

## **CHAPTER IV**

### **FINDINGS AND DISCUSSION**

This chapter contains findings gathered after analyzing the correlation of language aptitude and English second language learners' mastery of conditional sentences. The analysis included analyzing the correlation of language aptitude and English second language learners' mastery of conditional sentences by using Pearson product moment correlation coefficient. The next steps were analyzing the coefficient of determination and level of significance for both variables. Furthermore, the study also analyzed the correlation of language aptitude's three constituent abilities such as Rote Memory, Phonetic Coding, and Grammatical Sensitivity with the result of the test on conditional sentences for the learners.

#### **4.1 The Correlation of Language Aptitude and English Second Language Learners' Mastery of Conditional Sentences**

##### **4.1.1 Score Tabulation**

This study used two main instruments; the first was the Modern Language Aptitude Test (MLAT) to measure the English second language learners' aptitude, while the second one was test on conditional sentences which was used to measure the second language learners' mastery of English conditional sentences. The MLAT consisted of five parts and 25 questions in total. As mentioned in *Chapter III*, Part I consisted of 4 questions, Part II consisted of 5 questions, Part III consisted of 4 questions for each part, Part IV and Part V consisted of 6 questions for each. One point was given for every right answer, while the wrong answer scored zero.

Twenty questions were available on test on conditional sentences. The test consisted of 10 essays and 10 matching exercises regarding conditional sentences in various types. Each participant collected 1 point

for giving the right answer, while the wrong answer caused them in getting no point. The total scores on both tests are presented in Appendix I.

Based on the total score of both tests, the lowest score of language aptitude test is 12, while the highest score is 22 from 25 available questions. In test on conditional sentences, the lowest score is 6, while the highest score is 13 from 20 available questions. Unfortunately, no students are able to achieve a full mark in both tests. The highest score in MLAT or language aptitude test which was collected by the sample of this study is 22 instead of 25, while the highest score in test on conditional sentences is 13 instead of 20.

Besides calculating the score of language aptitude as a whole, the study also calculated the score of three constituent abilities of language aptitude which were also investigated in the study. The scores of three constituent abilities of language aptitude are presented in Appendix II.

In accordance to the table in Appendix II, the highest score of Rote Memory is 10, while the lowest score is 8. The maximum score for Rote Memory is 10, after combining Part I (4 questions) and Part V (6 questions) in the language aptitude test. Sixteen subjects of the study are able to achieve the maximum score in Rote Memory, while the rest are able to get score range between 8 and 9.

In the case of Phonetic Coding, the highest score is 7, while the lowest score is 0. The maximum score of Phonetic Coding is 9 after combining Part II (5 questions) and part III (4 questions) in the MLAT. The subject of the study are not able to get a full mark in Phonetic Coding, instead they only get a score range from 0 to 7.

The highest score of Grammatical Sensitivity is 6. It is from the total 6 questions of Part IV in the MLAT. Out of 20 English second language learners in the study, only 2 subjects who get the highest score. The lowest score of Grammatical Sensitivity is 0 and only 1 subject who manages to get the score. The rest 17 subjects are able to get a score range from 1 to 5.

#### 4.1.2 Preliminary Data Analysis: Descriptive Statistics

The descriptive analysis is given to provide information regarding two variables in the study. The information includes standard deviation (SD), sample variance, range, minimum and maximum score. Along with the descriptive statistics, this chapter also provides information regarding the measurements which are needed in this study. As mentioned in *Chapter III*, the study used language aptitude test, which is called the Modern Language Aptitude Test (MLAT), and test on conditional sentences for 20 students who were willing to volunteer for the study.

The MLAT consisted of 25 questions, while test on conditional sentences consisted of 20 questions. The MLAT was used to measure the subjects' language aptitude and their abilities in aptitude's constituent abilities, such as Rote Memory, Phonetic Coding, and Grammatical Sensitivity, while test on conditional sentences was used to measure their mastery of the material. The following table summarizes the descriptive statistics of investigated variables.

