

APPENDIX - A

APPENDIX - A

Learning TrialsExperiment II

Group I	Group II	Group III	Group IV	Group V
15	15	16	17	17
20	11	13	14	18
9	21	10	13	13
14	16	11	13	15
12	17	14	12	19
8	17	17	25	11
13	6	20	15	5
14	21	13	16	22
21	8	22	15	11
18	14	14	20	13
14	16	15	7	15
26	12	18	14	15
25	15	14	17	18
14	19	17	13	9
28	14	16	17	12
11	12	17	17	10

Table - I

RECALL SCORES

Gr. I (N=16)	5	6	6	6	7	7	7	7	8	8	8	9	9	10	10	11
Gr. II (N=16)	7	7	7	8	8	8	8	8	9	9	10	10	10	11	12	12

Group I - No Interpolation, No knowledge of recall
 Group II - No Interpolation, with knowledge of recall

	f	F
1	-	-
2	-	-
3	-	-
4	-	-
5	1	1
6	3	4
7	7	11
8	8	19
9	4	23
10	5	28
11	2	30
12	2	32

$N = 32$

$\frac{N}{2} = 16$

$l = 7.5$

$f = 8$

$F = 11$

$i = 1$

$$\begin{aligned} \text{Mdn} &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i \\ &= 7.5 + \left(\frac{16 - 11}{8} \right) 1 \\ &= 7.5 + \frac{5}{8} \\ &= 8.12 \\ &= 8 \end{aligned}$$

I	II	
5	8	Number of cases above Mdn.
11	8	Number of cases below Mdn.

$$\begin{aligned} \chi^2 &= \frac{N \left[(AD - BC) - \frac{N}{2} \right]^2}{(A + B)(C + D)(A + C)(B + D)} \\ &= \frac{32 \left[(5 \times 8 - 8 \times 11) - 16 \right]^2}{(13)(19)(16)(16)} \end{aligned}$$

$\chi^2 = 2.07$ with 1 df insignificant.

III

Table - 2

RECALL SCORES

Gr. III (N=16)	1	1	2	2	2	2	2	2	2	2	2	3	3	4	4	6
Gr. I (N=16)	5	6	6	6	7	7	7	7	8	8	8	9	9	10	10	11
Group III	- With interpolation, without knowledge of recall															
Group I	- Without interpolation, without knowledge of recall															

	f	F		
1	2	2	N =	32
2	9	11	$\frac{N}{2}$ =	16
3	2	13	l =	4.5
4	2	15	f =	1
5	1	16	F =	15
6	4	20	f =	1
7	4	24	l =	1
8	3	27	l =	1
9	2	29	l =	1
10	2	31	l =	1
11	1	32	l =	1
12	-	-	l =	1

$$\begin{aligned}
 \text{Mdn} &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) l \\
 &= 4.5 + \left(\frac{16 - 15}{1} \right) 1 \\
 &= 4.5 + \frac{1}{1} \\
 &= 4.5 + 1 \\
 &= 5.5 = 5
 \end{aligned}$$

III	I	
1	15	Number of cases above Mdn
15	1	Number of cases below Mdn

$$\begin{aligned}
 \chi^2 &= \frac{N \left[(AD - BC) - \frac{N}{2} \right]^2}{(A+B)(C+D)(A+C)(B+D)} \\
 &= \frac{32 \left[(1-15 \times 15) - 16 \right]^2}{(16)(16)(16)(16)}
 \end{aligned}$$

$$\chi^2 = 28.12 \text{ with 1 df significant at .001 (6.635)}.$$

Table - 3

RECALL SCORES

Gr. III (N=16)	1	1	2	2	2	2	2	2	2	2	2	3	3	4	4	6
Gr. IV (N=16)	1	2	2	2	2	2	3	3	3	4	4	5	5	5	6	6

Group III - With Interpolation. No instructions.

Group IV - With Interpolation, with instructions urging the subjects to resist inhibitory effect of interpolation

	f	F
1	3	3
2	14	17
3	5	22
4	4	26
5	3	29
6	3	32

$$\begin{aligned}
 N &= 32 \\
 \frac{N}{2} &= 16 \\
 l &= 1.5 \\
 f &= 14 \\
 F &= 3 \\
 i &= 1 \\
 Mdn &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i \\
 &= 1.5 + \left(\frac{16 - 3}{14} \right) 1 \\
 &= 1.5 + \frac{13}{14} \\
 &= 2.42 = 2
 \end{aligned}$$

III	IV
5	10
11	6

Number of cases above Mdn
Number of cases below Mdn

$$\begin{aligned}
 \chi^2 &= \frac{N \left[\frac{(Ad - BC) - \frac{N}{2}}{(A+B)(C+D)(A+C)(B+D)} \right]^2}{\dots} \\
 &= \frac{32 \left[\frac{(30 - 110) - 16}{(15)(17)(16)(16)} \right]^2}{\dots}
 \end{aligned}$$

$\chi^2 = 4.51$ with 1 df significant at .05 level (3.841)

Table - 4

RECALL SCORES

Gr. III (N=16)	1	1	2	2	2	2	2	2	2	2	2	2	3	3	4	4	6
Gr. V (N=16)	2	2	4	4	4	4	5	5	5	5	6	7	7	7	8	10	

Group III - With interpolation, with no instructions
 Group V - With interpolation, with instructions to resist the inhibitory effect of interpolated activity and additional motivation involving praise and competition.

	f	F
1	2	2
2	11	13
3	2	15
4	6	21
5	4	25
6	2	27
7	3	30
8	1	31
9	-	31
10	1	32

$$\begin{aligned}
 N &= 32 \\
 \frac{N}{2} &= 16 \\
 l &= 3.5 \\
 f &= 6 \\
 F &= 15 \\
 i &= 1 \\
 \text{Edn} &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i \\
 &= 3.5 + \left(\frac{16 - 15}{6} \right) 1 \\
 &= 3.5 + \frac{1}{6} = 3.5 + .16 \\
 &= 3.66 = 4
 \end{aligned}$$

III	V
1	10
15	6

$$\begin{aligned}
 \chi^2 &= \frac{N \left[(AD - BC) - \frac{N}{2} \right]^2}{(A+B)(C+D)(A+C)(B+D)} \\
 &= \frac{32 \left[(6 - 150) - 16 \right]^2}{(11)(21)(16)(16)}
 \end{aligned}$$

$\chi^2 = 13.85$ with 1 df significant at .001 (6.635).

