

C H A P T E R - I V

ANALYSIS AND DISCUSSION OF DATA

- 4.1 INTERPERSONAL RELATIONSHIP
- 4.2 WORK SATISFACTION
- 4.3 ANXIETY
- 4.4 CONCLUSION

As has been stated earlier (Chap.: III), this research is designed to test the following hypotheses.

- 1) "Interpersonal relationship will tend towards positive Valence among the members of cooperative group whereas in competitive group the interpersonal relationship will tend towards negative valence.

In the above hypothesis it is indicated that in cooperative group the members of the group will get more friendly with each other, while in competitive group, the members will become less friendly with each other.

- 2) There will be greater work satisfaction among the members of cooperative group as compared to competitive group.
- 3) There will be more anxiety in competitive group than in cooperative group."

Initially the first hypothesis which is about interpersonal relationship will be tested. To measure

this dependant variable Semantic Differential test with only three scales, was used i.e.

- | | | | |
|----|-------------|---|----------|
| 1. | Good | - | Bad. |
| 2. | Intelligent | - | Foolish. |
| 3. | Active | - | Dull. |

On the basis of individual rating each individual had been given marks on a 7 point rating scale. These scores were added and average was calculated individually as well as groupwise. Lastly the average for whole cooperative group and for competitive group was calculated. To test the hypothesis the average of all -3- scales was calculated seperately. Then t-test was applied to see the significance of difference between means of the two groups.

In the following Table the average score of each cooperative and competitive group has been shown.

TABLE NO. 1

TABLE SHOWING THE AVERAGE SCORES OF INTERPERSONAL
RELATIONSHIP OF COOPERATIVE AND COMPETITIVE GROUPS.

COOPERATIVE GROUP			COMPETITIVE GROUP		
INTELLIGENT/ FOOLISH	GOOD/ BAD	ACTIVE/ DULL	INTELLIGENT/ FOOLISH	GOOD/ BAD	ACTIVE/ DULL
1	2	3	4	5	6
6.7	6.8	6.7	4.6	4.9	4.4
6.7	6.6	6.5	5.4	4.3	4.1
6.0	6.1	6.1	3.7	4.1	3.6
6.5	6.4	6.4	4.8	4.9	4.7
6.5	6.5	6.0	3.8	3.8	4.0
6.3	6.8	6.5	4.5	4.8	4.3
5.8	6.6	6.3	5.3	4.3	4.1
5.9	6.3	6.7	3.6	4.0	3.5
6.1	5.2	6.6	4.7	4.7	5.2
6.4	6.3	5.1	3.8	3.7	4.4
6.2	5.4	6.4	4.4	4.6	4.4
6.3	6.2	6.3	5.1	4.1	3.9
5.6	5.8	6.4	3.7	4.0	3.6

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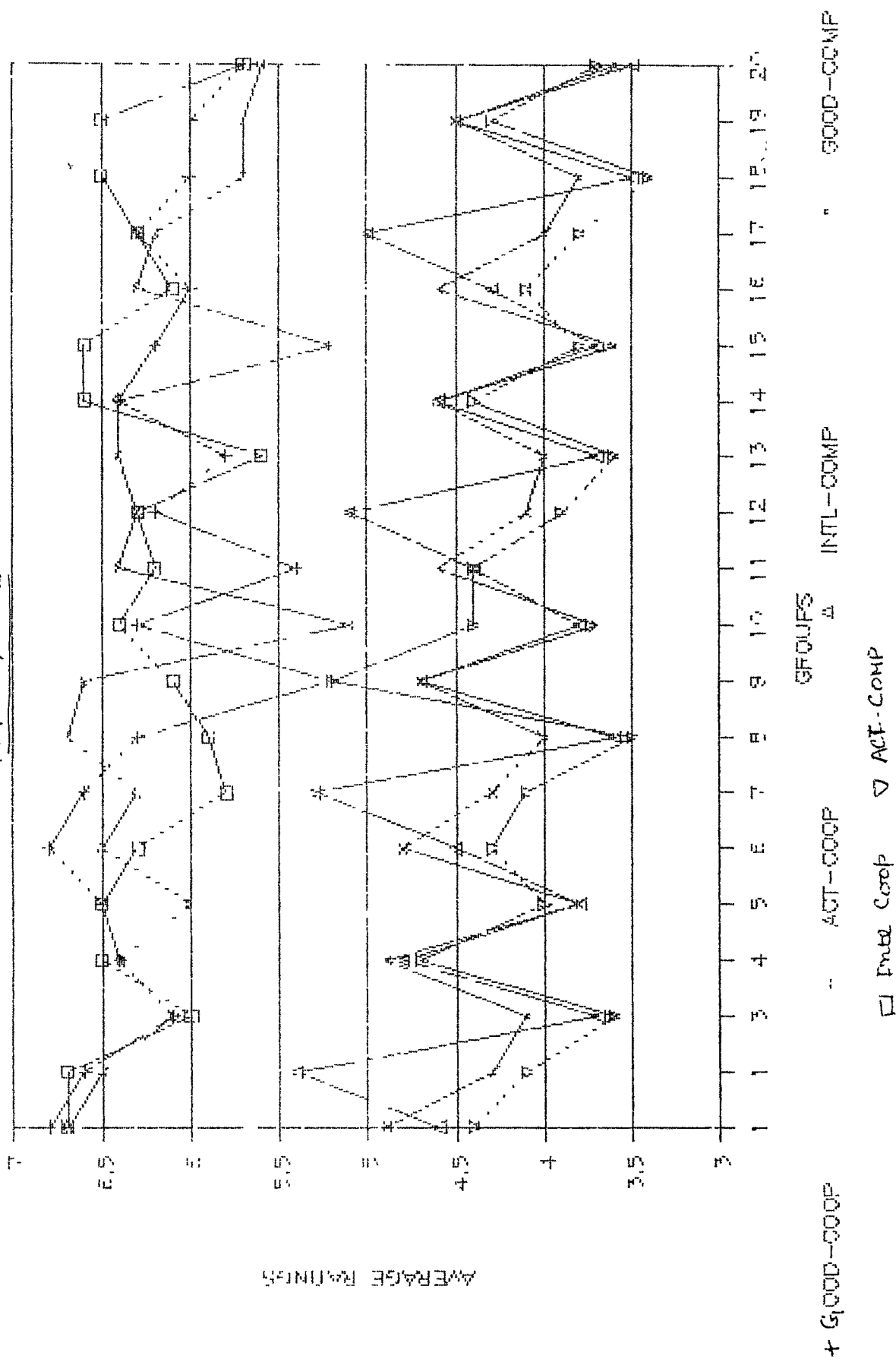
Contd...Table No.1

COOPERATIVE GROUP			COMPETITIVE GROUP		
INTELLIGENT/ FOOLISH	GOOD/ BAD	ACTIVE DULL	INTELLIGENT/ FOOLISH	GOOD/ BAD	ACTIVE/ DULL
1	2	3	4	5	6
6.6	6.4	6.4	4.6	4.6	4.4
6.6	6.2	5.2	3.7	3.6	3.8
6.1	6.0	6.3	4.3	4.6	4.1
6.3	6.3	6.2	5.0	4.0	3.8
6.5	6.0	5.7	3.5	3.8	3.4
6.5	6.0	5.7	4.5	4.5	4.3
5.7	5.7	5.6	3.5	3.6	3.7

The diagraphic presentation of the above data have been shown in the Figure No.1 and 2. Further figure numbers 3, 4 and 5 show the average scores of cooperative and competitive groups for Intelligent/Foolish, Good/Bad and Active/Dull respectively.