Table 4.1

Descriptive Statistics (N = 20)

Variables	Items	Points	Mean	Standard Deviation (SD)	Sample Variance	Maximum	Minimum
Language Aptitude	25	25	16.2	2.38	5.64	22	12
Rote Memory	10	10	9.7	0.66	0.43	10	8
Phonetic Coding	9	9	2.8	1.54	2.39	7	0
Grammatical Sensitivity	6	6	3.85	1.57	2.45	6	0
Conditional Sentences	20	20	11.23	1.77	3.11	13	6

As shown in the Table 4.1, the mean of language aptitude which measured by the Modern Language Aptitude test is 16.2 (SD = 2.38), which is 64.8% of the total score (25), while the mean for test on conditional sentences is 11.23 (SD = 1.77), which was 56.15% of the total score (20). The sample variance of the data ranged from 0.43 to 5.64.

In MLAT, there are five main parts in which the test takers are expected to answer. Part I [Number Learning] and Part V [Paired Associate] were used to measure the test takers' memory, in this case is called Rote Memory. Part II [Phonetic Script] and Part III [Spelling Clues] were used to measure the test takers' Phonetic Coding ability, while Part IV which is called Words in Sentences was used to measure the test takers' sensitivity of grammatical concept or in this case is called Grammatical Sensitivity.

#### **4.1.3 Language Aptitude and English Second Language Learners' Mastery of Conditional Sentences**

In order to find out the correlation of language aptitude and English second language learners' mastery of conditional sentences, this study used the Modern Language Aptitude Test (MLAT) to measure the learners' language learning ability, while test on conditional sentences was used to measure learners' mastery of conditional sentences. Using Pearson product moment correlation coefficient, the relationship between language aptitude and English second language learners' mastery of conditional sentences in the study is 0.35. The figure 4.1 elaborates the scatter diagram or best-fit line of the correlation of language aptitude and English L2 learners' mastery of conditional sentences.

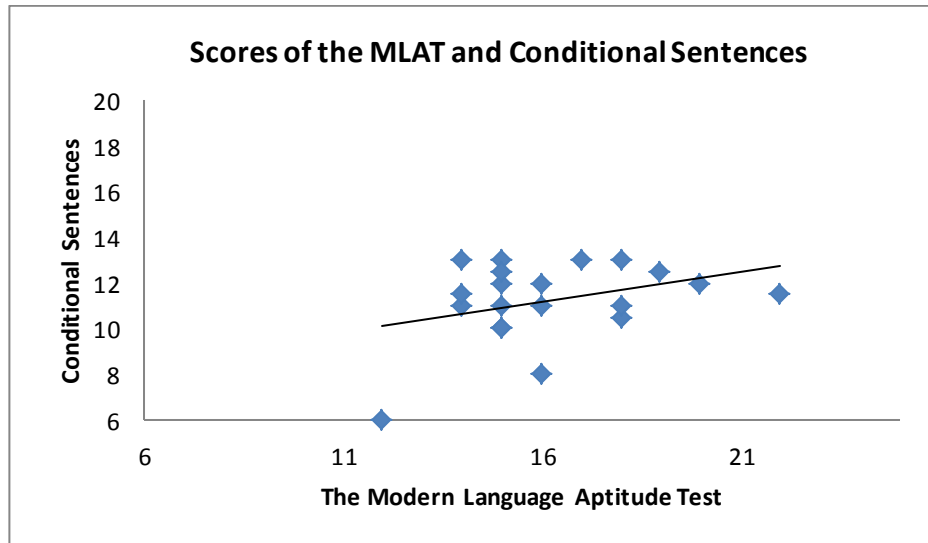


Figure 4.1 The Scatter Plot of MLAT and Test on Conditional Sentences ( $N = 20$ )

From the figure above, it is shown that there is a linear relationship between language aptitude which is represented by horizontal axis (variable X) and English L2 learners' mastery of conditional sentences which is represented by vertical axis (variable Y). The dots of the scatter plot represents the distribution of the two variables, in this case the scores of the Modern Language Aptitude Test and test on conditional sentences taken by the samples of this study. Through the figure above, it appears that the relationship or the association of both variables is linear positive.

