CHAPTER 3

PRESENTATION AND ANALYSIS OF THE DATA

Chapter 3 consists of three subchapters; they are presentation of the data, quantitative analysis of the data, and interpretation of the result. In the data presentation, the data are presented in tables that show the respondents' competence in reading and speaking, and also respondents' score result along with its classification in doing the personality test. Then, in the data analysis, the data from those variables are then analyzed using ANOVA variance analysis. In the interpretation of the result, the writer interprets the results of the quantitative analysis.

3.1 Presentation of the Data

In order to discover the level of respondents' emotional, the writer takes the outcome of Personality Test administered at the end of the odd semester, in October 2004. Therefore, the first data is about the respondents' categorization in emotional level. The data are written in order based on the numbers of personality test sheets.

Table 3.1.1: The result on respondents' personality test for the emotional level group.

Respondents	Score on Personality Test	Group of Emotional Level
1	16	High Emotion
2	16	High Emotion
3	22	High Emotion
4	16	High Emotion
5	22	High Emotion
6	14	High Emotion
7	22	High Emotion
8	20	High Emotion
9	22	High Emotion
10	22	High Emotion
11	14	High Emotion
12	20	High Emotion
13	20	High Emotion
14	18	High Emotion
15	24	Average Emotion
16	30	Average Emotion
17	42	Low Emotion
18	26	Average Emotion
19	40	Low Emotion
20	24	Average Emotion
21	42	Low Emotion
22	30	Average Emotion
23	40	Low Emotion
24	34	Average Emotion
25	32	Average Emotion
26	30	Average Emotion
27	34	Average Emotion
28	24	Average Emotion
29	30	Average Emotion
30	26	Average Emotion

Table 3.1.1 above, shows the result score on respondents' personality test for the emotional level group. Here, the scores are directly show respondents' emotional level group, which consist of three groups; they are high emotional group, average emotional group, and low emotional group. As it has mentioned before in Chapter 2: Literature Review, that classification of these groups is based on the result that respondents get from the personality test, which has been distributed by the writer. For the result score 40-50, the respondents will be categorized as the low emotional group; for the result score 24-39, the respondents will be categorized as the average emotional group; and for the result score <24, the respondents will be categorized as the high emotional group **(see Appendix 1)**.

From the table above, the writer finds out that the data shows that there are three groups of emotional level which will become *number sample group variable* in the quantitative calculation. It finds out that the group of high emotion consists of 14 respondents, the group of average emotion consists of 12 respondents, and the group of low emotion consists of 4 respondents.

Table 3.1.2: The academic score's conversion from letter score into numeric interval score. Source: Faculty of Letter, Airlangga University.

Academic Score Conversion	
A	4
AB	3.5
B	3
BC	2.5
C	2
D	1
E	0

Table 3.1.2 above, shows the academic letter score conversion into the interval range of score.

Table 3.1.3: The academic score's conversion from letter score into numeric ratio score. Source: Faculty of Letter, Airlangga University.

Academic Score Conversion	
A	75-100
AB	70-74.9
B	65-69.9
BC	60-64.9
C	55-59.9
D	40-54.9
E	0-39.9

Table 3.1.3 above, shows the academic letter score from A to E along with its conversion into the numeric score. The conversion show the range of the numerical score from letter score A to E.

Table 3.1.4: The respondents' score on Reading 6 and Speaking 6.

Respondents	Reading 6		Speaking 6	
	Letter Score	Numeric Score	Letter Score	Numeric Score
1	A	4	BC	2.5
2	AB	3.5	B	3
3	B	3	B	3
4	A	4	A	4
5	A	4	A	4
6	AB	3.5	BC	2.5
7	A	4	AB	3.5
8	AB	3.5	B	3
9	B	3	A	4
10	B	3	A	4
11	AB	3.5	AB	3.5
12	A	4	B	3
13	C	2	B	3
14	A	4	B	3
15	AB	3.5	B	3
16	C	2	C	2
17	B	3	C	2
18	A	4	AB	3.5
19	A	4	B	3
20	A	4	AB	3.5
21	AB	3.5	AB	3.5
22	B	3	B	3
23	A	4	B	3
24	AB	3.5	B	3
25	A	4	AB	3.5
26	AB	3.5	B	3
27	AB	3.5	A	4
28	C	2	B	3
29	A	4	B	3
30	A	4	BC	2.5