Table - 5

RECALL SCORES

Gr. IV (N=16)	1	2	2	2	2	2	3	3	3	4	4	5	5	5	6	6
Gr. V (N=16)	2	2	4	4	4	4	5	5	5	5	6	7	7	7	8	10

Group IV - With interpolated activity and with directions urging the subjects to resist the inhibitory effect of interpolated activity.

Group V - With interpolated activity, with directions urging the subjects to resist the inhibitory effect of interpolated activity and additional motivation involving praise and competition.

	f	F
1	1	1
2	7	8
3	3	11
4	6	17
5	7	24
6	3	27
7	3	30
8	1	31
9	-	31
10	1	32

$$\begin{aligned}
 N &= 32 \\
 \frac{N}{2} &= 16 \\
 l &= 3.5 \\
 f &= 6 \\
 F &= 11 \\
 i &= 1
 \end{aligned}$$

$$\begin{aligned}
 \text{Mdn} &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i \\
 &= 3.5 + \left(\frac{16 - 11}{6} \right) 1 \\
 &= 3.5 + \frac{5}{6} \\
 &= 4.33 = 4
 \end{aligned}$$

IV	V
5	10
11	6

Number of cases above Mdn
Number of cases below Mdn

$$\begin{aligned}
 \chi^2 &= \frac{N \left[(AD - BC) - \frac{N}{2} \right]^2}{(A+B)(C+D)(A+C)(B+D)} \\
 &= \frac{32 \left[(15)(17) - (16)(16) \right]^2}{(15)(17)(16)(16)}
 \end{aligned}$$

$\chi^2 = 4.51$ with 1 df significant at .05 level (3.841).

VII

Table - 6
SAVING SCORES

Group I	-	13	25	50	55	56	62	70	71	71	73	75	77	89	86	90	92
Group II	-	33	38	50	58	63	68	75	76	82	82	83	87	88	90	93	93

	f	F
6 - 17	1	1
18 - 27	1	2
28 - 37	1	3
38 - 47	1	4
48 - 57	4	8
58 - 67	3	11
68 - 77	9	20
78 - 87	6	26
88 - 97	6	32

$$\begin{aligned}
 N &= 32 \\
 \frac{N}{2} &= 16 \\
 \bar{X} &= 67.5 \\
 f &= 9 \\
 F &= 11 \\
 i &= 10 \\
 \text{Eda} &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i \\
 &= 67.5 + \left(\frac{16 - 11}{9} \right) 10 \\
 &= 67.5 + \left(\frac{5}{9} \right) 10 \\
 &= 67 + \frac{50}{9} = 67.5 + 5.5 \\
 &= 73
 \end{aligned}$$

I	II
6	10
10	6

$$\begin{aligned}
 \chi^2 &= \frac{N \left[(AD - BC) - \frac{N}{2} \right]^2}{(A+B)(C+D)(A+C)(B+D)} \\
 &= \frac{32 \left[(36 - 100) - 16 \right]^2}{(16)(16)(16)(16)}
 \end{aligned}$$

$$\chi^2 = 3.12 \text{ with 1 df insignificant}$$

VIII

Table - 7

SAVING SCORES

Group III -	36	40	43	46	46	50	54	56	57	62	64	70	70	72	80	82
Group I -	13	25	50	55	56	62	70	71	71	73	75	77	83	86	90	92

	f	F
8 - 17	1	1
18 - 27	1	2
28 - 37	1	3
38 - 47	4	7
48 - 57	7	14
58 - 67	3	17
68 - 77	9	26
78 - 87	4	30
88 - 97	2	32

$$\begin{aligned}
 N &= 32 \\
 \frac{N}{2} &= 16 \\
 \bar{x} &= 57.5 \\
 f &= 3 \\
 F &= 14 \\
 i &= 10 \\
 Edn &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) \quad 1 \\
 &= 57.5 + \left(\frac{16 - 14}{3} \right) \quad 10 \\
 &= 57.5 + \left(\frac{2}{3} \right) \quad 10 \\
 &= 57.5 + 6.66 \\
 &= 64.16 = 64
 \end{aligned}$$

III	I
5	10
11	6

$$\begin{aligned}
 \chi^2 &= \frac{N \left[(AD - BC) - \frac{N}{2} \right]^2}{(A+B)(C+D)(A+C)(B+D)} \\
 &= \frac{32 \left[(30 - 110) - 16 \right]^2}{(15)(17)(16)(16)}
 \end{aligned}$$

$\chi^2 = 4.51$ with 1 df significant at .05 level (3.841).

Table - A

SAVING SCORES

Group III -	36	40	43	46	46	50	54	56	57	62	64	70	70	72	80	82
Group IV -	14	23	47	50	60	60	62	62	67	71	71	71	75	78	80	82

	f	F
8 - 17	1	1
18 - 27	1	2
28 - 37	1	3
38 - 47	5	8
48 - 57	5	13
58 - 67	7	20
68 - 77	7	27
78 - 87	5	32
88 - 97		

$$\begin{aligned}
 N &= 32 \\
 \frac{N}{2} &= 16 \\
 i &= 57.5 \\
 f &= 7 \\
 F &= 13 \\
 i &= 10 \\
 \text{Hdn} &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i \\
 &= 57.5 + \left(\frac{16 - 13}{7} \right) 10 \\
 &= 57.5 + \left(\frac{3}{7} \right) 10 \\
 &= 57.5 + \frac{30}{7} \\
 &= 57.5 + 4.28 = 62.78 \\
 &= 63
 \end{aligned}$$