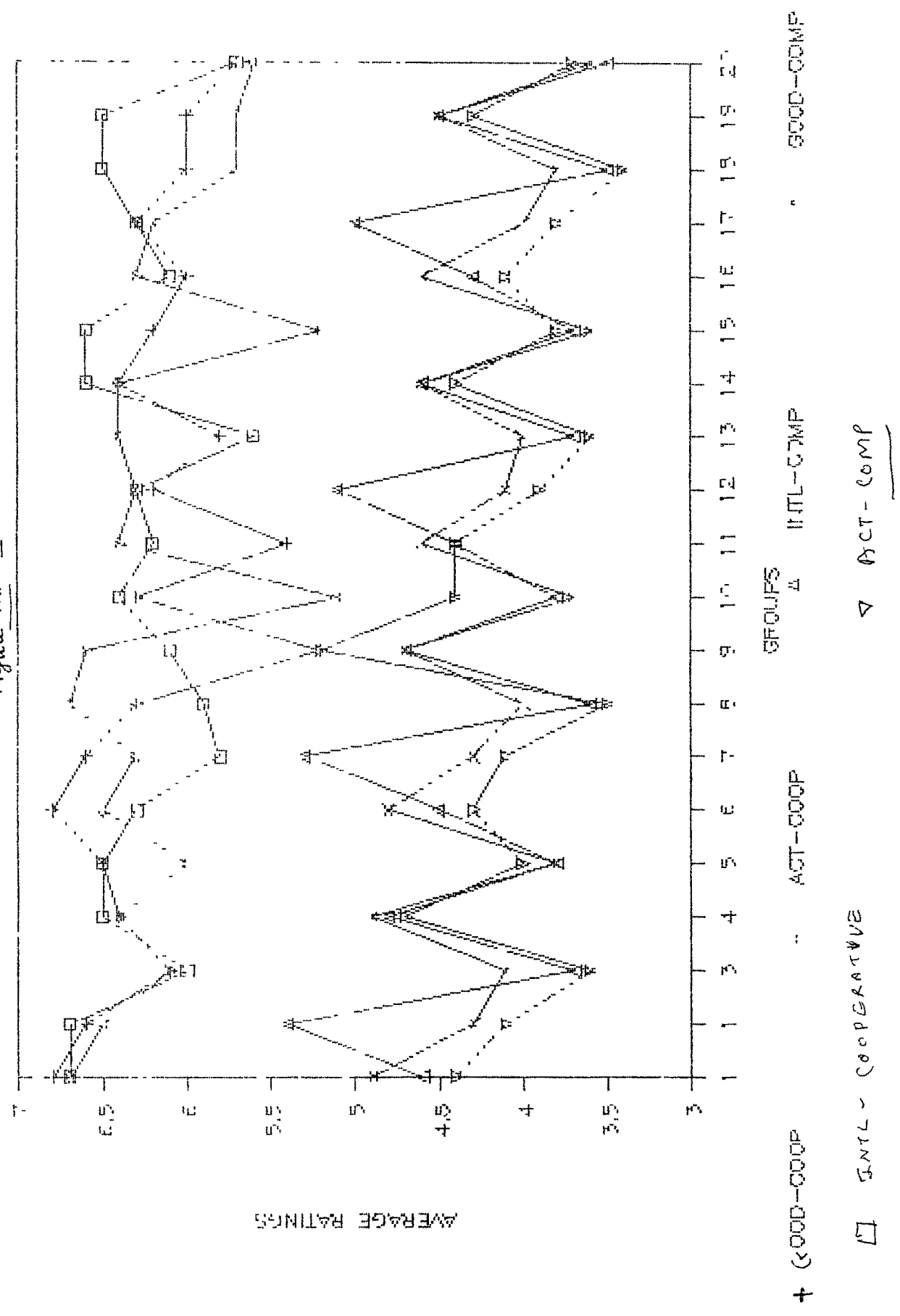
AVG SCORE OF CO-OP. & COMPETITIVE GROUP

FIGURE NO -1



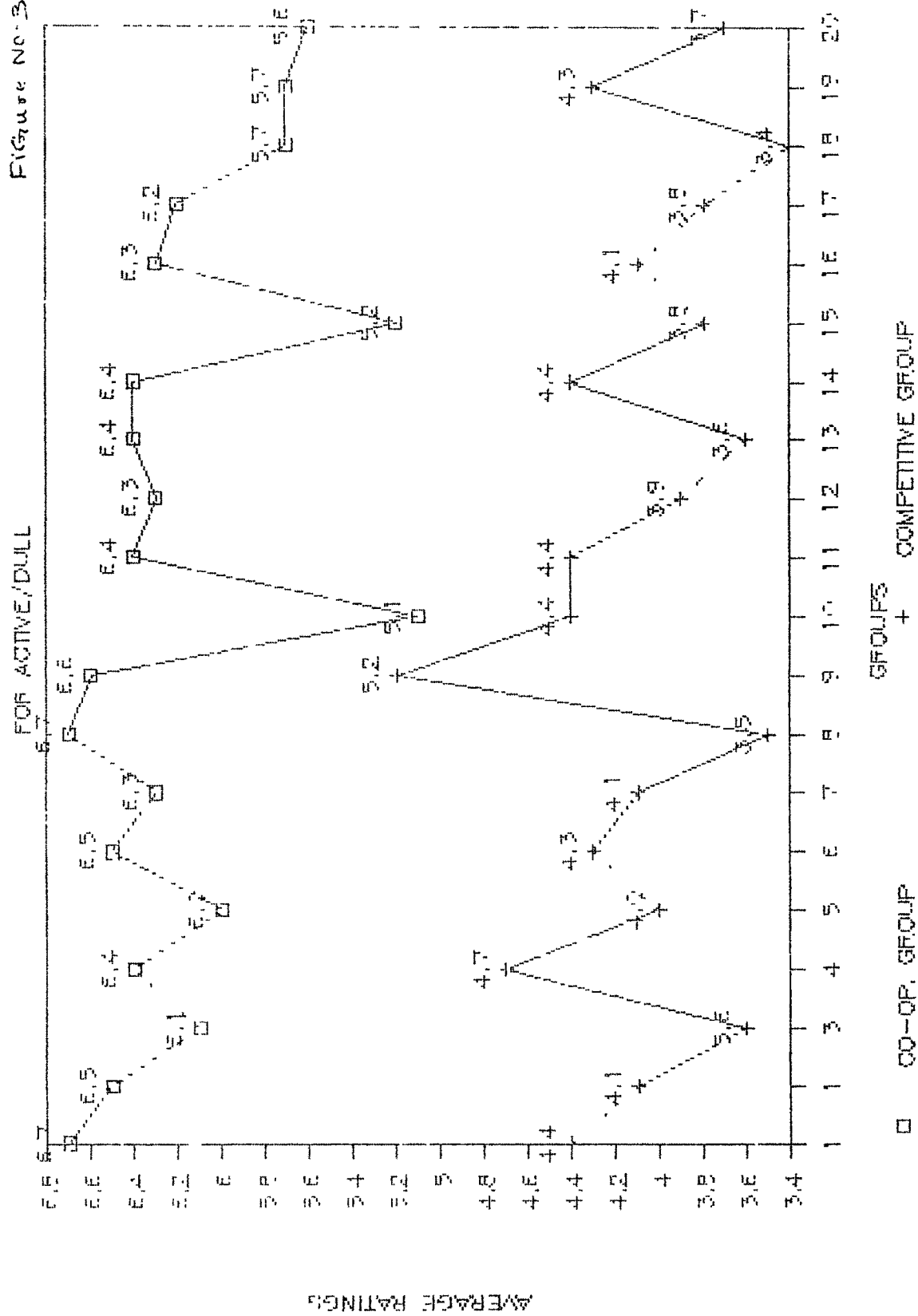
AVG SCORE OF CO-OP. & COMPETITIVE GROUP

Figure No - 2



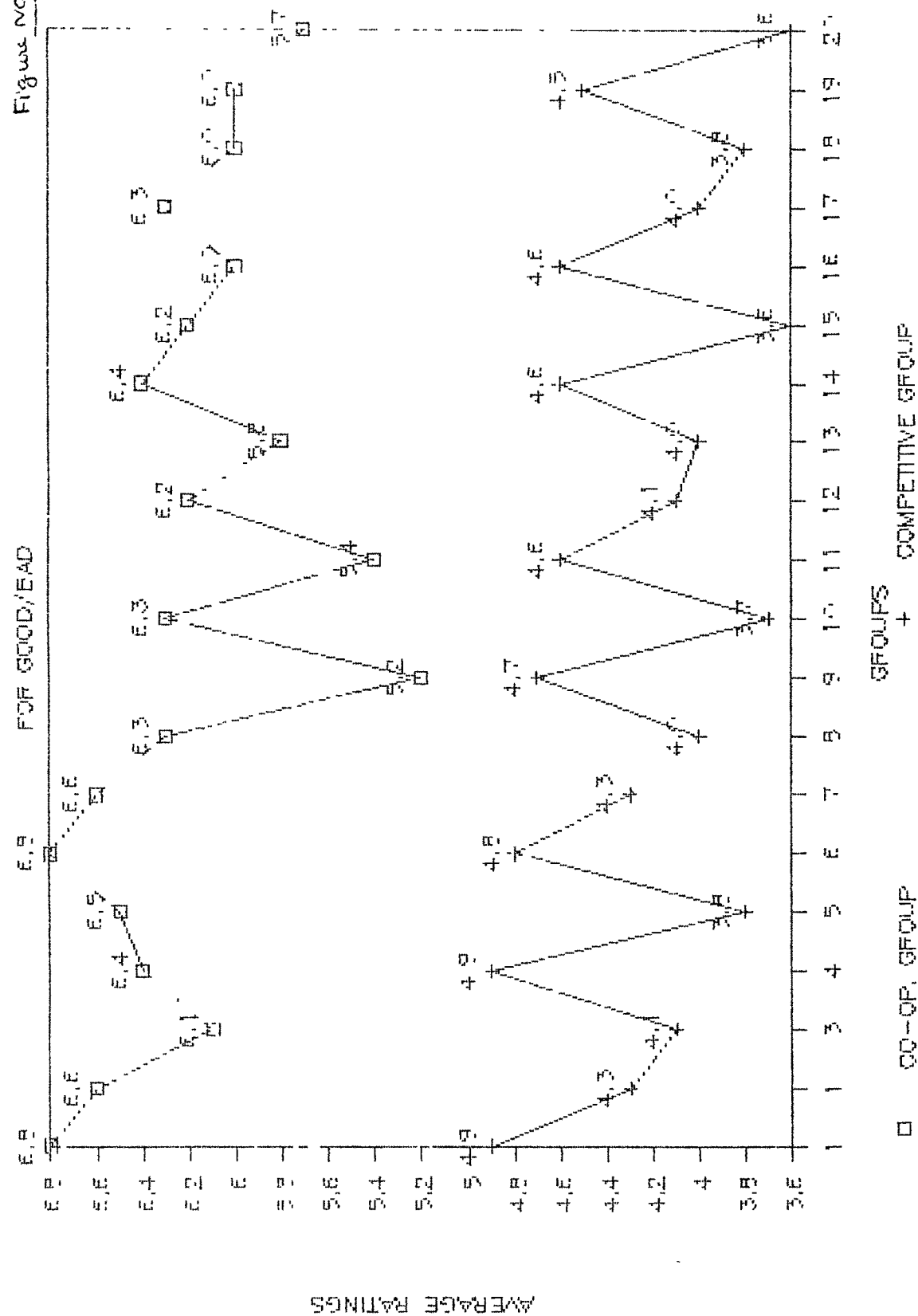
AVG SCORE OF CO-OP. & COMPETITIVE GROUP

FIGURE NO-3



AVG SCORE OF CO-OP. & COMPETITIVE GROUP

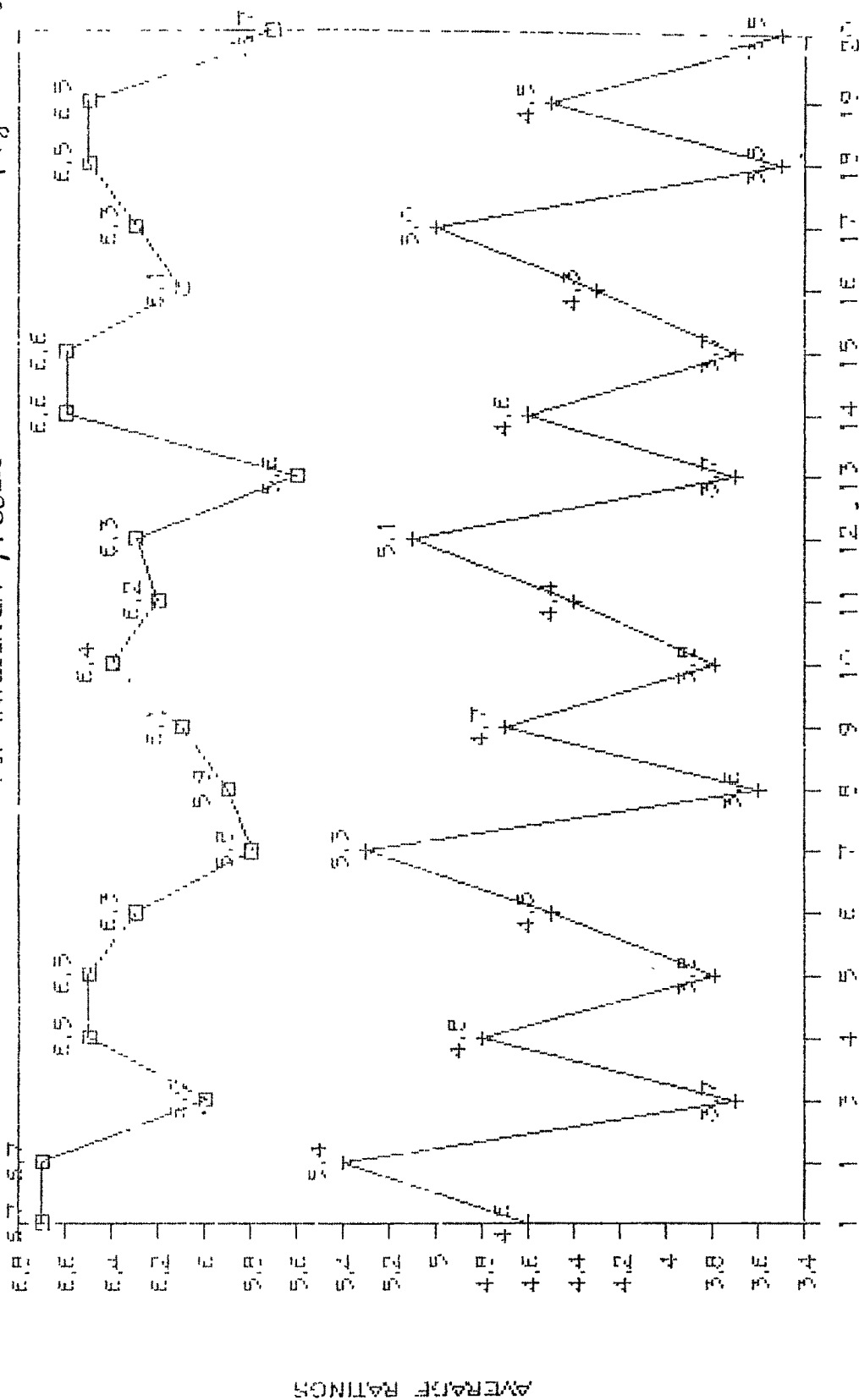
Figure No- 41



AVG SCORE OF CO-OP. & COMPETITIVE GROUP

Figure No-5-

FOR INTELLIGENT / Foolish



GROUPS + INTL. COMP. GROUP

□ INTL COOP. GROUP

TABLE NO. 2

AVERAGE SCORE OF INTERPERSONAL RELATIONSHIP OF COOPERATIVE AND COMPETITIVE GROUPS

SR. NO.	COOPERATIVE GROUP				COMPETITIVE GROUP			
	INTELLIGE FOOL	GOOD BAD	ACTIVE DULL	AVERAGE SCORE	INTELLIGE FOOL	GOOD BAD	ACTIVE DULL	AVERAGE SCORE
1.	6.7	6.8	6.7	6.7	4.6	4.7	4.4	4.6
2.	6.7	6.6	6.5	6.6	5.4	4.3	4.1	4.6
3.	6.0	6.1	6.1	6.1	3.7	4.1	3.6	3.8
4.	6.5	6.4	6.4	6.4	4.8	4.9	4.7	4.8
5.	6.5	6.5	6.0	6.3	3.8	3.8	4.0	3.9
6.	6.3	6.8	6.5	6.5	4.5	4.8	4.3	4.5
7.	5.8	6.6	6.3	6.2	5.3	4.3	4.1	4.6
8.	5.9	6.3	6.7	6.3	3.6	4.0	3.5	3.7
9.	6.1	5.2	6.6	6.0	4.7	4.7	5.2	4.9
10.	6.4	6.3	5.1	5.9	3.8	3.7	4.4	4.8

Contd.....

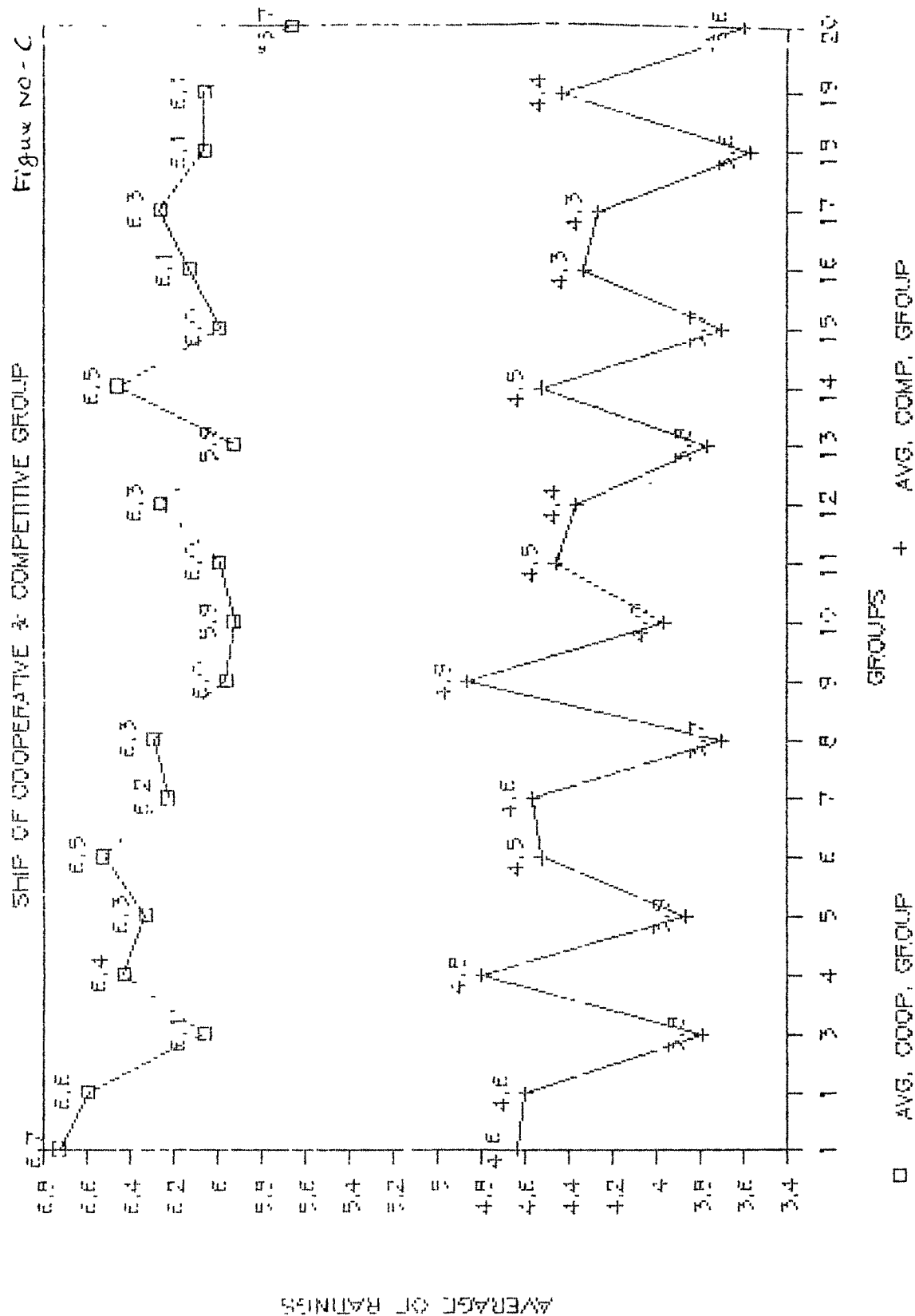
Contd....Table No.2

COOPERATIVE GROUP				COMPETITIVE GROUP				
SR. NO.	INTELLIGE FOOL	GOOD BAD	ACTIVE DULL	AVERAGE SCORE	INTELLIGE FOOL	GOOD BAD	ACTIVE DULL	AVERAGE SCORE
11.	6.2	5.4	6.4	6.0	4.4	4.6	4.4	4.5
12.	6.3	6.2	6.3	6.3	5.1	4.1	3.9	4.4
13.	5.6	5.8	6.4	5.9	3.7	4.0	3.6	3.8
14.	6.6.	6.4	6.4	6.5	4.6	4.6	4.4	4.5
15	6.6	6.2	5.2	6.0	3.7	3.6	3.8	3.7
16	6.1	6.0	6.3	6.1	4.3	4.6	4.1	4.3
17.	6.3	6.3	6.2	6.3	5.0	4.0	3.8	4.3
18	6.5	6.0	5.7	6.1	3.5	3.8	3.4	3.6
19	6.5	6.0	5.7	6.1	4.5	4.5	4.3	4.4
20.	5.7	5.7	5.6	5.7	3.5	3.6	3.7	3.6

The same data have been presented in Figure No.6.

