text are given in the appendix IV.

2.2 PROCEDURES

Initially a pilot test was conducted with a small number of the learners to eliminate any fallibility and improve the reliability of the testing procedures. Later, the task dependency factor of the CSs and non-conformity of data elicitation led the investigator to proceed with different procedures in each task, which are discussed in the following paragraphs.

2.2.1 Task One

Twenty objects were photographed or selected from Corel Draw Software with the maximum effort to capture them in isolation. The objects were selected based on the subjects' familiarity with them and the assumed lack of linguistic knowledge in the part of the learners to convey these concepts. The photographs were shown to each group separately under the same condition. Each picture was shown by an overhead projector for five minutes and the students were
asked to give the English term of the objects or to explain the pictures in whatever manner that they felt to be most effective. In some cases, they were asked to explain one object out of various identical items. The utterances were tape-recorded and later on transcribed. Then, we labeled the communication strategies elicited in the data following, primarily, the classification of Poulisse (1994). But as mentioned before, we made a departure from this classification as we observed some CSs which neither could fit into, nor have been explored and reported in the said approach. Anew and expanded classification has been schematized in Chapter 3 which is based on the data collected in the present research.

2.2.2 Task Two

A pictorial story was given to each subject and they were asked to construct a short story based on the pictures. They were asked to produce the story initially in English and later in Persian. Maximum precision and elaboration were requested at the time of production. The utterances were recorded and transcribed later on as in Task One.

2.2.3 Task Three

To launch this test, four one-minute passages of the book by Alexander (1965), were translated into Persian. Each story was recorded on an tape and was played three times to ensure the complete perception of the details. The students were asked to reproduce the stories in English. A similar approach was
adopted in all four stories. As in the previous tasks, the utterances were tape-recorded and transcribed. A similar approach was taken to codify and label the CSs.

2.2.4 Task Four

Each subject was interviewed individually for fifteen minutes by one of the teachers of Islamic Azad University, Tabriz Branch. The topics of the interview were mainly on cooking, shopping, going to university, job opportunities, personal hobbies, and education. Because of some difficulties we couldn’t do video recording, so consequently para-linguistic strategies such as gestures, mimes were missed out of the recording. The usual transcription of the data from the tapes and transcription of the utterances were done later on.

2.2.5 Task Five

One passage of the above-mentioned book was selected to conduct this test (appendix IV). It was translated into Persian. The text was given to the learners. They were asked to write (translate) the passage in English. There was no time constraint and they were given sufficient time to complete the task. The same procedure was applied to codify the strategies.
2.3 STATISTICAL ANALYSIS

2.3.1 Terms and Rationale

2.3.1.1 Analysis of Variance (ANOVA)

When we have sets of parametric data and we want to test the hypothesis that the scores of the various groups differ we normally use a technique to investigate how much of the variability in these sets of observations could be attributed to different causes. "As the name implies analysis of variance examines the variance of the whole sets of scores" (SPSS, 1993). In one-way analysis of variance several different samples are drawn. The data is, then, tested to see if its variability (as measured by its variance) is all random, or if part of it is the result of systematic differences between the samples. Through testing the null hypothesis, one-way analysis of variance tests to show whether all the samples have been drawn from the same parent population.

In one-way analysis of variance the crucial statistic is the $F$ value, the ratio of the mean square due to treatment (between groups) and the mean square due to error (within groups). In ANOVA test, sample variances are divided into two components, i.e. within the samples and between the samples. These are compared using the F-test. The output of the tests show the value of $F$ and the $F$ Prob. arising by chance, if the $F$ Prob. (probability) is less than 0.05, one can conclude that there is a significant difference between the groups, and if it is greater than 0.05, we may conclude that no difference exists between the groups.
The nature of the ANOVA test, as explained above, perfectly fits the type of the data we had and wanted to compare. That is to say, by means of the ANOVA test we could compare two proficiency groups or compare and contrast the effect of the task factor on the performance of these two groups through the five tasks. When two groups are compared to find out the direction of the difference between the groups, as ANOVA test does not show which group is greater than the other, we used the two-tailed t-test to find out the direction of this difference. The results of these tests are normally shown in the last column of the related tables in this project. However, in the case of the comparison of more than two groups the post hoc test of Student Newman-Keuls have been used to compare the groups or tasks, whichever applicable. Now, we define some of the main terms used throughout this investigation.

2.3.1.2 Mean

The arithmetic average of a set of values in a distribution is referred to as mean. The mean of set of scores is obtained by adding up the all the scores and then dividing this sum by the total number of observation. The formula for the computation of mean is:

\[
\text{Mean} = \frac{\text{some of all values}}{\text{total number of values}}
\]

or technically as Frank & Altoen (1995) put it as “the arithmetic mean of N observation is the sum of the observations divided by N” in the following formula:

\[
\bar{x} = \frac{\sum x}{N}
\]
2.3.1.3 Standard Deviation (SD)

The most useful "measure of variability which involves all the numbers in a set, not the two of them, for the variables with an interval or ratio level of measurement is the Standard Deviation. It is immensely related to the variance, which is regarded as another measure of variability. It is defined in SPSS (1993) as "measure of dispersion around the mean, equal to the square root of the variance. The standard deviation is measured in the same units as the variance itself." To obtain SD, mean of the distribution should be calculated, then mean should be subtracted from each score \((x_i - \bar{x})\), next each one of the scores should be squared to get rid of the negative sign \((x_i - \bar{x})^2\), then all the squares of these scores should be added up \(\sum_{i=1}^{N}(x_i - \bar{x})^2\), the next step is to divide the total by the number of scores, yielding a result which is called Variance; the last step is to take the square root of the variance, yielding the standard deviation. In algebraic expression they can be written as:

\[
\text{Var}(x) = \sigma^2 = \frac{\sum_{i=1}^{N}(x_i - \bar{x})^2}{N}
\]

and

\[
SD = \sqrt{\frac{\sum_{i=1}^{N}(x_i - \bar{x})^2}{N-1}}
\]

As Butler, p.36 (1985) suggests we will obtain a biased estimate of SD in we divide by N as in the SD formula, but if we divide by (N-1) we will obtain an unbiased estimate.
2.3.1.4 Variance

It is defined in SPSS (1993) as "a measure of dispersion around the mean, equal to the sum of square deviations from the mean divided by the one less than the number of cases. The variance is measured in units that are the square of those of the variable itself."

2.3.1.5 Standard Error (SE)

"A measure of how much the value of the mean may vary from sample to sample taken from the same distribution. It is the standard deviation of the distribution of all possible means when samples of the same size are repeatedly taken from a distribution" (SPSS, 1993).

2.3.1.6 Student-Newman-Keuls Test

Being a post hoc test, it is defined in SPSS (1993) as a test which favors comparisons of means pair-wise, by the use of the standardized range with equal sample size. When the harmonic average all groups are selected, the test also compares pairs of means within homogenous subsets by a stepwise procedure. The extreme differences are tested first and then the means are placed in decreasing order.
2.3.1.7 Two-tailed t-test

"The t-test is a parametric test which is used to test whether the difference between the means of two sets of scores is statistically significant" (Foster, 1993, p. 259) "the independent t-test is used to compare the means of two groups of subjects i.e. when different individuals were allocated to group 1 and group 2." In a two-tailed test, one does not specify, beforehand, which group would have the higher mean.