	III	IV
8		6
8		10

$$\chi^2 = \frac{N \left[(AD - BC) - \frac{N}{2} \right]^2}{(A+B) (C+D) (A+C) (B+D)}$$

$$= \frac{32 \left[(80 - 48) - 16 \right]^2}{(14) (18) (16) (16)}$$

$$\chi^2 = .12 \text{ with 1 df insignificant}$$

Table - 9

SAVING SCORES

Group III -	36	40	43	46	46	50	54	56	57	62	64	70	70	72	80	82
Group V -	20	20	44	45	45	58	62	67	67	73	73	78	78	82	82	83

	f	F
8 - 17		
18 - 27	2	2
28 - 37	1	3
38 - 47	7	10
48 - 57	4	14
58 - 67	6	20
68 - 77	5	25
78 - 87	7	32
88 - 97	-	

$$\begin{aligned}
 N &= 32 \\
 \frac{N}{2} &= 16 \\
 l &= 57.5 \\
 f &= 6 \\
 F &= 14 \\
 \text{Mdn} &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) \cdot 1 \\
 &= 57.5 + \left(\frac{16 - 14}{6} \right) \cdot 10 \\
 &= 57.5 + \left(\frac{2}{6} \right) \cdot 10 \\
 &= 57.5 + \frac{20}{6} \\
 &= 60.83 = 61
 \end{aligned}$$

III	V
10	7
6	9

$$\begin{aligned}
 \chi^2 &= \frac{N \left[\frac{(AD-BC) - \frac{N}{2}}{2} \right]^2}{(A+B)(C+D)(A+C)(B+D)} \\
 &= \frac{32 \left[\frac{(90-42) - 16}{2} \right]^2}{(17)(15)(16)(16)}
 \end{aligned}$$

$\chi^2 = .501$ with 1 df insignificant.

Table - 10

SAVING SCORES

Group IV -	14	23	47	50	60	60	62	62	67	71	71	71	75	78	80	82
Group V -	20	20	44	45	45	58	62	67	67	73	73	78	78	82	82	83

	f	F
8 - 17	1	1
18 - 27	3	4
28 - 37	-	4
38 - 47	4	8
48 - 57	1	9
<u>58 - 67</u>	<u>9</u>	<u>18</u>
68 - 77	6	24
78 - 87	8	32
88 - 97		

$$\begin{aligned}
 N &= 32 \\
 \frac{N}{2} &= 16 \\
 l &= 57.5 \\
 f &= 9 \\
 F &= 9 \\
 i &= 10
 \end{aligned}$$

$$\begin{aligned}
 Edo &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i \\
 &= 57.5 + \left(\frac{16 - 9}{9} \right) 10 \\
 &= 57.5 + \left(\frac{7}{9} \right) 10 \\
 &= 57.5 + \frac{70}{9} \\
 &= 57.5 + 7.77 \\
 &= 65.27 \\
 &= 65
 \end{aligned}$$

IV	V
8	9
8	7

$$\begin{aligned}
 \chi^2 &= \frac{N \left[(AD - BC) - \frac{N}{2} \right]^2}{(A+B)(C+D)(A+C)(B+D)} \\
 &= \frac{32 \left[(56 - 72) - 16 \right]^2}{(17)(15)(16)(16)}
 \end{aligned}$$

$\chi^2 = .38$ with 1 df insignificant

Table - 11

RECALL SCORES

Group I - 5 6 6 6 7 7 7 7 8 8 8 9 9 10 10 11

	f	F	
5	1	1	$N = 16$
6	3	4	$\frac{N}{2} = 8$
7	4	8	$\frac{N}{4} = 4$
8	3	11	$3 \frac{N}{4} = 12$
9	2	13	
10	2	15	
11	1	16	

$$Q_1 = 1 + \left(\frac{\frac{N}{4} - F}{f} \right) i$$

$$= 5.5 + \left(\frac{4 - 1}{3} \right) 1 = 5.5 + \frac{3}{3} = 5.5 + 1 = 6.5$$

$$Q_2 = 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i$$

$$= 6.5 + \left(\frac{8 - 4}{4} \right) 1 = 6.5 + \frac{4}{4} = 6.5 + 1 = 7.5$$

$$Q_3 = 1 + \left(\frac{3 \frac{N}{4} - F}{f} \right) i$$

$$= 8.5 + \left(\frac{12 - 11}{2} \right) 1 = 8.5 + \frac{1}{2} = 8.5 + .5 = 9$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{9 - 6.5}{2}$$

$$= \frac{3.5}{2} = 1.75$$

$$Q_1 = 7.5$$

$$Q_2 = 6.5$$

$$Q_3 = 9$$

$$Q = 1.75$$

Table - 12

RECALL SCORES

Grade II - 7 7 7 8 8 8 8 8 9 9 10 10 10 11 12 12

	f	F		
7	3	3	$N =$	16
8	5	8	$\frac{N}{2} =$	8
9	2	10	$\frac{N}{4} =$	4
10	3	13	$3^{N/4} =$	12
11	1	14		
12	2	16		

$$Q_1 = 1 + \left(\frac{\frac{N}{4} - F}{f} \right) i$$

$$= 7.5 + \left(\frac{4 - 3}{5} \right) i = 7.5 + \frac{1}{5} = 7.5 + .20 = 7.70$$

$$Q_2 = 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i$$

$$= 7.5 + \left(\frac{8 - 3}{5} \right) i = 7.5 + 1 = 8.5 = 8.5$$

$$Q_3 = 1 + \left(\frac{3^{N/4} - F}{f} \right) i$$

$$= 9.5 + \left(\frac{12 - 10}{3} \right) i = 9.5 + .66 = 10.16$$

$$Q = \frac{Q_3 - Q_1}{2}$$

$$= \frac{10.16 - 7.70}{2} = \frac{2.46}{2} = 1.23$$

$$M_1 = 8.5$$

$$Q_1 = 7.70$$

$$Q_3 = 10.16$$

$$Q = 1.23$$

Table- 13

RECALL SCORES

Group III - 1 1 2 2 2 2 2 2 2 2 3 3 4 4 6

	f	F	
1	2	2	$N = 16$
2	9	11	$\frac{N}{2} = 8$
3	2	13	$\frac{N}{4} = 4$
4	2	15	4
5	-	15	$3^{N/4} = 12$
6	1	16	

$$Q_1 = 1 + \left(\frac{\frac{N}{4} - F}{f} \right) 1 = 1.5 + \left(\frac{4 - 2}{9} \right) 1 = 1.5 + \frac{2}{9}$$

$$= 1.5 + .22 = 1.72$$

$$M_1 = Q_2 = 1 + \left(\frac{\frac{N}{2} - F}{f} \right) 1 = 1.5 + \left(\frac{8 - 2}{9} \right) 1 = 1.5 + \frac{6}{9}$$