Table 3.1.4 above, shows the respondents' score on Reading 6 and Speaking 6, the main subjects that must be taken by the students (the respondents) of the English Department, Faculty of Letters, Airlangga University, to accomplish their study. Here, the score are varied, from A to E. The writer also asserts the conversion of the letter score into the numeric score based on the interval score 4 to 0, so that the data can be done in quantitative calculation as the *individual from j sample variable* (X_{ij}). (See table 3.12)

In this research to estimate the value of population is based on the data from the sample. Then, it needs certain requirements or conditions. In inductive or inferential statistic, these certain conditions refer to the parameter from its population, which follow certain kind of distribution (e.g., normal distribution) and have the homogenous variance. This kind of inferential statistic is called *parametric statistic.* If those certain conditions are not available (usually because the number of the observation is small or the type of the data is nominal or ordinal) uses the nonparametric statistic.

Then we need variables to do the measurement or calculation. Variables are a concept, which has the score variation, which at least can be divided into two attributes, such as variables of sex, is divided into the attributes of men and women.

The scale of variable in a research can be divided into four kinds, they are (Singarimbun and Effendi, 1982 in Djarwanto, 2000: 3):

- Nominal
- Ordinal

- Interval
- Ratio

Based on the previous explanation, the writer decided to have the variables in the interval scale.

3.2 Quantitative Analysis of the Data

Before doing the variance analysis calculation, first we have to do the Kolmogorov-Smirnov test in order to find out whether the data from the samples have already had a normal distribution (as it has mention in previous subchapter, see pages 39-40). Bellow is the Kolmogorov-Smirnov test.

Table 3.2.1: One-Sample Kolmogorov-Smirnov Test.

		Emotion	Reading	Speaking
N		30	30	30
Normal Parameters	Mean	25,7333	3,4833	3,1500
	Std. Deviation	8,26682	,62261	,54377
Most Extreme Differences	Absolute	,150	,244	,242
	Positive	,150	,203	,242
	Negative	-,091	-,244	-,225
Kolmogorov-Smirnov Z		,820	1,337	1,325
Asymp. Sig. (2-tailed)		,512	,056	,060

a Test distribution is Normal.
b Calculated from data.

From the result of Kolmogorov-Smirnov test, it can be seen that each group has significancy value more than 0.05. So that in other words, the data have normal distribution. In order to convince, we can see the following graphic/diagram:

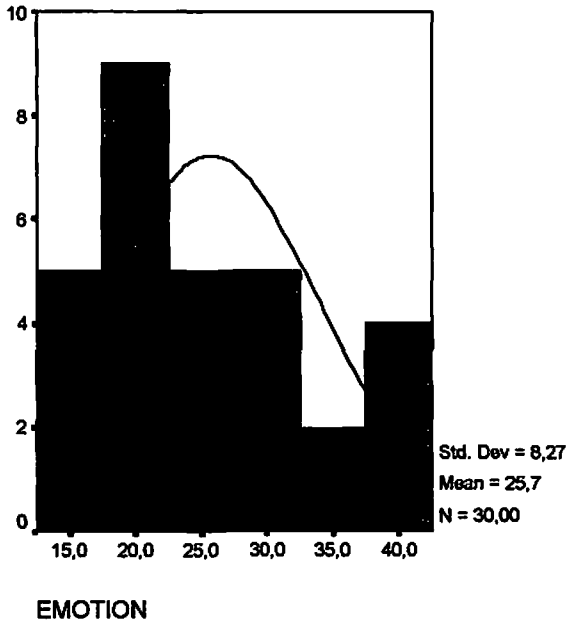


Figure 3.2.1: The histogram of One – Sample Kolmogorov-Smirnov Test on Emotional Level.