According to Evans (1996), if the absolute value of  $r$  ranges from .20 to .39, the relationship reflects a weak positive relationship. Since the absolute value of  $r$  on the relationship between language aptitude and English second language learners' mastery of conditional sentences is 0.35, it means the relationship reflects a weak positive relationship.

#### 4.1.3.1 Rote Memory

Rote Memory as one of the constituent abilities in Carroll's language aptitude theory is also investigated in the study. Since Rote Memory relates to language aptitude, it means that there are two independent variables to be related to conditional sentences as the dependent variable. After applying the formula of multiple correlations to find out the correlation of the variables, it is found

that the value of  $R$  of language aptitude and Rote Memory with English second language learners' mastery of conditional sentences is 0.62. The result emphasizes that the two independent variables and the learners' mastery of conditional sentences defines a strong relationship since the value of  $R$  is closer to 1 (Bluman, 2012).

To see whether Rote Memory employs linear relationship with English second language learners' mastery of conditional sentences, the figure 4.2 below explains the scatter diagram or best fit-line for a linear relationship. The diagram is based on the scores of Rote Memory, which can be measured by using Part I [Number Learning] and Part V [Paired Associates] in the Modern Language Aptitude Test, and test on conditional sentences.

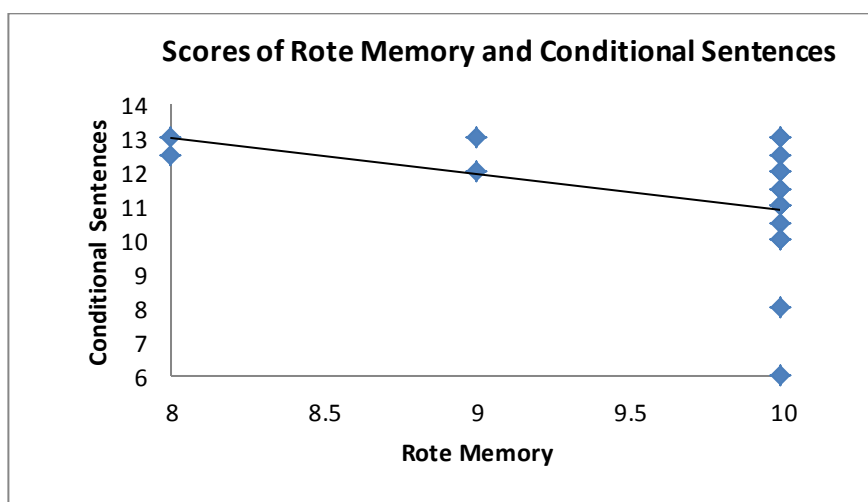


Figure 4.2 The scatter plot of Rote Memory and Test on Conditional Sentences (N = 20)

From the figure above, it is shown that there is a linear relationship between Rote Memory which is represented by horizontal axis (variable X) and English L2 learners' mastery of conditional sentences which is represented by vertical axis (variable Y). The dots of the scatter plot elaborates the distribution of the two variables, in this case the scores of Rote Memory, which is measured by Part I [Number Learning] and Part V [Paired Associates] in the Modern Language Aptitude Test, and test on

conditional sentences taken by the samples of this study. Through the figure above, it appears that the relationship or the association of both variables is linear negative.

#### **4.1.3.2 Phonetic Coding**

Another constituent ability in language aptitude which is investigated in the study is Phonetic Coding. It can be measured by Part II [Phonetic Script] and Part III [Spelling Clues] in the Modern Language Aptitude Test [MLAT]. Similar to Rote Memory, Phonetic Coding and language aptitude are two independent variables ( $X_1$  and  $X_2$ ), while English second language learners' mastery of conditional sentences is dependent variable ( $Y$ ).

In accordance to the formula of multiple correlations, the value of  $R$  of language aptitude and Phonetic Coding with English second language learners' mastery of conditional sentences is 0.55. Looking at the obtained  $R$  of the investigated variables, it appears that there is a strong association between investigated variables. A strong association ranges from 0.51 to 1.00 (Punithavalli & Sharmi, 2013). The value of  $R$  of language aptitude and Phonetic Coding with English second language learners' mastery of conditional sentences is also closer to 1.00, so it means the association is stronger (Bluman, 2012).