$$= 1.5 + .66 = 2.16$$

$$Q_3 = 1 + \left(\frac{3^{N/4} - F}{f} \right) 1 = 2.5 + \left(\frac{12 - 11}{2} \right) 1 = 2.5 + 1/2$$

$$= 2.5 + .5 = 3$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{3 - 1.72}{2} = \frac{1.28}{2} = .64$$

$$M_1 = 2.16$$

$$Q_1 = 1.72$$

$$Q_3 = 3.00$$

$$Q = 0.64$$

Table - 14

RECALL SCORES

Group IV - 1 2 2 2 2 2 3 3 3 4 4 5 5 5 6 6

	f	F	
1	1	1	$N = 16$
2	5	6	$\frac{N}{2} = 8$
3	3	9	$\frac{N}{4} = 4$
4	2	11	
5	3	14	
6	2	16	$3^{N/4} = 12$

$$Q_1 = 1 + \left(\frac{\frac{N}{4} - F}{f} \right) i = 1.5 + \left(\frac{4 - 1}{5} \right) i$$

$$= 1.5 + \frac{3}{5} = 1.5 + .6 = 2.10$$

$$P_1 = Q_2 = 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i = 2.5 + \left(\frac{8 - 6}{3} \right) i$$

$$= 2.5 + \frac{2}{3} = 2.5 + .66 = 3.16$$

$$Q_3 = 1 + \left(\frac{3^{N/4} - F}{f} \right) i = 4.5 + \left(\frac{12 - 11}{3} \right) i$$

$$= 4.5 + \frac{1}{3} = 4.5 + .33 = 4.83$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{4.83 - 2.10}{2} = \frac{2.73}{2} = 1.36$$

$$P_1 = 3.16$$

$$Q_1 = 2.10$$

$$Q_3 = 4.83$$

$$Q = 1.36$$

Table - 15
RECALL SCORES

Group	V	-	2	2	4	4	4	4	5	5	5	5	6	7	7	7	8	10
			f		F													
1			-		-				$\frac{N}{4} = 16$									
2			2		2				$\frac{N}{2} = 8$									
3			-		2				$\frac{N}{4} = 4$									
4			4		6													
5			4		10													
6			1		11				$3 \frac{N}{4} = 12$									
7			3		14													
8			1		15													
9			-		15													
10			1		16													

$$Q_1 = 1 + \left(\frac{\frac{N}{4} - F}{f} \right) i = 3.5 + \left(\frac{4-2}{4} \right) i = 3.5 + \frac{2}{4} i$$

$$= 3.5 + \frac{1}{2} i = 3.5 + .5 i = 4$$

$$Q_2 = 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i = 4.5 + \left(\frac{8-6}{4} \right) i$$

$$= 4.5 + \frac{2}{4} i = 4.5 + .5 i = 5$$

$$Q_3 = 1 + \left(\frac{3 \frac{N}{4} - F}{f} \right) i = 6.5 + \left(\frac{12-11}{3} \right) i$$

$$= 6.5 + \frac{1}{3} i = 6.5 + .33 i = 6.83$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{6.83 - 4}{2} = \frac{2.83}{2} = 1.42$$

$$\begin{aligned} Q_1 &= 4 \\ Q_2 &= 5 \\ Q_3 &= 6.83 \\ Q &= 1.42 \end{aligned}$$

Table - 16

SAVING SCORES

Group I - 13 25 50 55 56 62 70 71 71 73 75 77 83 86 90 92

	f	F
8 - 17	1	1
18 - 27	1	2
28 - 37	0	2
38 - 47	0	2
48 - 57	3	5
58 - 67	1	6
68 - 77	6	12
78 - 87	2	14
88 - 97	2	16

$$Q_1 = 67.5 + \left(\frac{8 - 6}{6} \right) 10 = 67.5 + \frac{20}{6} = 67.5 + 3.33 = 70.83$$

$$Q_1 = 47.5 + \left(\frac{4 - 2}{3} \right) 10 = 47.5 + \frac{20}{3} = 47.5 + 6.66 = 54.16$$

$$Q_3 = 67.5 + \left(\frac{12 - 6}{6} \right) 10 = 67.5 + 10 = 77.5$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{77.50 - 54.16}{2} = \frac{22.34}{2} = 11.17$$

$$Q_1 = 70.83$$

$$Q_1 = 54.16$$

$$Q_3 = 77.5$$

$$Q = 11.17$$

XVIII

Table - 17

SAVING SCORES

Group II - 33 38 50 56 63 68 75 76 82 82 83 87 88 90 93 93

28 - 37	1	1
38 - 47	1	2
48 - 57	1	3
58 - 67	2	5
68 - 77	3	8
78 - 87	4	12
88 - 97	4	16

$$Q_3 = 67.5 + \left(\frac{8 - 5}{3} \right) 10 = 67.5 + \frac{30}{3} = 67.5 + 10 = 77.50$$

$$Q_1 = 57.5 + \left(\frac{4 - 3}{2} \right) 10 = 57.5 + \frac{10}{2} = 57.5 + 5 = 62.50$$

$$Q_3 = 77.5 + \left(\frac{12 - 8}{4} \right) 10 = 77.5 + 10 = 87.50$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{87.50 - 62.50}{2} = \frac{25.00}{2} = 12.5$$

$$Q_3 = 77.50$$

$$Q_1 = 62.50$$

$$Q_3 = 87.50$$

$$Q = 12.5$$

Table - 18

SAVING SCORES

Group III - 36 40 43 46 46 50 54 56 57 62 64 70 70 72 80 82

	<i>f</i>	<i>F</i>
28 - 37	1	1
38 - 47	4	5
48 - 57	4	9
58 - 67	2	11
68 - 77	3	14
78 - 87	2	16

$$\Pi_1 = 47.5 + \left(\frac{8-5}{4}\right) 10 = 47.5 + \frac{30}{4} = 47.5 + 7.5 = 55.00$$

$$Q_1 = 37.5 + \left(\frac{4-1}{4}\right) 10 = 37.5 + \frac{30}{4} = 37.5 + 7.5 = 45.00$$

$$Q_3 = 67.5 + \left(\frac{12-11}{3}\right) 10 = 67.5 + \frac{10}{3} = 67.5 + 3.33 = 70.83$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{70.83 - 45.00}{2} = \frac{25.83}{2} = 12.92$$