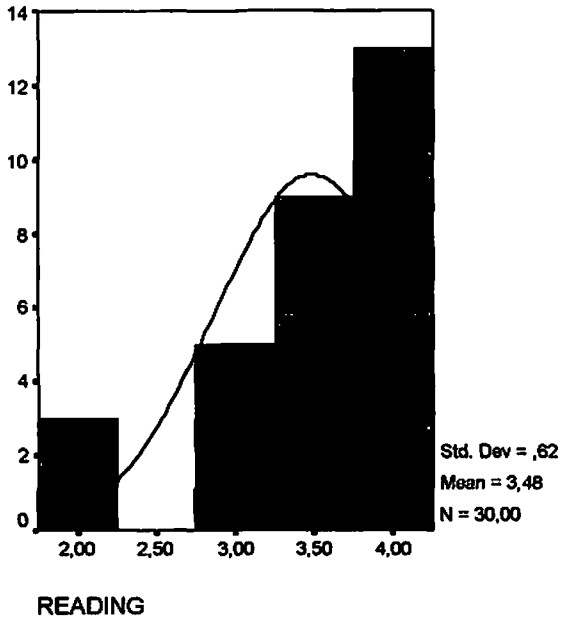


Figure 3.2.2: The histogram of One – Sample Kolmogorov-Smirnov Test on Reading Performances.

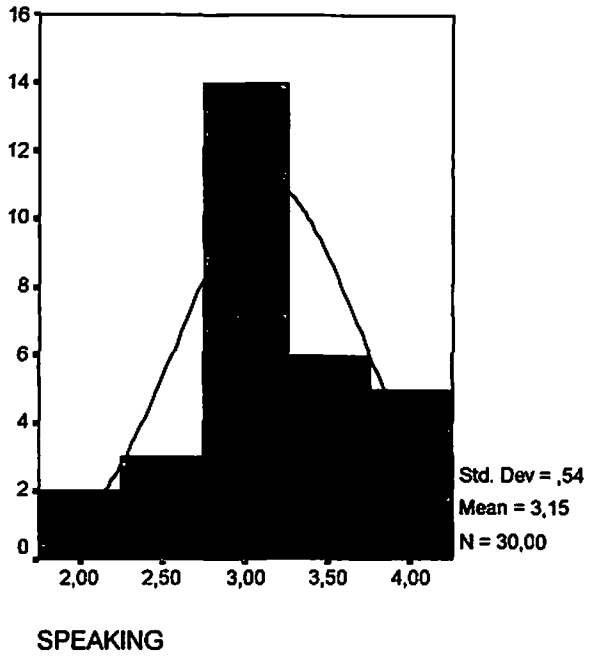


Figure 3.2.3: The histogram of One – Sample Kolmogorov-Smirnov Test on Speaking Performances.

Besides the normality test, there is the other test that we should do, that is homogeneity test of variance. This test is done in order to find out whether the data of reading and speaking performances, which are about to test, have homogenous variance's value or not. The test of homogeneity of variances is also known as Lavene's test. And here is the test:

Table 3.2.2: Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
READING	,368	2	27	,695
SPEAKING	,408	2	27	,669

From the Lavene's test of homogeneity of variance, it can figure out that the significancy value of reading and speaking performances are bigger than 0.05, they are 0.695 and 0.669, which indicate that data from reading and speaking performances have the homogenous variance between groups.

If all of the assumption has already been tested, the calculation can be continued to the next step. As it has mentioned before in Chapter 1 (in Technique of Data Analysis) that the writer performs a hypothetical testing based on the result of an investigation in more than two groups of samples. So, in this case, the writer uses the variance analysis (ANOVA) calculation.

The case that the writer performs is a hypothetical testing based on the result of an investigation in more than two samples. For instance, we are going to investigate whether the mean from 1st sample difference with the mean from 2nd sample, 3rd sample, etc are caused by chance factors or other factors that really significant.

The basic point in doing hypothetical testing is that if the mean from the part group are different one to another, then the combination of variance from the whole group will be bigger from part group's variance.

Schematically, the explanation will represented by the table bellow:

Table 3.2.3: The ANOVA data's samples.