Furthermore, Figure 4.3 explains the scatter diagram or best fit-line for a linear relationship. The diagram is based on the scores of Phonetic Coding and test on conditional sentences.



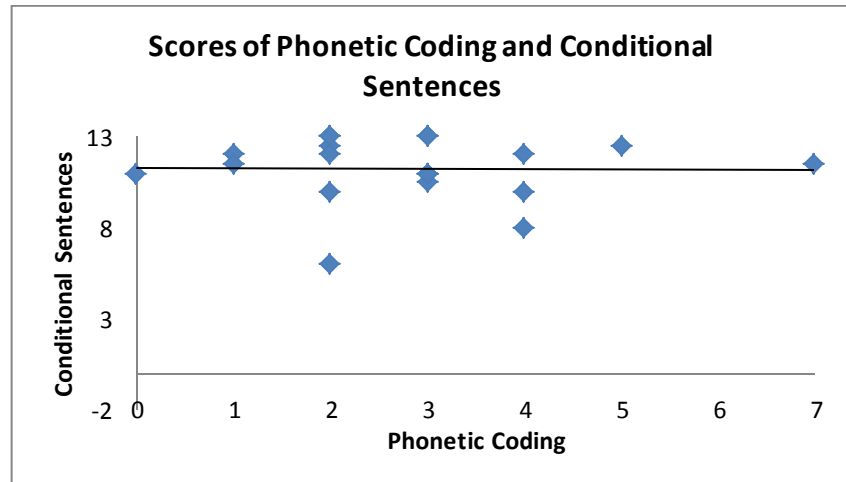


Figure 4.3 The scatter plot of Phonetic Coding and Test on Conditional Sentences (N = 20)

Based on the figure above, it is shown that there is a linear relationship between Phonetic Coding which is represented by horizontal axis (variable X) and English L2 learners’ mastery of conditional sentences which is represented by vertical axis (variable Y). The dots of the scatter plot defines the distribution of the two variables, in this case the scores of Phonetic Coding, which is measured by Part II [Phonetic Script] and Part III [Spelling Clues] in the Modern Language Aptitude Test, and test on conditional sentences taken by the samples of this study. Through the figure above, it appears that the relationship or the association of both variables was linear negative.

#### 4.1.3.3 Grammatical Sensitivity

The last constituent ability of language aptitude which is also investigated in the study is called Grammatical Sensitivity. The ability can be measured by using Part IV [Words in Sentences] in the Modern Language Aptitude Test (MLAT). Using the formula of multiple correlations, the value of *R* of language aptitude and Grammatical Sensitivity with English second language learners’ mastery of conditional sentences is 0.73. Looking at the obtained *R* of the investigated variables, it appears that there is a strong association between investigated variables. A strong association

ranges from 0.51 to 1.00 (Punithavalli & Sharmi, 2013). The value of  $R$  of language aptitude and Grammatical Sensitivity with English second language learners' mastery of conditional sentences is also closer to 1.00, so it means the association is stronger (Bluman, 2013).

To see whether Grammatical Sensitivity employs linear relationship with English second language learners' mastery of conditional sentences, the figure 4.4 below explains the scatter diagram or best fit-line for a linear relationship. The diagram is based on the scores of Grammatical Sensitivity and test on conditional sentences.