AVG. SCORES OF INTER-PERSONAL RELATION-

Figure No-C



The individual scores of interpersonal relationship given by the members of cooperative and competitive groups have been given in Table No. 3. The average score of interpersonal relationship for entire cooperative and competitive groups has been shown in Figure No. 7.

In the above graphs the ratings/scores of interpersonal relationship have been shown individually. On all the three scales, ratings of cooperative group are higher than the ratings of the competitive group.

For assessing the significance of the result t - test was used.

STATISTICAL ANALYSIS :TABLE NO. 4

TABLE SHOWING THE STATISTICAL ANALYSIS OF INTERPERSONAL
RELATIONSHIP (INTELLIGENT./FOOLISH)

GROUPS	SIZE (N)	MEAN (M)	STD.DEV (SD)	SED	t	$\frac{\text{OBSERVED}}{\text{SED}}$ DIFFERENCE
COOPERATIVE	100	6.5	0.219	0.031	2.2 0.031	= 70.96
COMPETITIVE	100	4.3				SIGNIFICANT AT.01 POINT

The above table reveals that t value of 70.96 is significant at .01 level. The ratings of cooperative group are thus definitely higher than the ratings of competitive group. In other words members of cooperative groups perceive each other in positive light than do members of competitive group.

TABLE NO. 5

TABLE SHOWING THE STATISTICAL ANALYSIS FOR ASSESSING
THE SIGNIFICANCE OF INTERPERSONAL RELATIONSHIP
(ACTIVE/DULL)

GROUPS	(N)	(M)	SD	SED	t	$\frac{\text{OBSERVED DIFF.}}{SE_D}$
COOPERATIVE	100	6.3	0.200	0.028	=	$\frac{2.3}{.028}$
						= 82.14
COMPETITIVE	100	4.0				SIGNIFICANT AT .01

In the above table it was found that observed difference between the two means was 2.3 and SE_D was .028 and the t obtained was 82.14 . It is also significant at .01 level.

TABLE NO. 6

TABLE SHOWING THE STATISTICAL ANALYSIS FOR ASSESSING
THE SIGNIFICANCE OF INTERPERSONAL RELATIONSHIP
(GOOD OR BAD)

GROUP	(N)	(M)	SD	SED	$t = \frac{\text{OBSERVED DIFF.}}{SE_D}$
COOPERATIVE	100	6.5	0.187	0.026	$t \frac{2.3}{0.026}$ = 88.46
COMPETITIVE	100	4.2			SIGNIFICANT AT .01

For this quality of interpersonal relationship
t value is 88.46 which is significant at .01
level.

On examining the above data, graphs and statistical analysis it was found that in cooperative group there was very good inter personal relationship. The highest rating of the scale is 7 and here the average of the interpersonal relationship for cooperative group is 6.5 which is very close to the maximum possible score. While in competitive group interpersonal relationship is only 4.3 which is low.

In the three scales of interpersonal relationship in the cooperative group the average for "Intelligence" (Intelligent or Foolish) is 6.5, average for "Activity" (Active or Dull) is 6.3 and for "Goodness" (Good and Bad) the average is 6.5 . It indicates that the members of cooperative group perceive each other favourably. In competitive group the average rating for "Intelligence" (Intelligent or Foolish) is 4.3, for "Goodness" (Good or Bad) is 4.2 and the average "Activity" (Active or Dull) is 4.0 . It can be easily said that there is a better interpersonal relationship among the members of the cooperative group than in competitive group.

Thus it can be concluded that in the present study

there was a positive interpersonal relationship among the members of the cooperative group, whereas competitive group it was not so.

Certain other researches have also been conducted in this area. It was found that when a few members worked together in a group, there developed a friendship among them. Husband (1940) found in his study that the group will be specially efficient, if members are friendly, on the other hand Barton (1926), Watson (1928), Shaw (1932), and Klugman (1944) found in their studies that if a task does not lend itself to a division of labour, pairs take longer to solve each problem (mathematical problem) but have more correct answers, presumably because of the error checking feature of interaction. Same thing is seen in this study also. The fourth task used in this study is a mathematical problem. The cooperative group gave more correct answers in comparison to competitive group, because of the error - checking feature of interaction.

Thorndike (1938) Mc CURDY & Lambert (1952) found that while working in a cooperative group the members

motivated each other. A similiar results was obtained in this study also.

Morton Deutch stated the hypothesis that "there will be more friendliness among individuals in a cooperative situation than in a competitive situation." First he makes the assumption that the actions of the fellow members in a cooperative situation will be positively cathected because ".....an entity will acquire positive valence or cathexis (become attractive) if that entity is seen to be promotively related to need satisfaction." (Page 138). Then "....we would also expect the perceived source of these actions to acquire, to some extent, a cathexis similar to that held with respect to the sections." (Page 146). With contriently interrelated goals, there should be less friendliness among the individuals. Aristotle said; "And we like those whose interests do not clash with ours and that they do not gain their living in the same way; for then it becomes a case of "Potter (being jealous) potter." (Aristotle, Trans, 1939)¹. Thus Deutsch found in his study that in answer

1. F. Heider, The Psychology of interpersonal Relations.

to the question "How good were the contributions of others", members of cooperative groups rated one another's contributions to be better than did the competitive subjects. This results can also be taken to indicate greater positive interpersonal relationship among individuals working in cooperation. A similar result was obtained in the present investigation also.

Byrne and Bulchler (1955) Heber and Heber (1957) found in their study that the persons who live together become friends and who do not meet do not become friends.

In the present investigation also it was seen that on the first day when members of the cooperative group were asked to rate each other, few members rated the others as good, but from the second day onwards they rated them more positively.

Stendler, Damrin and Haines (1951), Grossack (1954), Gottheil (1955), Harnack (1955), Pillips and D'Amico (1956) and Mann and Mann (1959) found in their study that the group members who have been motivated to cooperate show more positive responses to each other, are more

favourable in their perceptions, are more involved in the task.

In this study also it was found that in cooperative group the members were positively interrelated with each other. They took more interest in each other whereas in competitive group the members were not taking interest in each other. Each member wanted to outdo the other of the group.

CARTWRIGHT and ZANDER in their study "Effect of cooperation and competition upon group process," found that according to observer's ratings, individuals in cooperative group were significantly more friendly than individuals in competition having discussions.

They also found that a greater percentage of encouraging or rewarding remarks were made in cooperative groups and a significantly larger proportion of aggressive remarks were made in the competitive groups. Observations in the present study also indicate more or less, the same thing. The members of the cooperative group were motivating each other for working quickly. Such as 'DO fast, do you not want to take prize' or "Time is less

let us work fast". They were continuously in communication with each other, while in competitive group the members were not communicative.

This hypothesis receives additional support from the observation of behaviour during that period when the subjects were busy in doing the task. It was found that the members of the cooperative group displayed a sense of unity. In order to gain the prize for the group each member wanted to contribute to the maximum. All the 5 members of a group tried to move and sit very close to each other, discussed the possible mode of their attack, gave suggestions to each other and offered help. Whereas in competitive group, the group members unconsciously sat apart at some distance. There was ofcourse no question of giving suggestions or offering help to each other. It was also seen that when one subject succeeded in completing the geometrical design task earlier than others, he shielded it with the note book, lest others should copy his design.

One more thing was also marked that in cooperation, those groups in which the members were indifferent to each other, they did not rate other group members a very high

point on the first day. But from second day or third day onwards when they got acquainted with each other and grew friendly, then they rated each other at higher points than on the first day. Exactly opposite results were found in competitive group. On the first day the subjects rated their other group members for interpersonal relationship at quite a high point, but on third and fourth day they did not rate them as good as earlier. In competitive group the score of interpersonal relationship gradually decreased whereas in cooperative group the score gradually increased.

It was also found that those groups in which the subjects were indifferent to each other before the experiment, changed towards more points relationship after working together for four days. In cooperative group the subjects became friendly with each other.

For example in group number 3 each member was indifferent to the other, but in post sociometric test the interpersonal relationship was changed. B had rated A, D and F as most friendly, and C & E just friendly. In the same way C had rated A, B, D & F as friendly. They had thus become friendly with each other. On examining the first,

twelfth and Tenth groups, it was found that in pre-test C was less friendly with B, D & E but in post-test the feeling changed into friendliness. In pre-test B had become most friendly with A and A had become just friendly with B. Thus the members who were indifferent to each other, after working in cooperation, become friends.

In the last -4- groups in which the subjects were initially friends, became even more friendly. For example, in group number seventeen A, B, D and F were mutually most friendly, B was less friendly with C, D and E. C was just friendly with A, B and F. But in Post Sociometric test all 5 members have turned most friendly. In the same way group No. 19 and 20 all members became most friendly with other.

In competitive group, the members who were indifferent to each other became less friendly or just friendly or they remained indifferent with each other. In some other groups in which the subjects were most friendly or friendly with each other in the first sociometric test, rated each other less friendly after participating in competitive task. For example in group number one A, B and E were most friendly with each

other. C was friendly with B and D, and most friendly with A and F, and A was friendly with C and E. But in the Post Sociometric test the relationship was entirely changed. B and C became less friendly with each other and A, B and E became just friendly. A became just friendly with B, E and C become less friendly with A and B.

In the same manner in other group, at first all the members were most friendly or friendly changed their attitude and in post sociometric test they rated the other group members as just friendly and less friendly.

In the entire competitive group very few students remained friendly with each other, most of them had developed negative attitudes for partners in the group.

Thus it can be concluded that in cooperative group the subjects became more friendly while in competitive group they became less friendly or indifferent to each other.

TABLE No. 3

TABLE SHOWING THE INDIVIDUAL SCORES OF INTERPERSONAL
RELATIONSHIP GIVEN BY THE MEMBERS OF COOPERATIVE AND
COMPETITIVE GROUPS

COOPERATIVE GROUPS			COMPETITIVE GROUPS		
INTELL./ FOOL	GOOD/ BAD	ACTIVE/ DULL	INTELL./ FOOL	GOOD/ BAD	ACTIVE/ DULL
6.8	7.0	6.7	4.9	4.7	4.1
6.8	6.8	6.8	5.1	5.5	5.5
6.7	6.8	6.8	5.0	4.7	5.2
6.6	6.6	6.6	3.2	5.1	3.2
6.6	6.6	6.4	4.7	4.4	4.1
6.7	6.4	6.1	4.4	4.5	4.4
6.7	6.6	6.4	5.8	5.7	5.1
6.5	6.4	6.3	6.6	2.7	3.5
6.4	6.7	6.5	5.0	3.5	3.1
7.0	7.0	7.0	5.0	4.9	4.5
6.4	6.6	6.7	3.6	4.7	3.9
6.0	6.0	6.0	3.6	3.6	3.0
6.0	6.0	6.0	3.3	4.1	4.0
5.0	5.0	5.0	3.7	4.1	3.2

Contd.....

Contd...Table No. 3

COOPERATIVE GROUPS			COMPETITIVE GROUPS		
INTELL./ FOOL	GOOD/ BAD	ACTIVE/ DULL	INTELL./ FOOL	GOOD/ BAD	ACTIVE/ DULL
6.7	6.7	6.8	4.4	4.1	4.1
6.6	6.3	6.1	3.5	3.5	3.3
6.4	6.4	6.8	4.9	4.7	4.9
6.1	6.3	6.0	5.3	5.5	4.7
6.8	6.8	7.0	5.0	5.6	5.1
6.7	6.4	6.1	5.3	5.0	5.3
6.7	6.7	6.1	4.0	3.3	3.2
6.8	7.0	4.4	4.0	4.5	4.6
6.7	6.6	7.0	4.0	4.0	5.0
6.0	6.0	6.3	4.0	3.8	3.8
6.5	6.4	6.0	3.2	3.2	3.2
6.7	6.9	6.6	4.8	4.6	4.0
6.7	6.7	6.7	5.0	5.4	5.4
6.6	6.7	6.7	4.9	4.6	5.1
6.5	6.5	6.5	3.1	5.0	3.1
5.0	7.0	6.0	4.6	4.3	4.0
5.6	6.9	6.6	4.1	4.5	4.6
5.0	6.5	6.3	5.7	5.6	5.0

Contd.....

Contd...Table No. 3

COOPERATIVE GROUPS			COMPETITIVE GROUPS		
INTELL./ FOOL	GOOD/ BAD	ACTIVE/ DULL	INTELL./ FULL	GOOD/ BAD	ACTIVE/ DULL
6.4	6.3	6.2	6.5	2.6	3.4
6.3	6.6	6.4	4.9	3.4	3.0
5.7	6.8	6.2	5.3	5.2	4.6
6.3	6.5	6.6	3.5	4.6	3.8
5.6	5.6	6.9	3.5	3.5	2.9
6.0	6.0	6.9	3.2	4.0	3.9
6.3	6.9	6.6	3.6	4.0	3.1
5.4	6.6	6.7	4.3	4.0	4.0
6.3	5.4	6.3	3.4	3.4	6.3
6.3	5.3	6.7	4.8	4.6	4.8
6.4	5.1	6.5	5.0	5.1	4.9
6.0	4.9	6.9	4.9	5.5	5.0
5.7	5.4	6.7	5.2	4.9	5.2
6.6	6.6	6.0	3.9	3.2	3.1
6.0	6.0	4.3	3.9	4.4	4.5

Contd.....

Contd...Table No. 3

COOPERATIVE GROUPS			COMPETITIVE GROUPS		
INTELL./ FOOL	GOOD/ BAD	ACTIVE/ DULL	INTELL./ FOOL	GOOD/ BAD	ACTIVE/ DULL
6.6	6.5	4.9	3.9	3.9	4.5
6.4	6.3	5.1	4.4	4.1	6.4
6.4	6.3	5.3	3.1	3.1	3.1
6.1	4.9	6.0	4.7	4.5	3.9
6.5	5.4	6.5	4.8	5.2	5.2
5.9	5.5	6.5	4.8	4.5	4.9
6.3	5.9	6.3	3.0	4.8	4.2
6.0	5.1	6.6	4.7	4.2	4.0
6.4	6.1	6.6	4.2	4.3	4.2
6.0	6.0	6.1	5.5	5.4	4.8
6.2	6.1	6.0	6.3	2.6	3.3
6.1	6.4	6.2	4.8	3.3	2.9
6.6	6.6	6.6	4.8	4.7	4.3
5.0	5.0	6.4	3.4	4.5	3.7
5.8	5.7	6.7	3.8	3.4	3.1
5.3	5.4	6.5	3.1	3.9	3.8
5.7	6.4	6.0	3.8	4.2	3.3
6.4	6.4	6.5	4.2	3.9	3.9

Contd.....