	$Sample_1$	$Sample_2$	.....	$Sample_k$
	X_{11}	X_{12}	.....	X_{1k}
	X_{21}	X_{22}	.....	X_{2k}
	⋮ ⋮	⋮ ⋮		⋮ ⋮
	X_{n1}	X_{n2}	.....	X_{nk}
Total	T_1	T_1	.....	T_k

The explanation:

X_{ij} = i individu from j sample

k = number of sample group

n = number of sample

n_j = number of individu for each sample group

$$\sum_{j=1}^{k} n_j \; ; j = 1,2, \ldots , k$$

T_j = total of each individu value in j sample

$$T = \sum_{j=1}^{k} T_j \; ; j = 1,2, \ldots , k$$

The table above represents the data that will be used in the calculation of F distribution. Since the error probability that the writer uses is $\alpha = 0.05$, so that the formula for the Degrees of Freedom (*df*) for $\alpha = 0.05$ which is equal to $(k - 1)(n -$

k). In this research, the number of sample group (k) = 3 (three) and the number of sample (n) = 30 (thirty).

In variance analysis (ANOVA), the F distribution is used in the F-test that compares the degree of variability in two data sets. To calculate the F distribution, first we have to calculate $S_{\bar{x}}^2$ = *variance between mean* and *Variance within group*, as follow:

$S_{\bar{x}}^2$ **= variance between mean (VBM)**

$$S_{\bar{x}}^2 = \frac{\left(\sum_{j=1}^{k} \frac{T_j^2}{n_j}\right) - \frac{T^2}{n}}{k-1}$$

Variance within group (VWG)

$$\left[\left(\sum_{i=1}^{n}\sum_{j=1}^{k} X_{ij}^2\right) - \left(\sum_{j=1}^{k} \frac{T_j^2}{n_j}\right)\right] : (n-k)$$

So that the F distribution would be:

$$\mathbf{F} = \frac{\textbf{variance between mean}}{\textbf{variance within group}}$$

Bellow is the curve of the F distribution:

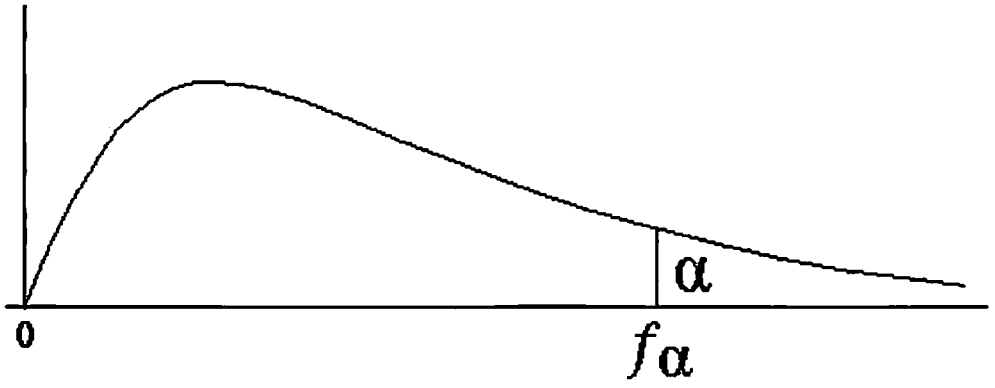


Figure 3.2.4: The μ estimation for normal sampling distribution (The F distribution curve).

The point of μ estimation for F - table is pointed in the α point 3.35 **(see Appendix 2)**, which means that the F value of the investigation lies between the degrees of Freedom for Numerator (k – 1) that is 3 – 1 = 2 and the Degrees of Freedom for Denominator (n – k) that is 30 – 3 = 27, since the formula for the Degrees of Freedom (*df*) for α = 0.05 is equal to (k – 1)(n – k).

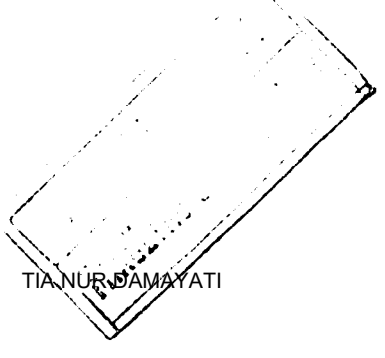
Before we start the calculation, it is better for us to rearrange the data first, so that it would be easier to do the rest of the calculation. The writer does the calculation by using one of the programs used in Windows, called ***excel***.