$$\Pi_1 = 55.00$$

$$Q_1 = 45.00$$

$$Q_3 = 70.83$$

$$Q = 12.92$$

Table - 19

SAVING SCORES

Group IV - 14 23 47 50 60 60 62 62 67 71 71 71 75 78 80 82

	f	F
0 - 17	1	1
18 - 27	1	2
28 - 37	0	2
38 - 47	1	3
48 - 57	1	4
58 - 67	5	9
68 - 77	4	13
78 - 87	3	16

$$Q_4 = 57.5 + \left(\frac{8-4}{5}\right) 10 = 57.5 + \frac{40}{5} = 57.5 + 8 = 65.50$$

$$Q_1 = 47.5 + \left(\frac{4-3}{1}\right) 10 = 47.5 + 10 = 57.50$$

$$Q_3 = 67.5 + \left(\frac{12-9}{4}\right) 10 = 67.5 + \frac{30}{4} = 67.5 + 7.5 = 75.00$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{75.00 - 57.50}{2} = \frac{17.50}{2} = 8.75$$

$$Q_4 = 65.50$$

$$Q_1 = 57.50$$

$$Q_3 = 75.00$$

$$Q = 8.75$$

Table - 20

SAVING SCORES

Group - V 20 20 44 45 45 58 62 67 67 73 73 78 78 82 82 83

	f	F
18 - 27	2	2
28 - 37	0	2
38 - 47	3	5
48 - 57	0	5
58 - 67	4	9
68 - 77	2	11
78 - 87	5	16

$$M_1 = 57.5 + \left(\frac{8 - 5}{4} \right) 10 = 57.5 + \frac{30}{4} = 57.5 + 7.5 = 65.00$$

$$Q_1 = 37.5 + \left(\frac{4 - 2}{3} \right) 10 = 37.5 + \frac{20}{3} = 37.5 + 6.66 = 44.16$$

$$Q_3 = 77.5 + \left(\frac{12 - 11}{5} \right) 10 = 77.5 + \frac{10}{5} = 77.5 + 2 = 79.50$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{79.50 - 44.16}{2} = \frac{35.34}{2} = 17.67$$

$$M_1 = 65.00$$

$$Q_1 = 44.16$$

$$Q_3 = 79.50$$

$$Q = 17.67$$

APPENDIX - B

APPENDIX - B

Learning TrialsExperiment II

<u>Group I</u>	<u>Group II</u>	<u>Group III</u>	<u>Group IV</u>
5	2	3	3
6	3	3	6
7	3	4	4
7	3	4	4
8	3	6	4
8	4	7	5
8	4	7	5
8	5	7	6
8	5	8	6
8	5	8	7
9	5	8	8
10	5	8	8
11	7	9	8
12	8	10	10

APPENDIX - B

Table - 21

RECALL SCORES

Group I (N=14) - 8 9 9 9 10 10 10 10 10 11 11 11 12 12
 Group II(N=14) - 8 9 10 10 11 11 11 11 12 12 12 12 12 12

Group I - Without interpolation, without organisation in learning material.
 Group II - Without interpolation, with organisation in learning material

	f	F
8	2	2
9	4	6
10	7	13
11	7	20
12	8	28

$$\begin{aligned}
 N &= 28 \\
 \frac{N}{2} &= 14 \\
 i &= 10.5 \\
 f &= 7 \\
 F &= 13 \\
 i &= 1
 \end{aligned}$$

$$\begin{aligned}
 \text{Mdn} &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i \\
 &= 10.5 + \left(\frac{14 - 13}{7} \right) 1 \\
 &= 10.5 + \frac{1}{7} = 10.5 + .14 \\
 &= 10.64 \\
 &= 11
 \end{aligned}$$

I	2	12
II	6	8

Consulting table I of critical values of D or C based on Fisher-Yates-test of significance 2 x 2 contingency table, we find that the observed value of C = 6 which is insignificant.

(Refer Siegel, 1956, pp. 264, 96, 100).

Table - 22

RECALL SCORES

Group I (N=14)	8	9	9	9	10	10	10	10	10	11	11	11	12	12
Group III (N=14)	5	7	7	7	7	9	9	9	9	10	10	10	12	12

Group I - Without interpolation, without organisation in learning material.

Group III= With interpolation, without organisation in learning material.

	f	F
5	1	1
6	-	1
7	4	5
8	1	6
9	7	13
10	8	21
11	3	24
12	4	28

$$\begin{aligned}
 N &= 28 \\
 \frac{N}{2} &= 14 \\
 i &= 9.5 \\
 f &= 8 \\
 F &= 13 \\
 i &= 1 \\
 Edn &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i \\
 &= 9.5 + \left(\frac{14 - 13}{8} \right) 1 \\
 &= 9.5 + \frac{1}{8} = 9.5 + .12 = 9.62 \\
 &= 10
 \end{aligned}$$

I	5	9
III	2	12

Consulting table 1 of critical values of D or C based on Fisher-Yates test of significance in 2 x 2 contingency table, we find that the observed value of C = 2 which is insignificant.

(Refer Siegel, 1956, pp. 264, 96, 100)

Table - 23

RECALL SCORES

Group II (N=14)	-	8	9	10	10	11	11	11	11	12	12	12	12	12	12
Group IV (N=14)	-	5	8	10	11	11	11	11	11	11	11	11	11	11	12

Group II - Without interpolation, with organisation in learning material.

Group IV - With interpolation, with organisation in learning material.

	f	F
5	1	1
6	-	1
7	-	1
8	2	3
9	1	4
10	3	7
11	14	21
12	7	28

$$\begin{aligned}
 N &= 28 \\
 \frac{N}{2} &= 14 \\
 l &= 10.5 \\
 f &= 14 \\
 F &= 7
 \end{aligned}$$

$$\begin{aligned}
 E_{dn} &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) \cdot 1 \\
 &= 10.5 + \left(\frac{14 - 7}{14} \right) \cdot 1 \\
 &= 10.5 + \frac{7}{14} = 10.5 + .5 \\
 &= 11
 \end{aligned}$$

II	6	8
IV	1	13

Consulting table I of critical values of D or C based on Fisher-Yates test of significance in 2 x 2 contingency table, we find that the observed value of C = 1 which is significant at .05 level.