Contd...Table No. 3

COOPERATIVE GROUPS			COMPETITIVE GROUPS		
INTELL./ FOOL	GOOD/ BAD	ACTIVE/ DULL	INTELL./ FOOL	GOOD BAD	ACTIVE/ DULL
6.5	6.5	6.1	3.3	3.3	3.1
6.6	6.4	6.5	4.7	4.5	4.7
6.6	6.5	6.5	5.0	5.2	4.5
6.5	6.5	6.6	4.8	5.3	4.8
7.0	6.0	6.3	5.0	4.8	5.0
6.9	6.4	5.8	3.8	3.1	3.0
6.8	5.8	4.2	3.8	4.3	4.4
6.6	6.3	4.9	3.8	3.8	4.8
6.9	6.6	5.6	3.8	3.6	3.6
6.0	6.0	5.7	3.2	3.2	3.1
5.6	5.4	6.3	4.6	4.4	3.8
6.0	6.0	6.4	4.8	5.1	5.1
6.3	6.4	6.4	4.7	4.4	4.8
6.2	6.2	6.2	2.9	4.8	2.9
6.2	6.2	6.0	4.4	4.1	3.8
6.3	6.0	5.7	4.1	4.2	4.1
6.3	6.2	6.0	5.4	5.3	4.8
6.1	6.0	5.9	6.2	2.5	3.2

Contd.....

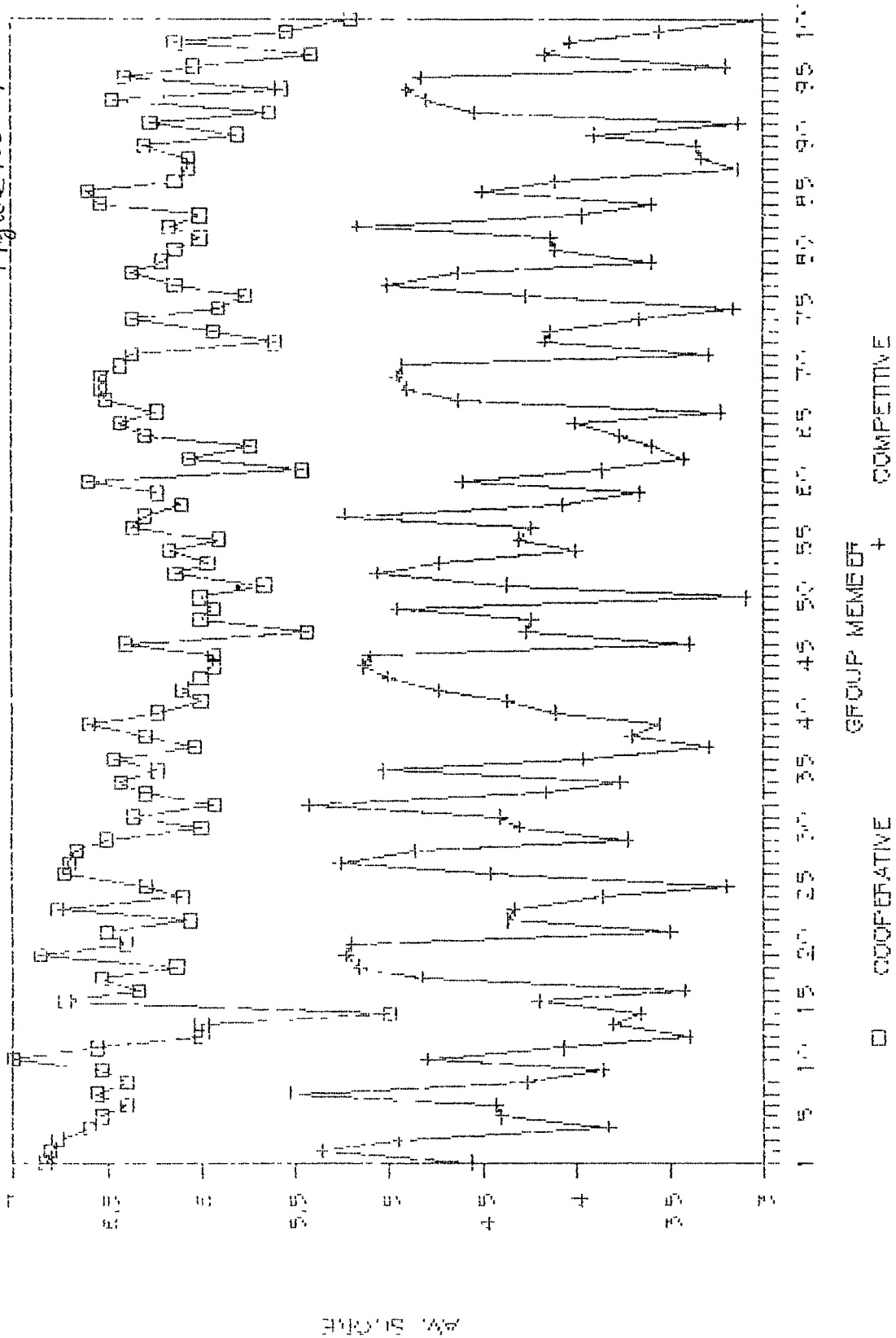
Contd...Table No. 3

COOPERATIVE GROUPS			COMPETITIVE GROUPS		
INTELL./ FOOL	GOOD/ BAD	ACTIVE/ DULL	INTELL./ FOOL	GOOD BAD	ACTIVE/ DULL
6.4	6.5	6.7	4.7	3.2	2.9
6.6	6.6	6.6	4.7	4.6	4.2
6.9	5.7	5.8	3.6	4.8	3.9
6.6	6.0	5.6	3.3	3.3	2.8
6.6	6.3	5.3	3.1	3.2	3.7
6.4	6.6	5.9	3.4	3.8	2.9
6.0	5.6	6.0	4.1	3.8	3.8
6.4	6.4	6.0	3.2	3.2	3.0
6.6	5.0	5.3	4.6	4.4	4.6
6.6	6.4	6.4	4.9	5.1	4.4
6.4	5.4	4.9	4.7	5.2	4.8
6.6	6.6	6.0	4.9	4.7	4.9
6.0	6.0	6.1	3.7	3.0	2.9
5.6	5.7	4.9	3.6	4.5	4.4
6.3	6.1	6.0	3.7	3.7	4.7
5.6	5.8	5.2	3.7	3.5	3.5
5.0	5.0	5.6	2.9	3.2	2.9
TOTAL					
627.3	618.4	615.4	432.0	423.4	409.4

AV. SCORE OF INTERPERSONAL RELATIONSHIP

FOR ENTIRE COOP. & COMP. GROUP.

Figure No - 7



WORK SATISFACTION :

The second hypothesis stated earlier, concerns experience of satisfaction with task.

According to this hypothesis, the members of cooperative group will be more satisfied with their tasks etc. While the members of the competitive group will be less satisfied with each other and with their tasks.

To test this hypothesis, each individual had been given a five point rating scale immediately after each task was over, to record their work satisfaction. The rating of each member was scored. These scores were added and the average of the whole competitive group as well as of cooperative group was calculated. In the following table the average score of each cooperative and competitive group has been shown.

TABLE NO. 7

TABLE SHOWING THE AVERAGE SCORES OF WORK SATISFACTION OF
COOPERATIVE AND COMPETITIVE GROUPS

SR. NO.	COOPERATIVE GROUP	COMPETITIVE GROUP
1	4.8	4.5
2	4.8	4.7
3	4.4	4.2
4	4.7	4.6
5	4.9	4.5
6	5.0	4.9
7	4.6	4.4
8	4.6	4.5
9	5.0	5.0
10	4.6	5.0
11	5.0	4.7
12	4.7	4.7
13	4.6	4.8
14	4.8	4.8
15	5.0	4.5
16	4.7	5.0

Contd.....

Contd.....Table No. 7

SR. NO.	COOPERATIVE GROUP	COMPETITIVE GROUP
17	4.7	4.9
18	5.0	4.6
19	4.7	4.9
20	5.0	5.0

Table No. 8 shows the average score of the work satisfaction given by the students (members) of cooperative and competitive group. The same data has been presented in Figure No. 8.

Further to test the significance of difference between averages, t test was applied. Table No. 9 shows the statistical analysis of work satisfaction.

AV. SCORE OF WORK SATISFACTION OF MEMBERS

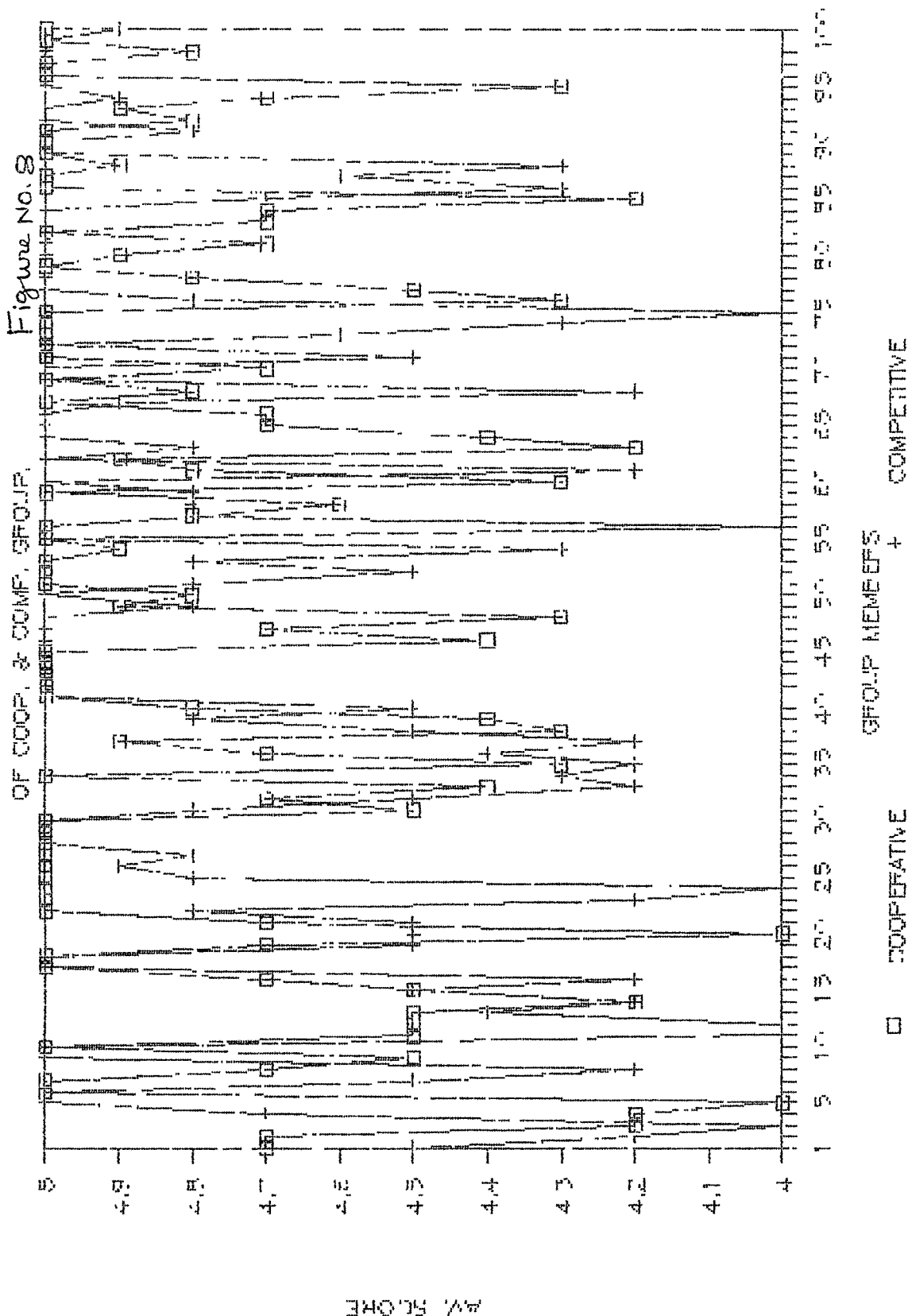


TABLE NO. 8

AVERAGE SCORE OF WORK SATISFACTION GIVEN BY MEMBERS OF
COOPERATIVE AND COMPETITIVE GROUP

SR. NO.	COOPERATIVE GROUP	COMPETITIVE GROUP
1	4.7	4.5
2	4.7	4.2
3	4.2	4.0
4	4.2	4.7
5	4.0	5.0
6	5.0	5.0
7	5.0	4.5
8	4.7	4.2
9	4.5	5.0
10	5.0	5.0
11	4.5	4.0
12	4.5	4.0
13	4.5	4.4
14	4.2	4.2
15	4.5	4.5

Contd.....

Contd.....Table No. 8

SR. NO.	COOPERATIVE GROUP	COMPETITIVE GROUP
16	4.7	4.2
17	5.0	5.0
18	5.0	5.0
19	4.7	4.5
20	4.0	4.5
21	4.7	4.5
22	5.0	4.8
23	5.0	4.2
24	5.0	4.0
25	5.0	4.8
26	5.0	4.9
27	5.0	4.8
28	5.0	5.0
29	5.0	5.0
30	5.0	5.0
31	4.5	4.8
32	4.7	4.5
33	4.4	4.2

Contd.....

Contd.....Table No. 8

SR. NO.	COOPERATIVE GROUP	COMPETITIVE GROUP
34	5.0	4.3
35	4.3	4.2
36	4.7	4.4
37	4.9	4.2
38	4.3	4.5
39	4.4	4.8
40	4.8	4.5
41	5.0	5.0
42	5.0	5.0
43	5.0	5.0
44	5.0	5.0
45	5.0	5.0
46	4.4	5.0
47	4.7	5.0
48	4.3	5.0
49	4.9	4.8
50	4.8	5.0
51	5.0	4.8
52	5.0	4.5
53	5.0	4.8
54	4.9	4.3

Contd.....