Here is the arrangement of research's data sample for reading performance:

Table 3.2.4: The research's data sample for reading performance.

High Emotional Group	Average Emotional Group	Low Emotional Group
3.5	3.5	4
3.5	4	4
4	2	3
3.5	4	3.5
4	4	
4	2	
3.5	3	
4	3.5	
2	4	
3	4	
4	3.5	
4	3.5	
3		
3		

Table 3.2.2 above shows the respondents' interval score on **reading 6**, which have been classified into three groups of emotional level based on respondents' result on personality test. So that according to the result on respondents' personality test for the emotional level group, in this table we have 14 scores for the high emotional group, 12 scores for the average emotional group and 4 scores for the low emotional group **(see table 3.1.1 and table 3.1.2)**.



Bellow is the calculation analysis using the formula, which is formed in a table. Here, the writer analyzes the hypothesis twice. First, would be the calculation for the hypothesis on reading performance among the emotional level group, and here are the calculations:

Table 3.2.5: The summary of research's data sample for reading performance.

SUMMARY	1	2	3	4
Groups	*Count*	*Sum*	*Average*	*Variance*
Column 1	14	49	3,5	0,346154
Column 2	12	41	3,416667	0,537879
Column 3	4	14,5	3,625	0,229167

The table above shows the summary of the research's data sample for reading performance **(see Table 3.2.4)**. If we take a look at table 3.2.4, we can see here that column 1 (high emotional group) is *count (n)* = 14 and *sum (GT/Group Total)* = 49, so that *average (GT/n)* = 3.5; column 2 (average emotional group) is *count (n)* = 12 and *sum (GT/Group Total)* = 41, so that *average (GT/n)* = 3.4; and finally column 3 (low emotional group) is *count (n)* = 4 and *sum (GT/Group Total)* = 14.5, so that *average (GT/n)* = 3.6.

Table 3.2.6: The ANOVA's Ms. Excel 2000 calculation for the hypothesis on reading performance.

ANOVA	1	2	3	4	5	6
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0,1375	2	0,06875	0,17	0,846927	3,35
Within Groups	11,10417	27	0,411265			
Total	11,24167	29				

The table above shows the ANOVA calculation for F - distribution that consist the calculation of $S_{\bar{x}}^2$ = **variance between mean (VBM)** and **Variance within group (VWG)**. Here, column 1 (*SS*) for Between Groups is the representation of the formula: $\left(\sum_{j=1}^{k}\frac{T_j^2}{n_j}\right)-\frac{T^2}{n}$ and column 2 (*df*) for Between Groups is the representation of the formula: $(k-1)$. While in column 1 (*SS*) for Within Groups is the representation of the formula: $\left[\left(\sum_{i=1}^{n}\sum_{j=1}^{k}X_{ij}^2\right)-\left(\sum_{j=1}^{k}\frac{T_j^2}{n_j}\right)\right]$ and column 2 (*df*) for Within Groups is the representation of the formula: $(n-k)$. So that column 3 (*MS*) is the representation of the column 1 / column 2. Then column 4 (*F*) is the representation of the column 3 - Between Groups / column 3 - Within Groups. Finally column 6 (*F crit or F table*) shows the number of 3.35 based on column 2 (*df*) which we can see in appendix 2.

From the table above, the calculation shows that F calculation < F table, which means that Hr0 is accepted. In further explanation, the analysis shows that there is **no** significant mean difference in reading performance among the emotional level group, which means that the emotional level groups do not influence one's ability in reading performance.

Here is the simpler form of the calculation:

Table 3.2.7: The ANOVA's manual calculation for the hypothesis on reading performance.