(Refer Siegel, 1956, pp. 264, 96, 100)

Table - 24

RECALL SCORES

Group III	11	12	5	7	7	7	7	9	9	9	9	10	10	10	12	12
Group IV	5	8	10	11	11	11	11	11	11	11	11	11	11	11	11	12

Group III - With interpolation, without organisation in learning material.

Group IV - With interpolation, with organisation in learning material.

	f	F
1	-	-
2	-	-
3	-	-
4	-	-
5	2	2
6	-	2
7	4	6
8	1	7
9	4	11
10	4	15
11	10	25
12	3	28

$$\begin{aligned}
 N &= 28 \\
 \frac{N}{2} &= 14 \\
 f &= 4 \\
 F &= 11 \\
 i &= 1 \\
 Edn &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i \\
 &= 9.5 + \left(\frac{14 - 11}{4} \right) i \\
 &= 9.5 + \frac{3}{4} \\
 &= 10.25
 \end{aligned}$$

2	11
12	3

$$\begin{aligned}
 \chi^2 &= \frac{N \left[(AD - BC) - \frac{N}{2} \right]^2}{(A+B)(C+D)(A+C)(B+D)} \\
 &= \frac{28 \left[(6 - 132) - 14 \right]^2}{(19)(15)(14)(14)}
 \end{aligned}$$

$\chi^2 = 14.35$ with 1 df significant at .001 level.

Table - 26

RECALL SCORES

Group I	-	20	37	50	62	66	75	75	75	75	77	80	83	85	85
Group II	-	25	33	33	40	50	50	60	60	66	66	71	75	80	80

	f	F
8 - 17	-	-
18 - 27	2	2
28 - 37	3	5
38 - 47	1	6
48 - 57	3	9
58 - 67	6	15
68 - 77	7	22
78 - 87	6	28

$$\begin{aligned}
 N &= 28 \\
 \frac{N}{2} &= 14 \\
 l &= 57.5 \\
 f &= 6 \\
 F &= 9 \\
 i &= 10 \\
 Ddn &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i \\
 &= 57.5 + \left(\frac{14 - 9}{6} \right) 10 \\
 &= 57.5 + \frac{50}{6} \\
 &= 57.5 + 8.33 \\
 &= 65.83 \\
 &= 65
 \end{aligned}$$

10	6
4	8

$$\begin{aligned}
 \chi^2 &= \frac{N \left[(AD - BC) - \frac{N}{2} \right]^2}{(A+B)(C+D)(A+C)(B+D)} \\
 &= \frac{28 \left[(80 - 24) - 14 \right]^2}{(16)(12)(14)(14)}
 \end{aligned}$$

χ^2 .86 with 1 df insignificant

Table - 26

SAVING SCORES

Group I -	20	37	50	62	66	75	75	75	75	77	80	83	85	85
Group III -	33	50	50	50	50	57	57	66	66	71	75	75	75	75

	f	F
R - 17	-	-
18 - 27	1	1
28 - 37	2	3
38 - 47	-	3
48 - 57	7	10
58 - 67	4	14
<u>68 - 77</u>	<u>10</u>	<u>24</u>
78 - 87	4	28

$$\begin{aligned}
 N &= 28 \\
 \frac{N}{2} &= 14 \\
 l &= 57.5 \\
 f &= 4 \\
 F &= 10 \\
 i &= 10 \\
 \text{Edp} &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i \\
 &= 57.5 + \left(\frac{14 - 10}{4} \right) 10 \\
 &= 57.5 + \frac{40}{4} = 57.5 + 10 \\
 &= 67
 \end{aligned}$$

9	5
5	9

$$\begin{aligned}
 \chi^2 &= \frac{N \left[(AD - BC) - \frac{N}{2} \right]^2}{(A+B) (C+D) (A+C) (B+D)} \\
 &= \frac{28 \left[(91 - 25) - 14 \right]^2}{(14) (14) (14) (14)}
 \end{aligned}$$

$$\chi^2 = 1.28 \text{ with 1 df insignificant}$$

Table - 27

SAVING SCORES

Group II	-	25	33	33	40	50	50	60	60	66	66	71	75	80	80
Group IV	-	33	50	50	50	60	60	66	66	66	71	75	75	75	80

	f	F
8 - 17	-	-
18 - 27	1	1
28 - 37	3	4
38 - 47	1	5
48 - 57	5	10
58 - 67	9	19
68 - 77	6	25
78 - 87	3	28

$N = 28$

$\frac{N}{2} = 14$

$\bar{X} = 57.5$

$f = 9$

$F = 10$

$i = 10$

$E_{dn} = \bar{X} + \left(\frac{\frac{N}{2} - F}{f} \right) i$

$= 57.5 + \left(\frac{14 - 10}{9} \right) 10$

$= 57.5 + \frac{40}{9} = 57.5 + 4.44$

$= 61.94$

$= 62$

6	8
8	6

$$\chi^2 = \frac{N \left[(AD-BC) - \frac{N}{2} \right]^2}{(A+D) (C+B) (A+C) (B+D)}$$

$$= \frac{28 \left[(36-64) - 14 \right]^2}{(14) (14) (14) (14)}$$

$\chi^2 = 1.28$ with 1 df insignificant

Table - 28

SAVING SCORES

Group III -	33	50	50	50	50	57	57	66	66	71	75	75	75	75
Group IV -	33	50	50	50	60	60	66	66	66	71	75	75	75	80

	f	F
0 - 17	-	-
18 - 27	-	-
28 - 37	2	2
38 - 47	-	2
48 - 57	9	11
58 - 67	7	18
68 - 77	9	27
78 - 87	1	28

$$\begin{aligned}
 N &= 28 \\
 \frac{N}{2} &= 14 \\
 l &= 57.5 \\
 f &= 7 \\
 F &= 11 \\
 i &= 10
 \end{aligned}$$

$$\begin{aligned}
 \text{Mdn} &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i \\
 &= 57.5 + \left(\frac{14 - 11}{7} \right) 10 \\
 &= 57.5 + \frac{30}{7} = 57.5 + 4.28 \\
 &= 61.78 \\
 &= 62
 \end{aligned}$$