Contd.....Table No. 8

SR. NO.	COOPERATIVE GROUP	COMPETITIVE GROUP
55	5.0	5.0
56	5.0	4.0
57	4.8	4.8
58	4.6	4.8
59	5.0	4.8
60	4.3	5.0
61	4.8	4.2
62	4.9	5.0
63	4.2	4.8
64	4.4	5.0
65	4.7	5.0
66	4.7	5.0
67	5.0	4.9
68	4.8	4.2
69	5.0	5.0
70	4.7	5.0
71	5.0	4.5
72	5.0	5.0
73	5.0	4.6
74	5.0	4.3

Contd.....

Contd.....Table No. 8

SR. NO.	COOPERATIVE GROUP	COMPETITIVE GROUP
75	5.0	4.0
76	4.3	4.8
77	4.5	5.0
78	4.8	5.0
79	5.0	5.0
80	4.9	5.0
81	4.7	5.0
82	5.0	5.0
83	4.7	5.0
84	4.7	5.0
85	4.2	4.7
86	5.0	4.3
87	5.0	4.6
88	4.9	4.3
89	5.0	5.0
90	5.0	5.0
91	5.0	4.8
92	4.8	5.0
93	4.9	5.0

Contd.....

Contd.....Table No. 8

SR. NO.	COOPERATIVE GROUP	COMPETITIVE GROUP
94	4.7	4.9
95	4.3	5.0
96	5.0	5.0
97	5.0	5.0
98	4.8	5.0
99	5.0	5.0
100	5.0	4.9

TABLE NO. 9

GROUPS	SIZE (N)	MEAN (M)	SD	SE _D	t- $\frac{\text{observed diff}}{\text{SE}_D}$
COOPERATIVE	100	4.8	0.32	0.03	$\frac{.1}{0.03}$
COMPETITIVE	100	4.7			= 3.33*

*SIGNIFICANT AT 0.01

The t ratio is 3.33, which shows that difference between mean work satisfaction of cooperative and competitive group is significant at level 0.01. In both groups subjects were not equally satisfied with their performance.

An attempt was made to analyse whether work satisfaction will gradually increase from trial to trial in cooperative group. In competitive group the opposite trend was expected. The results obtained are tabulated below :-

TABLE NO. 10

TABLE SHOWING THE MEAN SCORES OF WORK SATISFACTION OF COOPERATIVE AND COMPETITIVE GROUP ON FIRST AND FOURTH DAY

COOPERATIVE GROUP			COMPETITIVE GROUP		
1st WEEK	4th WEEK	CHANGES	1st WEEK	4th WEEK	CHANGES
4.3	5.0	+	4.3	4.8	+
4.0	4.0	0	5.0	4.4	-
4.3	4.3	0	4.6	4.6	0
4.0	4.0	0	5.0	2.8	-
4.7	4.7	0	5.0	3.5	-

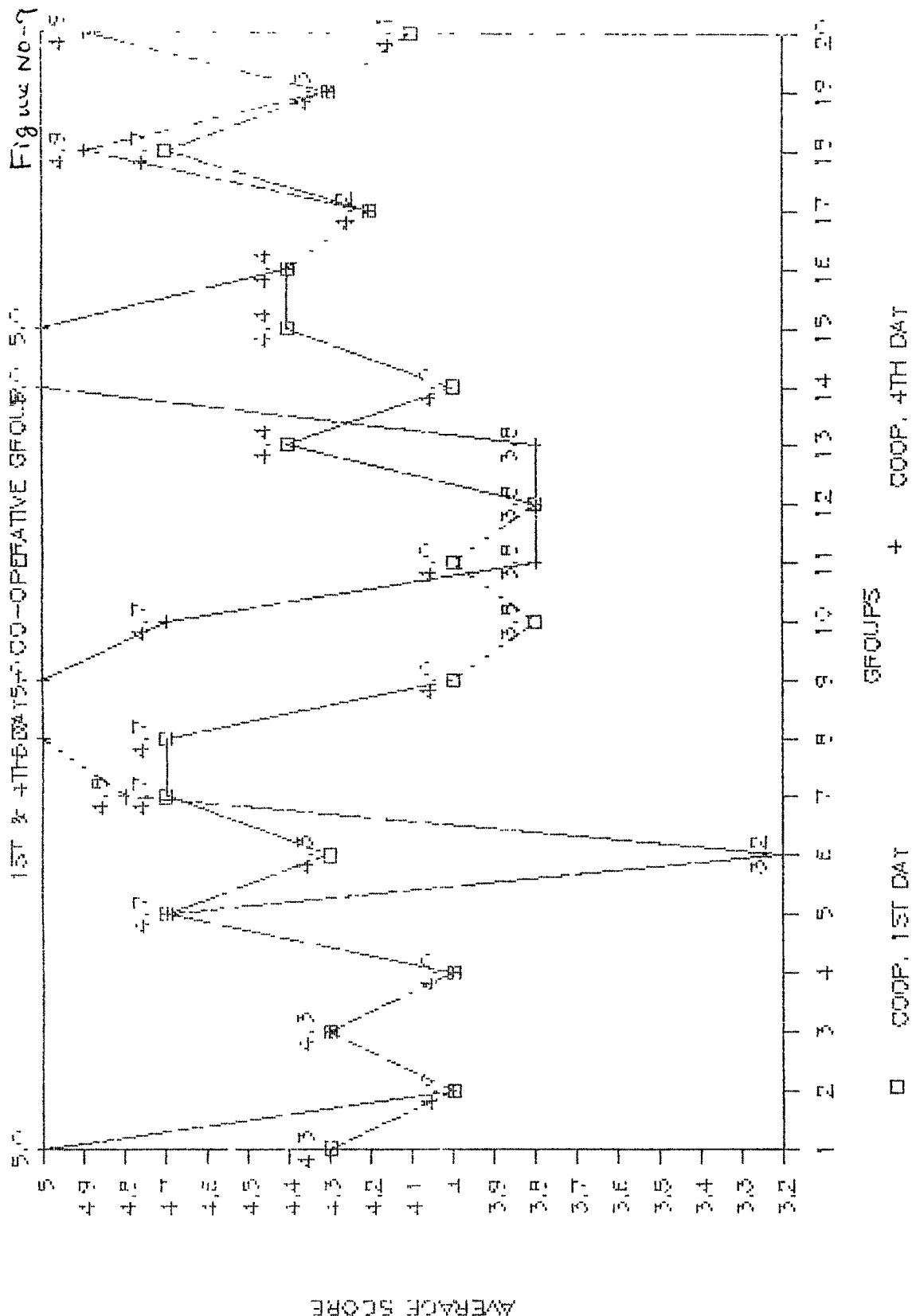
Contd.....

Contd.....Table No. 10

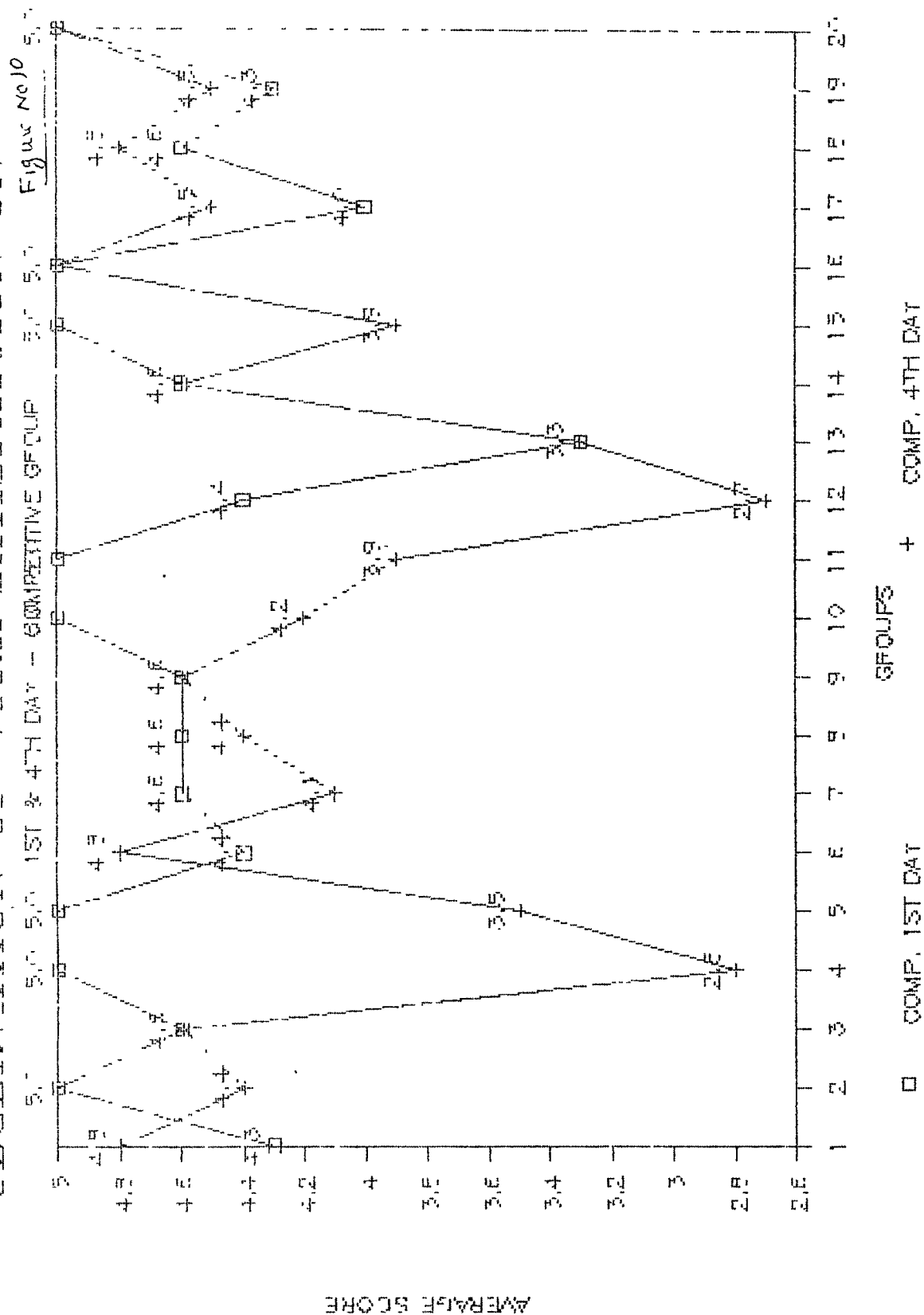
COOPERATIVE GROUP			COMPETITIVE GROUP		
1st WEEK	4th WEEK	CHANGES	1st WEEK	4th WEEK	CHANGES
4.3	3.2	-	4.4	4.8	+
4.7	4.8	+	4.6	4.1	-
4.7	5.0	+	4.6	4.4	-
4.0	5.0	+	4.6	4.6	0
3.8	4.7	+	5.0	4.2	-
4.0	3.8	-	5.0	3.9	-
3.8	3.8	0	4.0	2.7	-
4.4	3.8	-	3.3	3.3	0
4.0	5.0	+	4.6	4.6	0
3.4	5.0	+	5.0	3.9	-
4.4	4.4	0	5.0	5.0	-
4.2	4.2	0	4.0	4.5	+
4.7	4.9	+	4.6	4.8	+
4.3	4.3	0	4.3	4.5	+
4.1	4.9	+	5.0	5.0	0

The same data has been presented in Figure No.9,10 and 11. The (graph-II) also depicts changes/variance between first and fourth day in cooperative and competitive group.

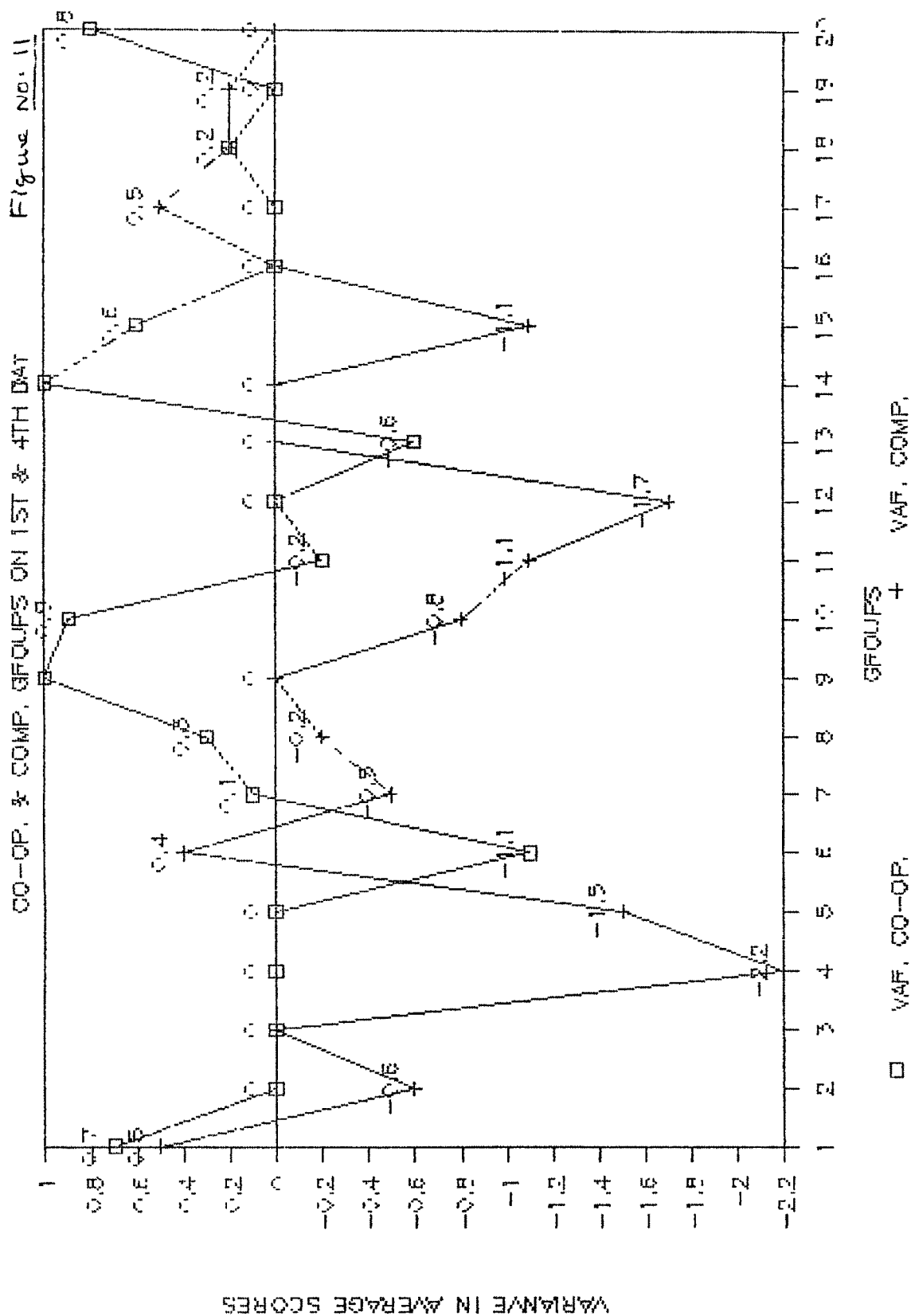
OBSERVATION OF WORK SATISFACTION ON



OBSERVATION OF WORK SATISFACTION ON



VARIANCE OBSERVED IN WORK SATISFACTION



From the Table - 10 and in Figure - 11 it can be seen that in some groups the work satisfaction has increases (in cooperative groups such as in Groups No. 1, 7, 8, 9, 10, 14, 15, 18 and 20). In some groups there is no change. Similarly in competitive groups it was found that in group no. 2, four, five, seven, eight, ten, eleven, twelve, fifteen and sixteen work satisfaction has decreased.