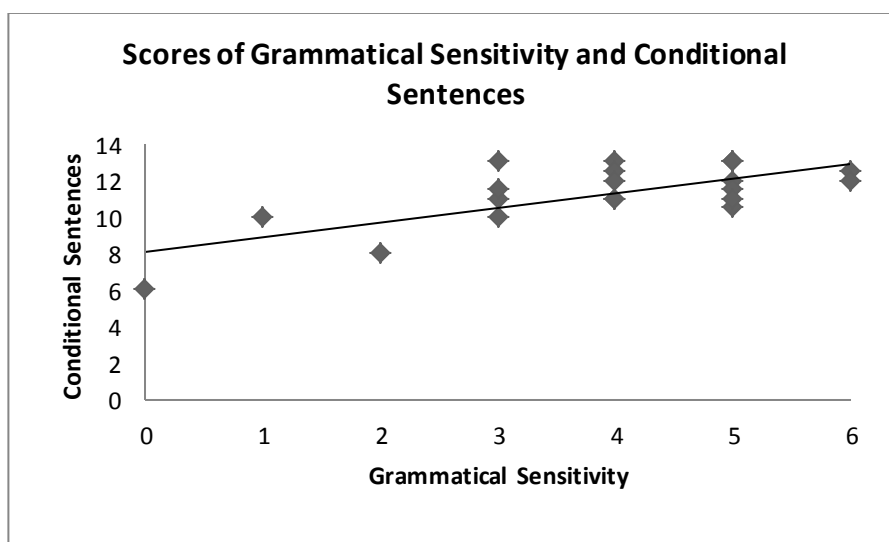


Figure 4.4 The scatter plot of Grammatical Sensitivity and Test on Conditional Sentences ( $N = 20$ )

Figure 4.4 above explains the scatter plot of the relationship between Grammatical Sensitivity and English second language learners' mastery of conditional sentences. It reveals that there is a linear relationship between Grammatical sensitivity, which is represented by horizontal axis (variable X), and English L2 learners' mastery of conditional sentences which is represented by vertical axis (variable Y). The dots of the scatter plot defines the distribution of the two variables, in this case the scores of Grammatical Sensitivity and test on conditional sentences taken by

the samples of this study. Through the figure above, it can be concluded that the relationship or the association of both variables is linear positive.

Compared to the two other constituent abilities (Rote Memory and Phonetic Coding), Grammatical Sensitivity has the strongest correlation to English second language learners' mastery of conditional sentences. It is expected since the study also dealt with the concept of conditional sentences which is one of the important subjects in comprehending English grammar. Grammatical Sensitivity itself in Carroll's language aptitude theory is "the ability to recognize the grammatical functions of words (or other linguistic entities) in sentences structures" (Carroll, 1981, p. 105).

#### **4.1.4 Coefficient of Determination of Language Aptitude and English Second Language Learners' Mastery of Conditional Sentences**

Coefficient of determination can be defined as "the percent of the variation in the values of the dependent variable (Y) that can be 'explained' by variations in the value of the independent variable (X)" (Taylor, 1990, p. 37). To put it simply, coefficient of determination determines the degree of contribution of variable X to variable Y. Coefficient of determination ( $r^2$ ) can be obtained by squaring the obtained  $r$  (Taylor, 1990).

The obtained  $r$  of language aptitude and English second language learners' mastery of conditional sentences in the study is 0.35 and the squared  $r$  ( $r^2$ ) or the degree of contribution is 0.12. In other words, language aptitude as variable X contributed 12% to English second language learners' mastery of conditional sentences. It also can be concluded that language aptitude explains 12% of English second language learners' mastery of conditional sentences.

#### 4.1.5 Level of Significance

Level of significance in a correlation is used to indicate “that the observed sample data provides ample evidence to reject the null hypothesis that the population correlation coefficient parameter (*rho*) is zero thereby concluding that the population correlation coefficient is not equal to zero” (Taylor, 1990, p. 37). In other words, the level of significance is needed to reject null hypothesis. In order to find the level of significance, it is necessary to calculate the t-score. Before calculating the t-score, the alternative hypothesis needs to be formed. The study used two tailed alternative hypothesis where  $H_1 : \rho \neq 0$  ( $\rho < 0$ ,  $\rho > 0$ ), and the null hypothesis where  $H_0 : \rho = 0$ .

Choosing the 0.05 level of significance for a two tailed test with 18 degree of freedom (df) and  $t = 2.101$ , the study investigates whether the correlation of language aptitude and English second language learners’ mastery of conditional sentences is statistically significant. After calculating the result by using the formula of the standardized t statistic for  $r$  as mentioned in *Chapter III*, the standardized t statistic of the two variables is 1.60. Since the t-value is larger than 0, the null hypothesis ( $H_0$ ) can be rejected. The alternative hypothesis that whether there is a significant relationship of the two variables can be accepted. The t-value of language aptitude and English second language learners’ mastery of conditional sentences is smaller than 2.101 ( $t_{\text{observed}} < t_{\text{table}}$ ). It appears that the relationship between the two variables is statistically significant.