7	8
7	6

$$\begin{aligned}
 \chi^2 &= \frac{N \left[(AD - BC) - \frac{N}{2} \right]^2}{(A+B)(C+D)(A+C)(B+D)} \\
 &= \frac{28 \left[(42 - 56) - 14 \right]^2}{(15)(13)(14)(14)}
 \end{aligned}$$

$$\chi^2 = .57 \text{ with 1 df insignificant.}$$

Table - 29

RECALL SCORES

Group - I - 8 9 9 9 10 10 10 10 10 11 11 11 12 12

	f	F	
8	1	1	$\frac{N}{4} = 14$
9	3	4	$\frac{N}{2} = 7$
10	5	9	$\frac{N}{4} = 3.5$
11	3	12	
12	2	14	
			$3^N/4 = 10.5$

$$Q_1 = 1 + \left(\frac{\frac{N}{4} - F}{f} \right) i = 8.5 + \left(\frac{3.5 - 1}{3} \right) i$$

$$= 8.5 + \frac{2.5}{3} = 8.5 + .83 = 9.33$$

$$E_1 = Q_2 = 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i = 9.5 + \left(\frac{7 - 4}{5} \right) i$$

$$= 9.5 + \frac{3}{5} = 9.5 + .60 = 10.10$$

$$Q_3 = 1 + \left(\frac{3^N/4 - F}{f} \right) i = 10.5 + \left(\frac{10.5 - 9}{3} \right) i$$

$$= 10.5 + \frac{1.5}{3} = 10.5 + .50 = 11$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{11 - 9.3}{2} = \frac{2.33}{2} = 1.16$$

E_1	=	10.10
Q_1	=	9.33
Q_3	=	11.00
Q	=	1.16

Table - 30

RECALL SCORES

Group II - 8 9 10 10 11 11 11 11 12 12 12 12 12 12

	<i>f</i>	<i>F</i>
8	1	1
9	1	2
10	2	4
11	4	8
12	6	14

$$\begin{aligned} N &= 14 \\ \frac{N}{2} &= 7 \\ \frac{N}{4} &= 3.5 \\ 3^{N/4} &= 10.5 \end{aligned}$$

$$\begin{aligned} Q_1 &= 1 + \left(\frac{\frac{N}{4} - F}{f} \right) i = 9.5 + \left(\frac{3.5 - 2}{2} \right) 1 = 9.5 + \frac{1.5}{2} = 9.5 + .75 \\ &= 10.25 \end{aligned}$$

$$\begin{aligned} Q_2 = Q_1 &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i = 10.5 + \left(\frac{7 - 4}{4} \right) 1 = 10.5 + \frac{3}{4} = 10.5 + .75 \\ &= 11.25 \end{aligned}$$

$$\begin{aligned} Q_3 &= 1 + \left(\frac{3^{N/4} - F}{f} \right) i = 11.5 + \left(\frac{10.5 - 8}{6} \right) 1 = 11.5 + \frac{2.5}{6} \\ &= 11.5 + .41 \\ &= 11.91 \end{aligned}$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{11.91 - 10.25}{2} = \frac{1.66}{2} = .83$$

$$\begin{aligned} Q_1 &= 11.25 \\ Q_2 &= 10.25 \\ Q_3 &= 11.91 \\ Q &= .83 \end{aligned}$$

Table - 31

RECALL SCORES

Group III - 5 7 7 7 7 9 9 9 9 10 10 10 12 12

	f	F	
5	1	1	$N = 14$
6	-	1	$\frac{N}{2} = 7$
7	4	5	$\frac{N}{4} = 3.5$
8	-	5	
9	4	9	
10	3	12	$3N/4 = 10.5$
11	-	12	
12	2	14	

$$Q_1 = 1 + \left(\frac{\frac{N}{4} - F}{f} \right) i = 6.5 + \left(\frac{3.5 - 1}{4} \right) i = 6.5 + \frac{2.5}{4}$$

$$= 6.5 + .62$$

$$= 7.12$$

$$M_1 = Q_2 = 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i = 8.5 + \left(\frac{7 - 5}{4} \right) i = 8.5 + \frac{2}{4} = 8.5 + .5$$

$$= 9.00$$

$$Q_3 = 1 + \left(\frac{3N/4 - F}{f} \right) i = 9.5 + \left(\frac{10.5 - 9}{3} \right) i = 9.5 + \frac{1.5}{3} = 9.5 + .5$$

$$= 10.00$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{10.00 - 7.12}{2} = \frac{2.88}{2} = 1.44$$

$$M_1 = 9.00$$

$$Q_1 = 7.12$$

$$Q_3 = 10.00$$

$$Q = 1.44$$

Table - 32

RECALL SCORES

Group IV - 5 6 10 11 11 11 11 11 11 11 11 11 12

	f	F		
5	1	1	N	= 14
6	-	1	$\frac{N}{2}$	= 7
7	-	1	$\frac{N}{4}$	= 3.5
8	1	2		
9	-	2		
10	1	3		
11	10	13	$3N/4$	= 10.5
12	1	14		

$$Q_1 = 1 + \left(\frac{\frac{N}{4} - F}{f} \right) i = 10.5 + \left(\frac{3.5 - 3}{10} \right) 1 = 10.5 + \left(\frac{.5}{10} \right) 1$$

$$= 10.5 + .05$$

$$= 10.55$$

$$Q_1 = Q_2 = 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i = 10.5 + \left(\frac{7 - 3}{10} \right) 1 = 10.5 + \frac{4}{10}$$

$$= 10.5 + .40$$

$$= 10.90$$

$$Q_3 = 1 + \left(\frac{3N/4 - F}{f} \right) i = 10.5 + \left(\frac{10.5 - 3}{10} \right) 1 = 10.5 + \frac{7.5}{10}$$

$$= 10.5 + .75$$

$$= 11.25$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{11.25 - 10.55}{2} = \frac{.70}{2} = .35$$

$$Q_1 = 10.90$$

$$Q_2 = 10.55$$

$$Q_3 = 11.25$$

$$Q = .35$$

Table - 33

SAVING SCORES

Group I - 20 37 50 62 66 75 75 75 75 77 80 83 85 85

	f	F	
18 - 27	1	1	$N = 14$
28 - 37	1	2	$\frac{N}{2} = 7$
38 - 47	-	2	
48 - 57	1	3	$\frac{N}{4} = 3.5$
58 - 67	2	5	
68 - 77	5	10	$3\frac{N}{4} = 10.5$
78 - 87	4	14	