	High Emt	Avg Emt	Low Emt	T
N	14	12	4	30
Group Total	49	41	14,5	104,5
GT Sqr	2401	1681	210,25	10920,25
GT Sqr / n	171.5	140,0833	52,5625	364,0083
VBM	0.06875			
VWG	0.411265			
F	0.167167< 3.354131 Ho accepted			

The result is presented in a diagram as follow:

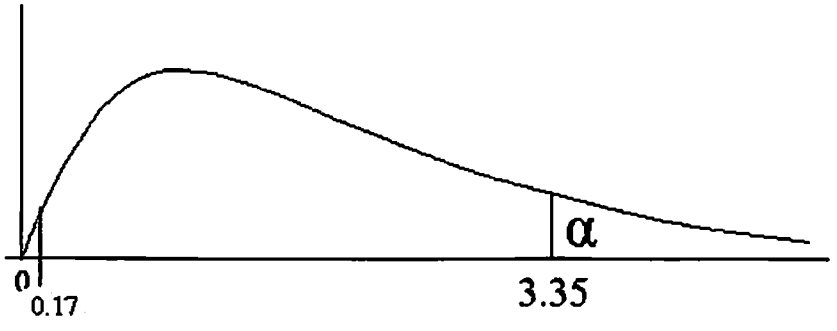


Figure 3.2.5: The μ estimation for reading performance sampling distribution.

Because the point of μ estimation for reading performance (0.17) is pointed far away from the α point (3.35), means that the F value of the investigation is lie far left of the F table, then Hr0 is accepted. It means that statistically there is no significant relationship between emotional level groups and reading performance.

Now, the writer continues to the second hypothesis, that is would be the calculation for the hypothesis on speaking performance among the emotional level group. Here is the arrangement of research's data sample for speaking performance:

Table 3.2.8: The research's data sample for speaking performance.

High Emotional Group	Average Emotional Group	Low Emotional Group
2.5	3	3
3.5	3.5	3
2.5	3	2
3	3.5	3.5
4	2.5	
3	2	
3	3	
3	3	
3	3	
3	3.5	
4	3	
3.5	4	
4		
4		

Table 3.2.6 above shows the respondents' interval score on **speaking 6,** which have been classified into three groups of emotional level based on respondents' result on personality test. According to the result on respondents' personality test for the emotional level group, in this table we have 14 scores for

the high emotional group, 12 scores for the average emotional group and 4 scores for the low emotional group **(see table 3.1.1 and table 3.1.2)**.

And here are the calculations:

Table 3.2.9: The summary of research's data sample for speaking performance.

SUMMARY	1	2	3	4
Groups	*Count*	*Sum*	*Average*	*Variance*
Column 1	14	46	3,285714	0,296703
Column 2	12	37	3,083333	0,265152
Column 3	4	11,5	2,875	0,395833

The table above shows the summary of the research's data sample for speaking performance **(see Table 3.2.8)**. If we take a look at table 3.2.8, we can see here that column 1 (high emotional group) is *count (n)* = 14 and *sum (GT/Group Total)* = 46, so that *average (GT/n)* = 3.28; column 2 (average emotional group) is *count (n)* = 12 and *sum (GT/Group Total)* = 37, so that *average (GT/n)* = 3.08; and finally column 3 (low emotional group) is *count (n)* = 4 and *sum (GT/Group Total)* = 11.5, so that *average (GT/n)* = 2.8.

Table 3.2.10: The ANOVA's Ms. Excel 2000 calculation for the hypothesis on speaking performance.

ANOVA	1	2	3	4	5	6
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0,61369	2	0,306845	1,04	0,36697	3,35
Within Groups	7,96131	27	0,294863			
Total	8,575	29				

The table above shows the ANOVA calculation for F - distribution that consist the calculation of $S_{\bar{x}}^2$ = **variance between mean (VBM)** and **Variance within group (VWG)**. Here, column 1 (*SS*) for Between Groups is the representation of the formula: $\left(\sum_{j=1}^{k}\frac{T_j^2}{n_j}\right)-\frac{T^2}{n}$ and column 2 (*df*) for Between Groups is the representation of the formula: $(k-1)$. While in column 1 (*SS*) for Within Groups is the representation of the formula: $\left[\left(\sum_{i=1}^{n}\sum_{j=1}^{k}X_{ij}^2\right)-\left(\sum_{j=1}^{k}\frac{T_j^2}{n_j}\right)\right]$ and column 2 (*df*) for Within Groups is the representation of the formula: $(n-k)$. So that column 3 (*MS*) is the representation of the column 1 / column 2. Then column 4 (*F*) is the representation of the column 3 - Between Groups / column 3 - Within Groups. Finally column 6 (*F crit or F table*) shows the number of 3.35 based on column 2 (*df*) which we can see in appendix 2.