Some studies have been conducted in this area in which it was found that members of the cooperative groups are more satisfied with their tasks than the members of the competitive group. According to the studies of Damrin and Haines (1951), Grossack (1954), Gotheil (1955), Phillips & D'Amica (1956) and Mann Mann (1956), it was found that in general group members who have been motivated to cooperative show more positive response to each other, are more involved in the task and have greater satisfaction with the task.

MARTIN M. GROSSACK : in his study "some effects of cooperation and competition upon small groupbehaviour", found that the members of the cooperative groups are more satisfied with their tasks than members of competitive group.

Since individuals tend to join groups for three general reasons, either for the prestige of membership, to help the group reach a goal or because they value the association with the group members (FESTINGER et al 1950), their satisfaction with the group can be the result of success in any of these three areas. This past experience which has prepared them for participation in the same or similar groups will in turn affect their ability to adjust to, and thereby be satisfied with the present outcome. (BURGESS and COTTRELL 1939), ARSENIAN (1943).

In other studies of competition Versus Cooperation, individuals working together but with individual goals are contrasted with individuals working together with a single group goal. The competitive groups are generally less efficient and less satisfying to the members (DEUTSCH, 1949), MINTZ, STENDLER et al (1951), GRACE (1954) except in case where members are asked to cooperate to receive a group score in a task in which it would be more, appropriate to rate individual performance. SMITH (1955) found in his study that college students who were given group scores for discussion effectiveness rather

than individual grades were dissatisfied with their group incentive system.

One element in competition which would appear to be related to members satisfaction is the fact that members are competing for a high status in the group. Members of groups with a high consensus on status are in general more satisfied with the other members and also with the task performance than members of group in which the status of the members is uncertain (HEINICKE and BALES 1953).

In the researches mentioned above it is found that the competitive groups are generally less satisfied with their performance, while cooperative groups are more satisfied. In the present study the members of the cooperative and competitive groups are more or less equally satisfied. Further all the members of cooperative & competitive groups were extremely enthusiastic about the experiment and enjoyed the tasks fully because it was a new experience for them. It was a departure from their routine school work. All the tasks were very interesting and since they had never gone through such an experience before, they found the task all the more interesting.

ANXIETY :

The third hypothesis as mentioned earlier states that more anxiety will be generated in competitive group than in cooperative group.

To test this hypothesis each individual had been given SARASON'S GENERAL ANXIETY SCALE immediately after each task. Mean anxiety score for each individual over trials was computed. These results are shown in Table No.11 below :

TABLE NO. 11

TABLE SHOWING THE AVERAGE SCORE OF ANXIETY OF COOPERATIVE
AND COMPETITIVE GROUP.

COOPERATIVE GROUP		COMPETITIVE GROUP	
GROUP	AVERAGE SCORE	GROUP	AVERAGE SCORE
1.	1.34	1.	3.22
2.	1.58	2.	3.20
3.	2.82	3.	2.40
4.	2.42	4.	2.66

Contd.....

Contd...Table No. 11

COOPERATIVE GROUP		COMPETITIVE GROUP	
GROUP	AVERAGE SCORE	GROUP	AVERAGE SCORE
5.	1.54	5.	4.51
6.	3.03	6.	3.82
7.	2.77	7.	3.26
8.	2.72	8.	2.48
9.	2.19	9.	3.38
10.	1.88	10.	4.85
11.	2.35	11.	3.73
12.	2.00	12.	3.06
13.	2.35	13.	3.22
14.	1.83	14.	3.64
15.	1.27	15.	4.51
16.	2.07	16.	3.05
17.	2.56	17.	2.27
18.	2.93	18.	1.90
19.	1.15	19.	4.33
20.	3.56	20	5.03

The above data have been presented graphically in
Figures 12, 13 and 14.

Figure # 12
AVERAGE SCORE OF ANXIETY
of COOPERATIVE GROUP

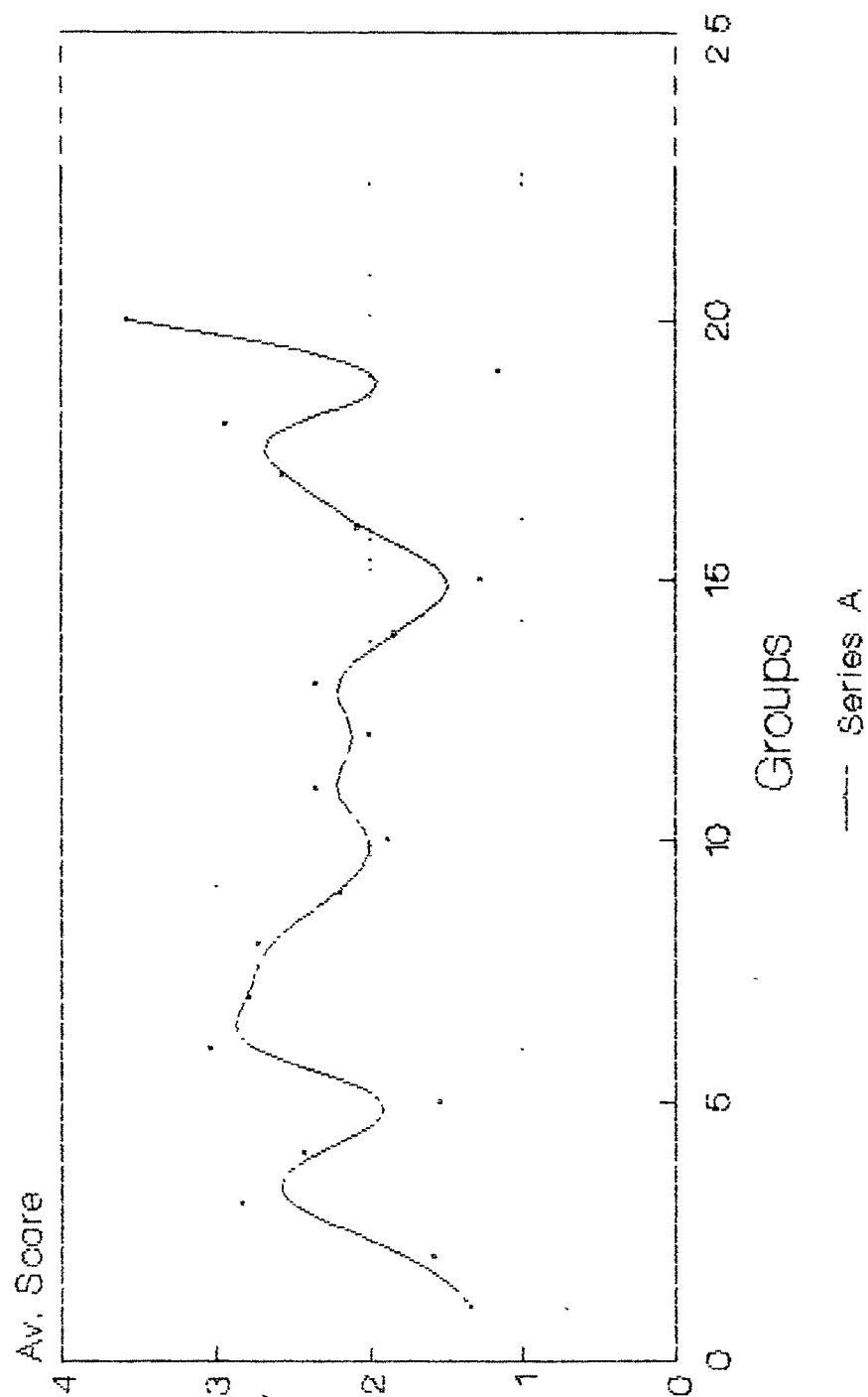
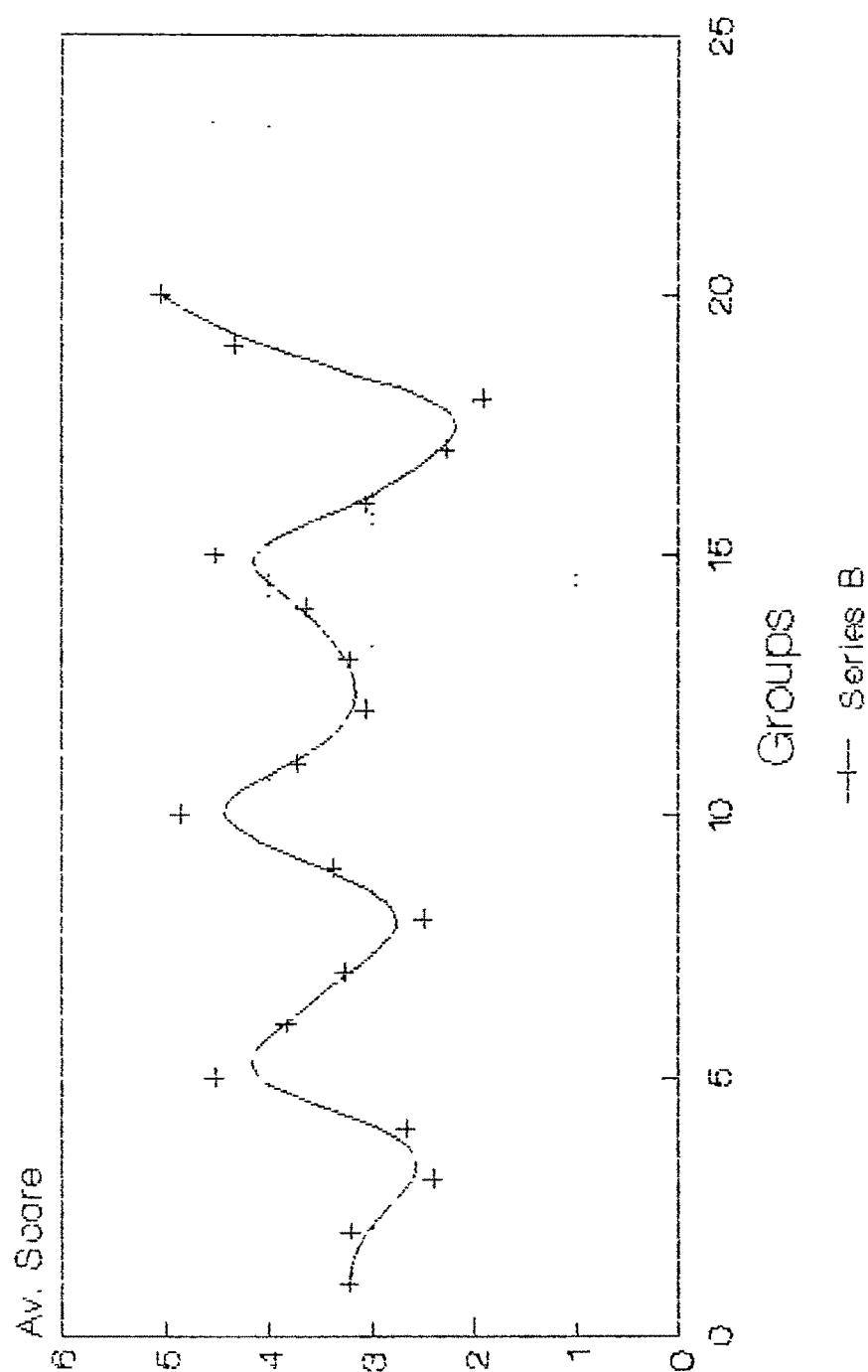
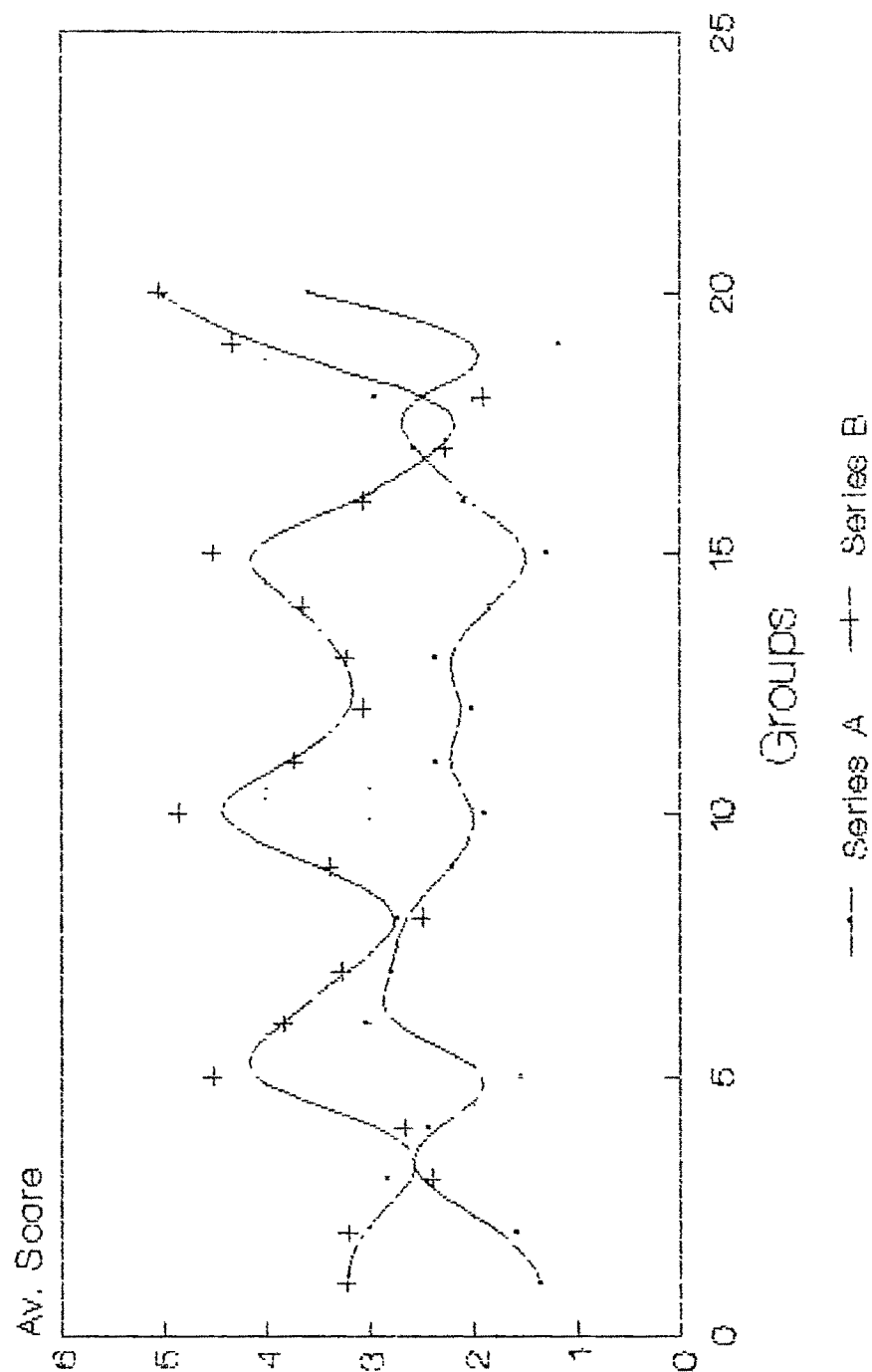