$$Q_1 = 1 + \left(\frac{\frac{N}{4} - F}{f} \right) i = 57.5 + \left(\frac{3.5 - 3}{2} \right) 10$$

$$= 57.5 + \left(\frac{.5}{2} \right) 10 = 57.5 + 2.5$$

$$= 60.00$$

$$Q_1 = Q_2 = 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i = 67.5 + \left(\frac{7 - 5}{5} \right) 10$$

$$= 67.5 + \left(\frac{2}{5} \right) 10 = 67.5 + 4$$

$$= 71.5$$

$$Q_3 = 1 + \left(\frac{3\frac{N}{4} - F}{f} \right) i = 77.5 + \left(\frac{10.5 - 10}{4} \right) 10$$

$$= 77.5 + \left(\frac{.5}{4} \right) 10 = 77.5 + \frac{5}{4} = 77.5 + 1.25$$

$$= 78.75$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{78.75 - 60.00}{2} = \frac{18.75}{2} = 9.37$$

$$M_1 = 71.5$$

$$Q_1 = 60.00$$

$$Q_3 = 78.75$$

$$Q = 9.37$$

Table - 34

SAVING SCORES

Group II - 25 33 33 40 50 50 60 60 66 66 71 75 80 80

	f	F
18 - 27	1	1
28 - 37	2	3
38 - 47	1	4
48 - 57	2	6
58 - 67	4	10
68 - 77	2	12
78 - 87	2	14

$$\begin{aligned} N &= 14 \\ \frac{N}{2} &= 7 \\ \frac{N}{4} &= 3.5 \\ 3^N/4 &= 10.5 \end{aligned}$$

$$\begin{aligned} Q_1 &= 1 + \left(\frac{\frac{N}{4} - F}{f} \right) i = 37.5 + \left(\frac{3.5 - 3}{1} \right) 10 = 37.5 + \left(\frac{0.5}{1} \right) 10 \\ &= 37.5 + 5 \\ &= 42.5 \end{aligned}$$

$$\begin{aligned} Q_1 = Q_2 &= 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i = 57.5 + \left(\frac{7 - 6}{4} \right) 10 = 57.5 + \frac{10}{4} \\ &= 57.5 + 2.5 \\ &= 60.00 \end{aligned}$$

$$\begin{aligned} Q_3 &= 1 + \left(\frac{3^N/4 - F}{f} \right) i = 67.5 + \left(\frac{10.5 - 10}{2} \right) 10 = 67.5 + \left(\frac{0.5}{2} \right) 10 \\ &= 67.5 + 2.5 \\ &= 70.00 \end{aligned}$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{70.00 - 42.50}{2} = \frac{27.50}{2} = 13.75$$

$$\begin{aligned} Q_1 &= 60.00 \\ Q_1 &= 42.00 \\ Q_3 &= 70.00 \\ Q &= 13.75 \end{aligned}$$

Table - 35

SAVING SCORES

Group III - 33 50 50 50 50 57 57 66 66 71 75 75 75 75

	f	F	
10 - 27	-	-	$N = 14$
28 - 37	1	1	$\frac{N}{2} = 7$
38 - 47	-	1	$\frac{N}{4} = 3.5$
48 - 57	6	7	$3^{N/4} = 10.5$
58 - 67	2	9	
68 - 77	5	14	
78 - 87	-	-	

$$Q_1 = 1 + \left(\frac{\frac{N}{4} - F}{f} \right) i = 47.5 + \left(\frac{3.5 - 1}{6} \right) 10 = 47.5 + \left(\frac{2.5}{6} \right) 10$$

$$= 47.5 + \frac{25}{6} = 47.5 + 4.16$$

$$= 51.66$$

$$Q_2 = 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i = 47.5 + \left(\frac{7 - 1}{6} \right) 10 = 47.5 + \left(\frac{6}{6} \right) 10$$

$$= 47.5 + 10$$

$$= 57.5$$

$$Q_3 = 1 + \left(\frac{3^{N/4} - F}{f} \right) i = 67.5 + \left(\frac{10.5 - 9}{5} \right) 10 = 67.5 + \left(\frac{1.5}{5} \right) 10$$

$$= 67.5 + 3$$

$$= 70.5$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{70.50 - 51.66}{2} = \frac{18.84}{2} = 9.42$$

$$Q_1 = 51.66$$

$$Q_2 = 57.5$$

$$Q_3 = 70.5$$

$$Q = 9.42$$

Table - 36

SAVING SCORES

Group IV - 39 50 50 50 60 60 66 66 66 71 75 75 75 80

	f	F	
18 - 27	-	-	$N = 14$
28 - 37	1	1	$\frac{N}{2} = 7$
38 - 47	-	1	
48 - 57	3	4	$\frac{N}{4} = 3.5$
58 - 67	6	9	
68 - 77	4	13	$3N/4 = 10.5$
78 - 87	1	14	

$$Q_1 = 1 + \left(\frac{\frac{N}{4} - F}{f} \right) i = 47.5 + \left(\frac{3.5 - 1}{3} \right) 10 = 47.5 + \frac{25}{3}$$

$$= 47.5 + 8.33$$

$$= 55.83$$

$$Q_2 = 1 + \left(\frac{\frac{N}{2} - F}{f} \right) i = 57.5 + \left(\frac{7 - 4}{5} \right) 10 = 57.5 + \left(\frac{3}{5} \right) 10$$

$$= 57.5 + 6$$

$$= 63.50$$

$$Q_3 = 1 + \left(\frac{3N/4 - F}{f} \right) i = 67.5 + \left(\frac{10.5 - 9}{4} \right) 10 = 67.5 + \left(\frac{1.5}{4} \right) 10$$

$$= 67.5 + \frac{15}{4} = 67.5 + 3.75$$

$$= 71.25$$

$$Q = \frac{Q_3 - Q_1}{2} = \frac{71.25 - 55.83}{2} = \frac{15.42}{2} = 7.71$$

- $Q_1 = 55.83$
- $Q_2 = 63.50$
- $Q_3 = 71.25$
- $Q = 7.71$