While using the same hypothesis, Rote Memory, Phonetic Coding, and Grammatical Sensitivity used an  $F$  test for  $R$  by employing the formula in *Chapter III*. Choosing the 0.05 level of significance for two tailed test with 18 degree of freedom numerator (d.f.N) and 17 degree of freedom dominator (d.f.D), the study investigates whether there is a significant correlation among investigated variables.

The result shows that the  $F$  test for Rote Memory and language aptitude as independent variables and English second language learners’ mastery of conditional sentences as dependent variable is 5.31. Since the

result of  $F$  test is larger than 0, the null hypothesis ( $H_0$ ) can be rejected and the alternative hypothesis can be accepted. It can be concluded that there is significant relationship among language aptitude, Rote Memory, and English second language learners' mastery of conditional sentences. It also applies to Phonetic Coding ( $F = 3.78$ ) and Grammatical Sensitivity ( $F = 9.98$ ).

## 4.2 Chapter Summary

Using Pearson product moment correlation coefficient, it was found that the correlation of language aptitude and English second language learners' mastery of conditional sentences is 0.35. The study also investigates three constituent abilities of language aptitude, which include Rote Memory, Phonetic Coding, and Grammatical Sensitivity, with the learners' mastery of conditional sentences. The formula used is the multiple correlation formula.

The result of the study shows that the multiple correlation of language aptitude and Grammatical Sensitivity, as two independent variables, and the learners' mastery of conditional sentences is 0.73, which is stronger compared to Rote Memory ( $R = 0.62$ ) and Phonetic Coding ( $R = 0.55$ ). Furthermore, the related variables in the study also indicate a significant correlation to each other.

Table 4.2 below presents the result of multiple correlation of language aptitude and its three constituent abilities and English second language learners' mastery of conditional sentences.

Table 4.2 The Multiple Correlation of Language Aptitude and its Three Constituent Abilities with conditional sentences

The Multiple Correlation with Conditional Sentences	Language Aptitude		
	Rote Memory	Phonetic Coding	Grammatical Sensitivity
<i>R</i>	0.62	0.55	0.73
<i>F</i> *	5.31	3.78	9.98

\*  $H_0: \rho = 0; H_1: \rho \neq 0$  (two tailed), choosing .05 level of significance with d.f.N: 18 and d.f.D: 17;  $F = 2.01$

Overall, the relationship of investigated variables can be concluded by Figure 4.5 below.

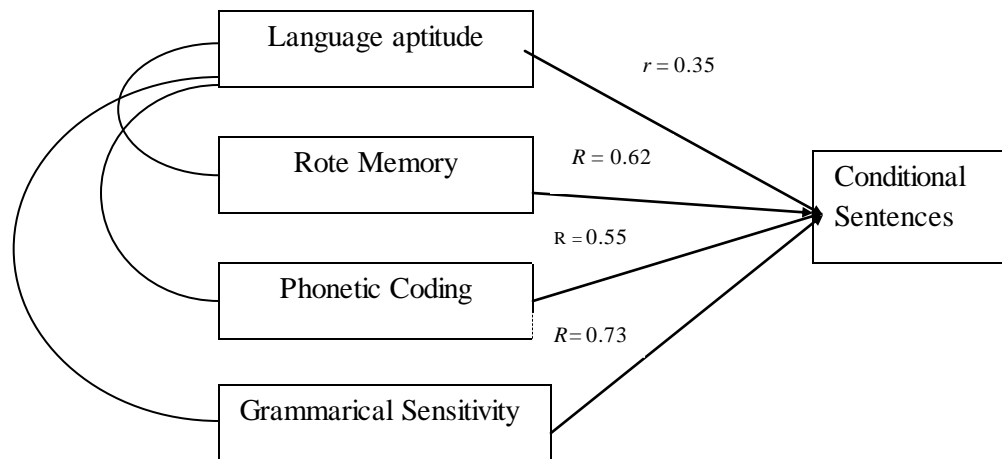


Figure 4.5 The relationship of investigated variables