Figure # 13
AVERAGE SCORE OF ANXIETY
OF COMPETITIVE GROUP



MCS

FIGURE # 14
AVERAGE SCORE OF ANXIETY OF
COOPERATIVE & COMPETITIVE GROUP



In the Figure No.14 it is clearly revealed that in competitive group there is more anxiety than in cooperative group. In group number one the score of anxiety is 1.34 in cooperative group while in competitive group the score is 3.22. There is a great difference between the averages of these groups. In 2nd group the score for cooperative group is 1.58 while for competitive group it is 3.20. In group number 5 the average score for cooperative group is 1.54 while in competitive group it is 4.51, again the difference is large between the two groups. In four groups i.e. three, eight, seventeen and eighteen the average score of anxiety is slightly more in cooperative group. But again in remaining group, the score in competitive groups is much higher than in the cooperative group. In group number ten the score for cooperative group was 1.88 while in competitive group it was 4.88, and in 14th, 15th, 19th and 20th the score for cooperative group was 1.83, 1.27, 1.15, 3.56 while in competitive group it was 3.64, 4.51, 4.33 and 5.03 respectively. Thus it can be said that in competitive group the subjects were more anxious than in cooperative group.

In the following table the average anxiety score for each individual of all cooperative and competitive groups are given.

Table No. 12 (Page No.) showing the average score of anxiety individually of cooperative and competitive group.

In the Table No. 12 it was found that the highest score for anxiety was 6.5 & the lowest No.0.0 so between 0.0 & 6.5 frequency distribution was made and then cumulative frequency was calculated for cooperative group as well as competitive group. The frequency distribution is given below.

TABLE - 13

TABLE SHOWING THE CUMULATIVE FREQUENCY FOR COOPERATIVE AND COMPETITIVE GROUP.

CLASS INTERVAL	COOP. FREQUENCY	CO-OPERATIVE CUM.FREQUENCY	COMPET FREQUENCY	COMPETITIVE CUM.FREQUENCY
	f.	c.m.f.	f.	c.m.f.
5.6 - 6.5	0	0	5	5
4.6 - 5.5	2	2	22	27
3.6 - 4.5	15	17	19	46
2.6 - 3.5	23	40	21	67
1.6 - 2.5	32	72	24	91
0 - 1.5	28	100	9	100

On the basis of this cumulative frequency ogive was drawn (Figure No. 15).

Fig. No. 16 Bar diagram also present the same difference between the scores of cooperative and competitive groups.

On seeing the graph, it was found that in competitive group the score of anxiety was high and ogive is appropriate but in cooperative group the scores were on the lower side and ogive is flat.

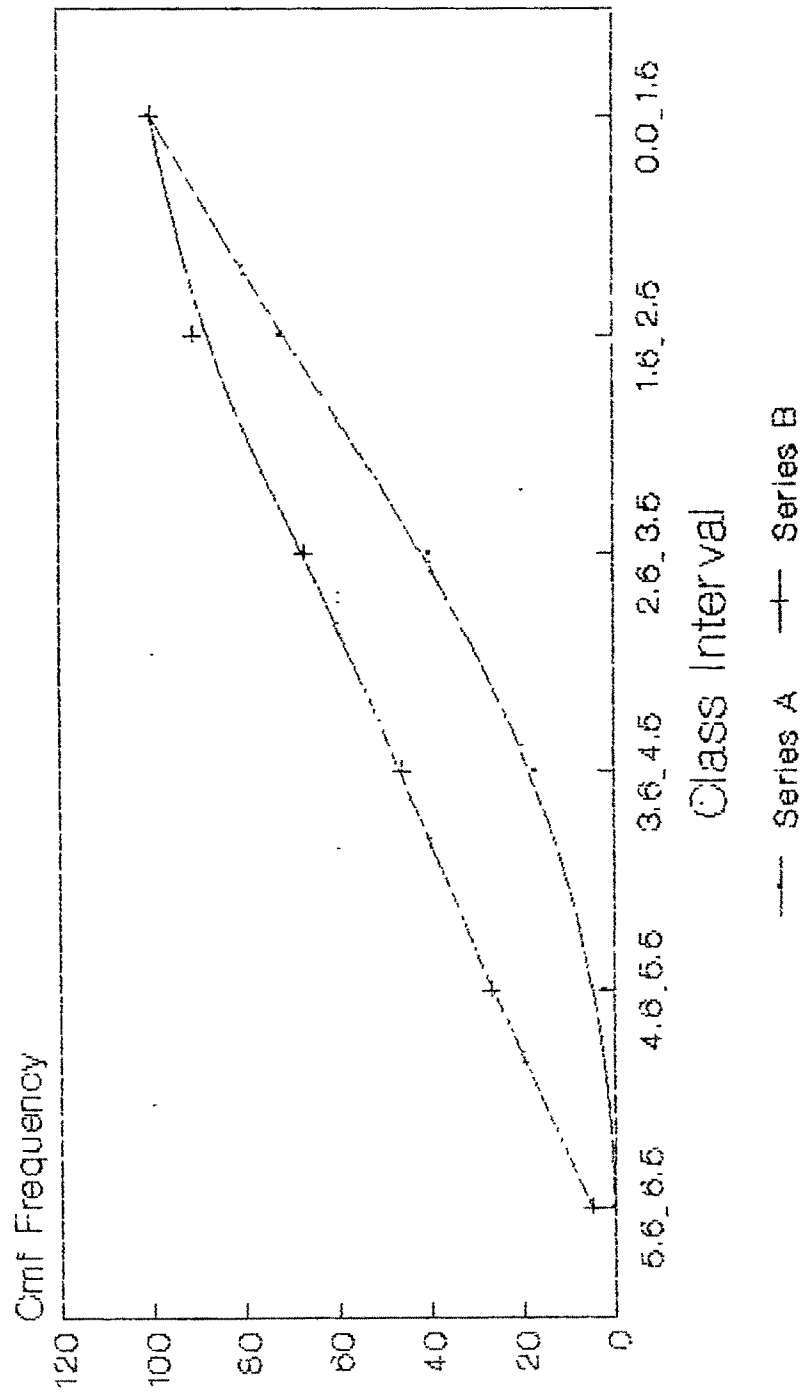
In cooperative group the average of anxiety was 2.2 and in competitive group the average was 3.4. After calculating the mean, standard deviation was calculated, and t-test was applied which is given below.

TABLE NO. 14

SHOWING THE STATISTICAL ANALYSIS OF ANXIETY

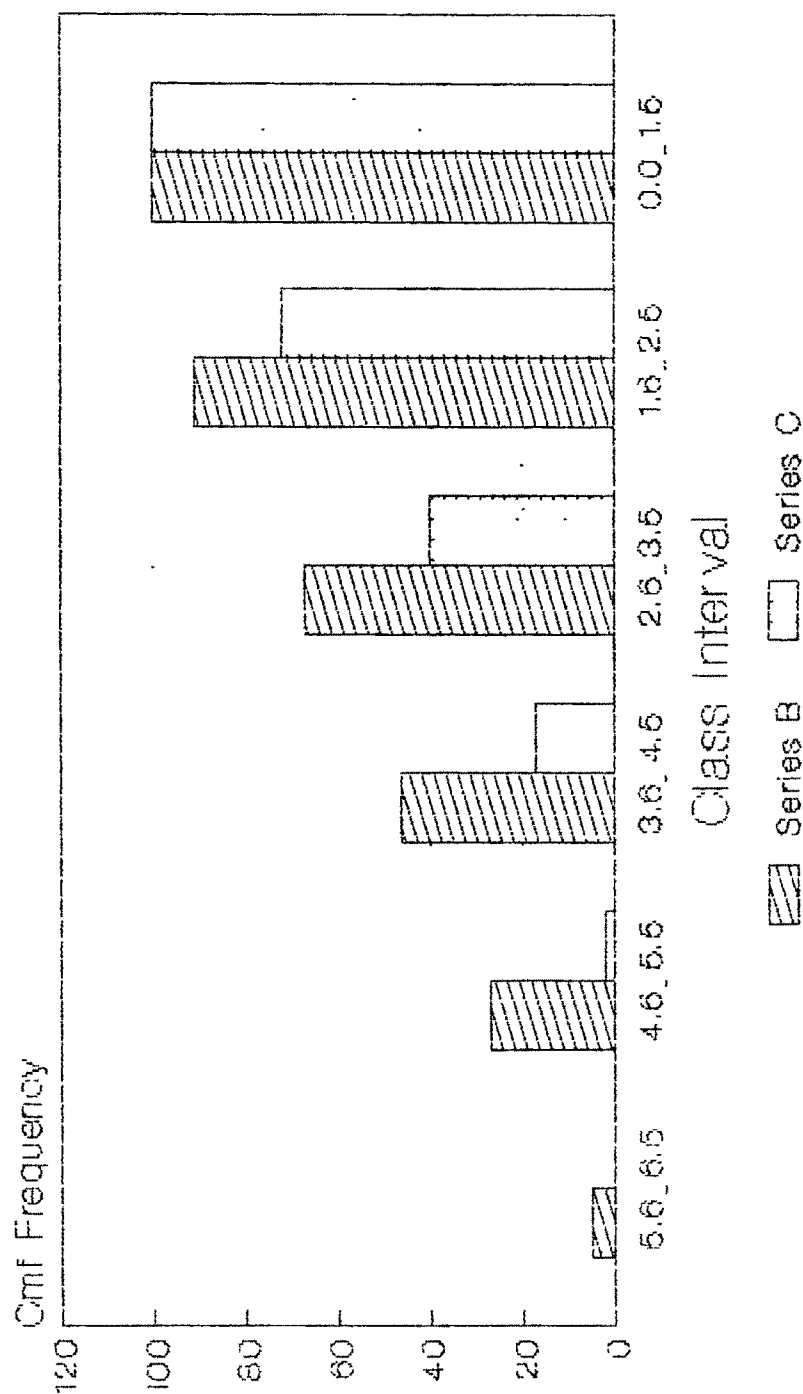
GROUP	N.	MEAN	SD	SE _D	$\frac{\text{observed difference}}{\text{SE}_D}$
COOPERATIVE	100	2.2	0.75	0.11	$t = \frac{1.2}{0.11}$ = 11.42
COMPETITIVE	100	3.4	0.75		It is significant at .01

Figure # 15
Difference Between The SCORES
of Coop. & Comp. Groups.



MCS
Series A = Cmf of cooperative Group
Series B = Cmf of competitive Group

Figure # 16
 Difference Between The SCORES
 of COOP. & COMP. GROUPS



MC8

Series B = Cmf of competitive Group

Series C = Cmf of cooperative Group

The t ratio of 11.42 indicates that the difference in mean anxiety score of cooperative and competitive group is significant. In other words the hypothesis, that in cooperative group the members are less anxious than in competitive group is verified.

In the observations of behaviour also while subjects were at work, it was marked that the competitive group subjects showed nervousness and anxiety. This was in clear contrast to the cooperative group where these negative elements of anxiety etc. were missing.

An attempt was also made to see whether in cooperative group the amount of anxiety gradually decreases from first trial to the last trial, and in competitive group anxiety gradually increases. To test this the average of the first and fourth day's anxiety score was calculated which is given below.

TABLE NO. 15

TABLE SHOWING THE AVERAGE ANXIETY OF COOPERATIVE AND
COMPETITIVE GROUPS IN FIRST AND FOURTH DAY

COOPERATIVE GROUP				COMPETITIVE GROUP			
GROUPS	IST DAY THE AV. ANXIETY	IVTH DAY AV. ANXIETY	CHAN- GES.	GROUPS	IST DAY THE AV. ANXIETY	IVTH DAY AV. ANXIETY	CHAN- GES.
1.	2.6	2.3	-	1.	3.6	4.3	+
2.	2.3	2.0	-	2.	3.3	4.3	+
3.	3.0	3.0	0	3.	3.0	3.3	+
4.	4.3	1.0	-	4.	2.0	1.0	-
5.	3.3	2.0	-	5.	2.6	2.3	-
6.	1.0	2.0	+	6.	2.6	2.3	-
7.	1.0	3.0	+	7.	4.0	3.3	-
8.	3.0	1.6	-	8.	6.3	5.0	-
9.	3.2	2.3	-	9.	3.6	4.6	+
10.	4.6	4.6	0	10.	2.9	3.2	+
11.	5.2	4.9	-	11.	5.5	5.5	0
12.	3.2	2.2	-	12.	3.9	2.7	-
13.	4.3	1.2	-	13.	6.2	6.3	+

Contd.....