From the table above, the calculation shows that F calculation < F table, which means that Hs0 is accepted. In further explanation, the analysis shows that there is **no** significant mean difference in speaking performance among the emotional level group, which means that the emotional level groups do not influence one's ability in speaking performance so far.

Here is the simpler form of the calculation:

Table 3.2.11: The ANOVA's manual calculation for the hypothesis on speaking performance.

	High Emt	Avg Emt	Low Emt	T
N	14	12	4	30
Group Total	46	37	11,5	94,5
GT Sqr	2116	1369	132,25	8930,25
GT Sqr / n	151.1429	114,0833	33,0625	297,675
VBM	0.31			
VWG	0.294863			
F	1.040636< 3.354131 Ho accepted			

The result is presented in a diagram as follow:

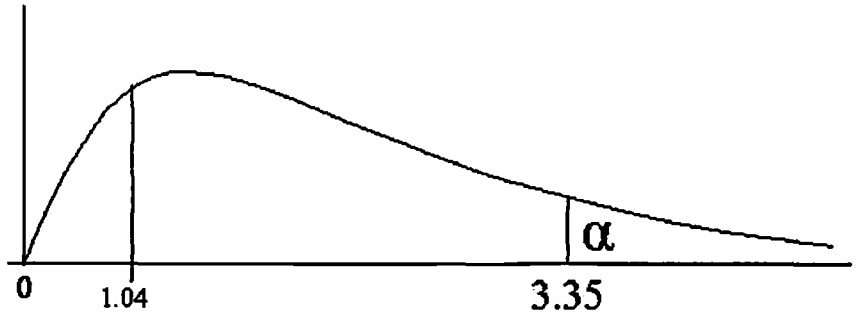


Figure 3.2.6: The μ estimation for speaking performance sampling distribution.

Because the point of μ estimation for speaking performance (1.04) is pointed away from the α point (3.35), means that the F value of the investigation is lie far left of the F table, then Hs0 is accepted. It means that statistically there is no significant relationship between emotional level groups and speaking performance.

3.3 Interpretation of the Result

The quantitative analysis of the data that has been calculated in the previous subchapters shows that there is a negative relationship between the group of emotional level with the reading and speaking performances. We can see from the ANOVA calculation that the individual emotional level may not influence one's ability whether in reading performance and speaking performance. Since the result of the study show that the differentiation in emotional level group among the respondents is not followed by the differentiation of quality in respondents' reading 6 and speaking 6 score. Here, we may assume that respondents who have low emotional level or average emotional level or high emotional level may has the same quality in performing their ability whether in reading and speaking performances. In other words, the respondents achievement whether in reading and speaking performances is not influenced by their emotional level groups.

Furthermore, it has been mentioned before, in Chapter 1 that the writer scopes and limits this study only around reading and speaking performances, which in this case, both reading and speaking performances have different basic kinds of comprehension. Reading performance is a kind of receptive comprehension, while speaking performance is a kind of productive comprehension; and around classification of the emotional level into three groups, based on the theory proposed by Carter and Russell (2004).

In addition, based on the statement of the problems, the writer only focus the objectives of this study on the significance in mean difference that may happen in reading performance among the emotional level group and also the

significance in mean difference that may happen in speaking performance among the emotional level group. And if there is a significant mean difference among the group then the research will be continued to find out which emotional level group has the most influence in reading performance and also which emotional level group has the most influence in speaking performance. However, since there is no significant differences, the analysis is concluded until this part.

CHAPTER IV

CONCLUSION AND SUGGESTION