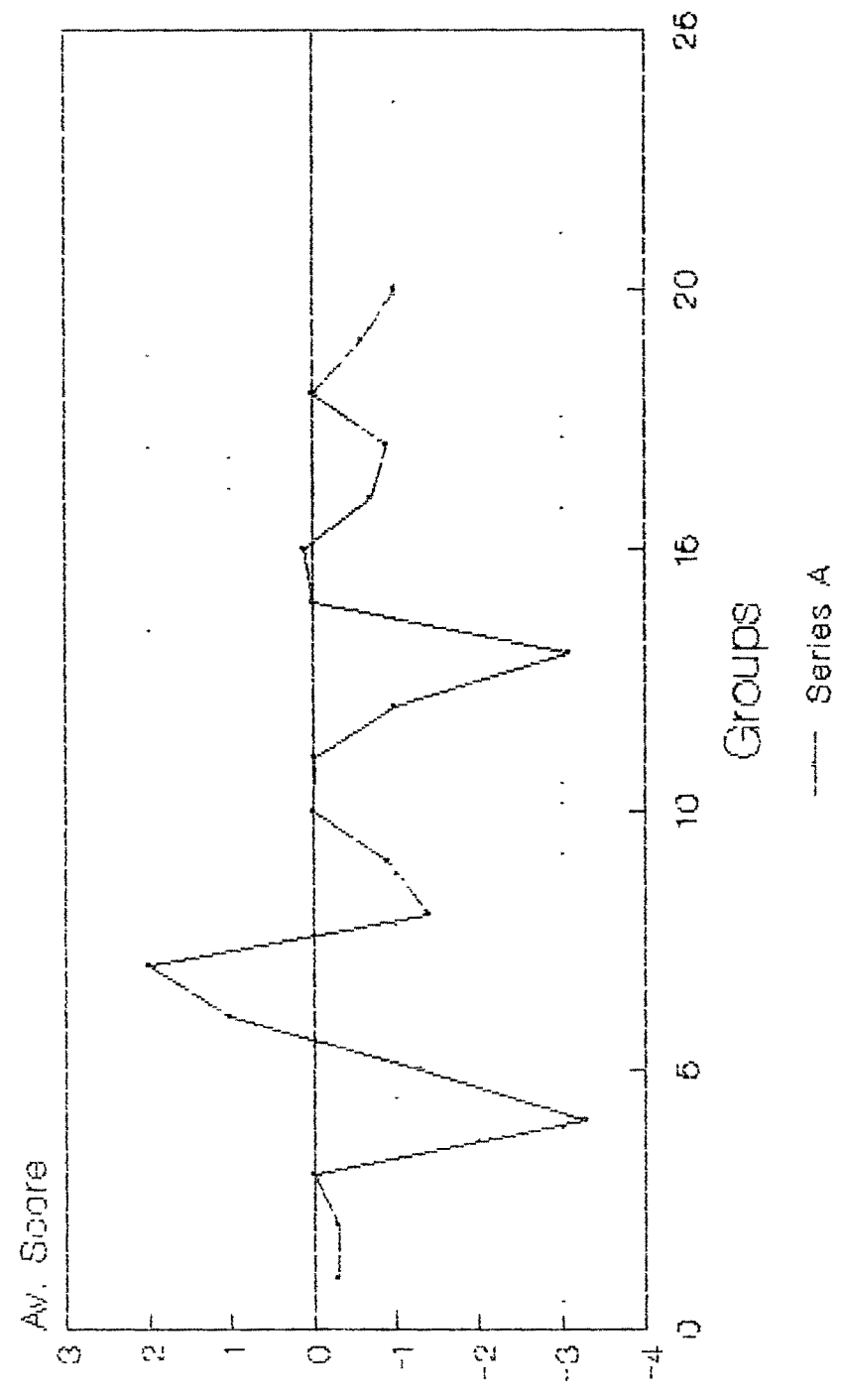
Contd...Table No.15.

COOPERATIVE GROUP				COMPETITIVE GJROUP			
GROUPS	IST DAY THE AV. ANXIETY	IVTH DAY AV. ANXIETY	CHAN- GES.	GROUPS	IST DAY THE AV. ANXIETY	IVTH DAY AV. ANXIETY	CHAN- GES.
14.	3.2	3.2	0	14.	5.2	6.0	+
15.	3.8	3.9	+	15.	3.0	3.3	+
16.	3.2	2.5	-	16.	2.6	2.3	-
17.	4.3	3.4	-	17.	5.2	4.9	-
18.	2.5	2.5	0	18.	3.8	4.2	+
19.	4.5	3.9	-	19.	2.7	2.9	+
20.	3.2	2.2	-	20.	3.2	3.9	+

The same data have been graphically presented in Figures 17 and 18.

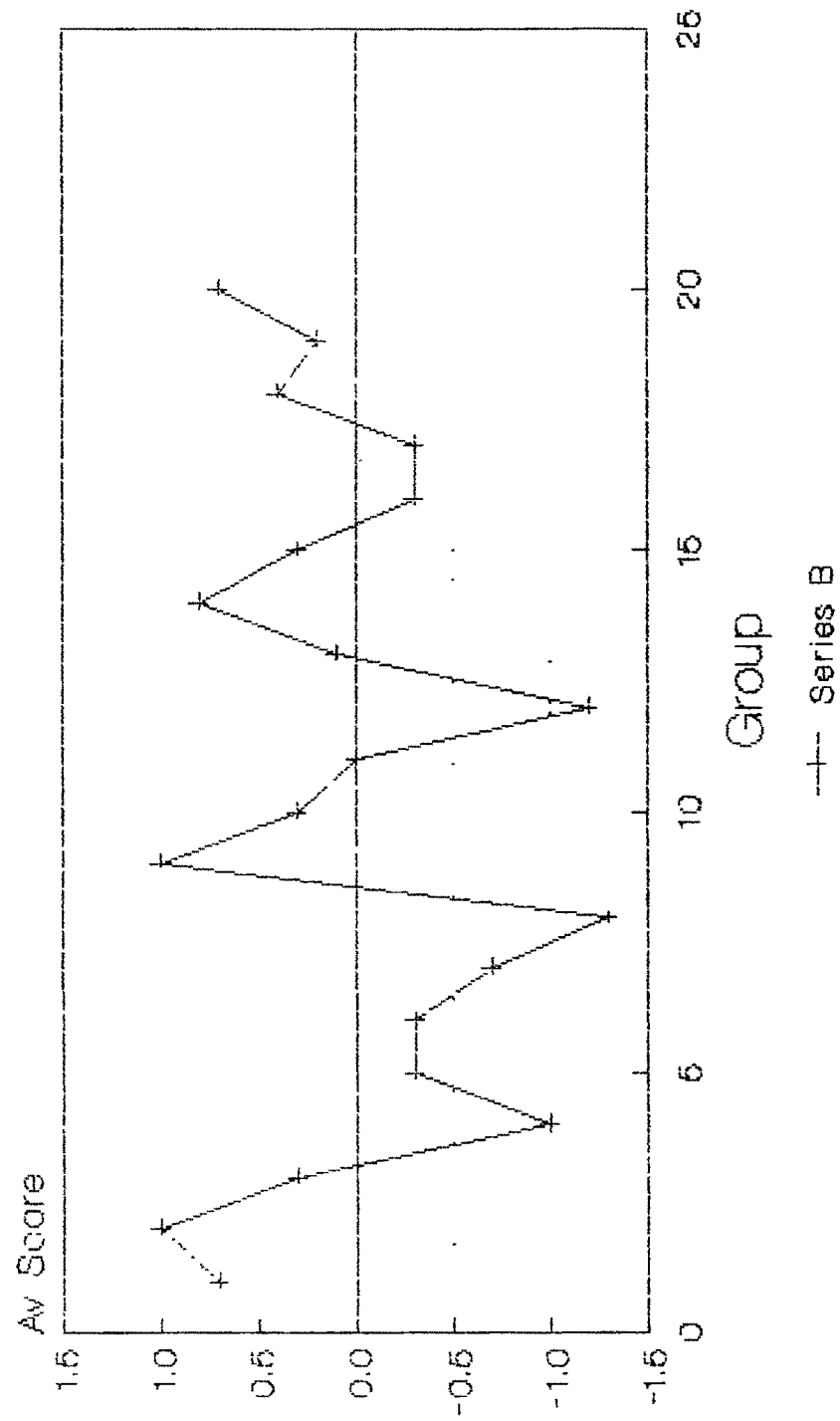
Figure No. 19 shows changes in the anxiety which has taken place between first and the fourth day.

Figure # 17
AVERAGE SCORE OF ANXIETY of 1st
& IVth DAY SCORE in COOPERATIVE GROUP



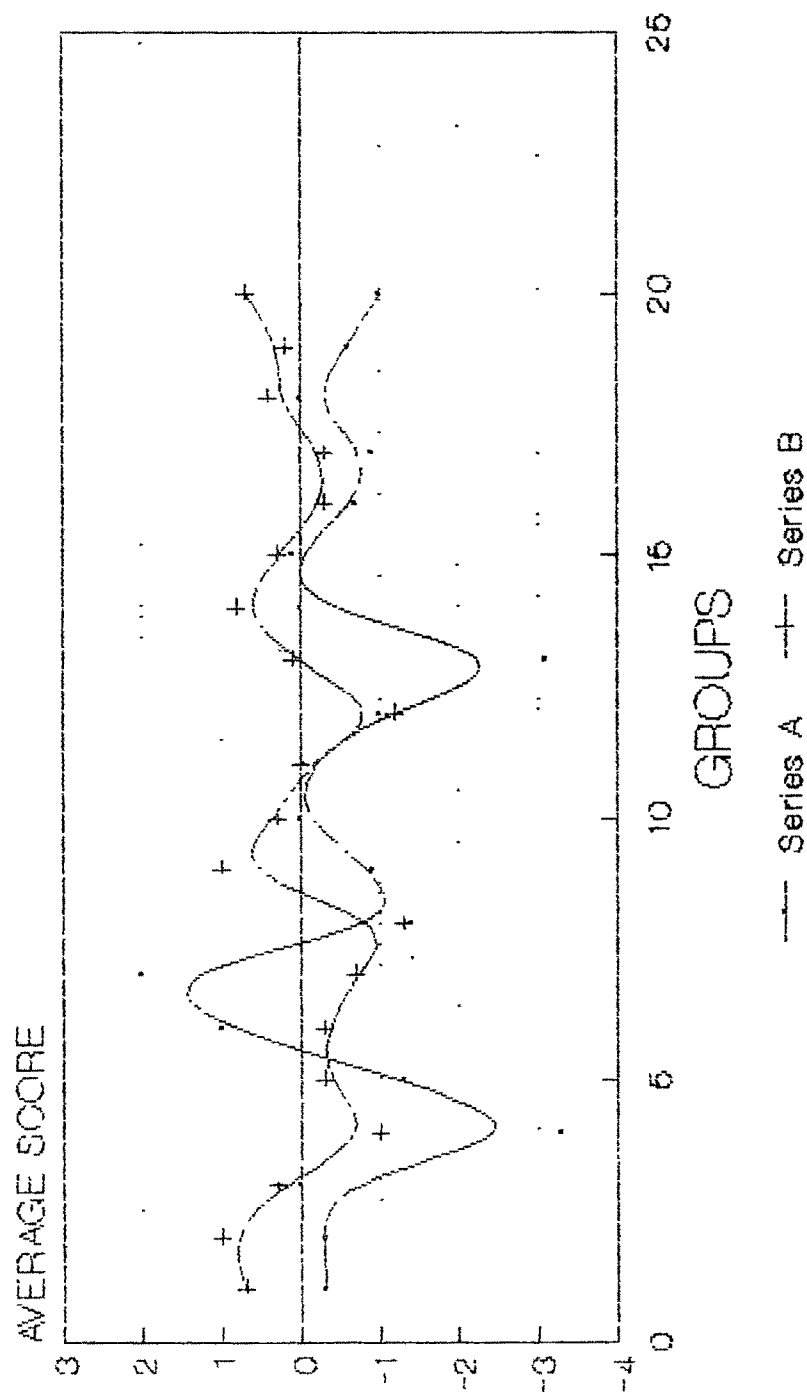
mcs
[COOPERATIVE GROUP]

Figure # 18
**AVERAGE SCORE OF ANXIETY of 1st
 & IVth DAY SCORE of COMPETITIVE GROUP**



MO3
 [COMPETITIVE GROUP]

Figure # 19
**VARIANCE/CHANGES IN ANXIETY of 1st &
 IVth Day Score of COOP. & COMP. GROUP**



mc3
 SERIES A = COOPERATIVE
 SERIES B = COMPETITIVE

On examining above graph (Graph No. 19) and Table No. 15 it is seen that in most of the cooperative groups the anxiety really decreased. In group no. one, on first day the average of anxiety was 2.6 but on the last day it decreased to 2.3. In group no. 2 also, on first day the average of anxiety was 2.3 and on fourth day it was 2.0. Except for sixth, seventh and fifteen groups, in each group the anxiety was less on fourth day. Thus we can say when members work cooperatively they become confident and so they are less anxious. In the case of competitive group subjects have to work alone and the whole responsibility of the work is on one individual only, which causes a sort of nervousness and anxiety.

In competitive group out of twenty groups, anxiety increased in 11 groups. In first group, on the first day it was 3.6 and on fourth day it increased to 4.3. In second group the average was 3.3 on first day and on fourth day it increased to 4.3. In the same way in third, ninth, tenth, thirteenth fourteenth, fifteenth, eighteenth, nineteenth and twentieth groups also the anxiety was more on fourth day than on first day. Thus it can be said that in competitive group the members become more anxious than the members of the cooperative groups.

TABLE NO. 12

TABLE SHOWING THE AVERAGE SCORE OF ANXIETY INDIVIDUALLY
OF COOPERATIVE AND COMPETITIVE GROUP.

COOPERATIVE GROUP	COMPETITIVE GROUP
0.00	2.20
0.70	4.50
1.50	4.20
2.50	2.00
2.00	3.20
2.70	2.20
1.50	2.50
1.50	4.80
0.50	3.50
1.70	3.00
3.50	0.30
3.70	2.50
3.20	3.50
2.00	2.00
1.70	3.70

Contd.....

Contd.....Table No. 12

COOPERATIVE GROUP	COMPETITIVE GROUP
3.70	1.20
3.70	2.70
2.50	2.20
1.20	5.00
1.00	2.20
1.00	4.50
2.50	4.50
0.00	5.00
4.20	6.50
0.00	2.05
2.65	4.35
4.50	4.60
2.50	4.90

Contd.....

Contd.....Table No. 12

COOPERATIVE GROUP	COMPETITIVE GROUP
2.90	3.04
2.60	2.20
4.70	4.60
1.43	4.70
2.60	3.40
1.70	1.20
3.40	2.40
3.52	2.40
3.04	4.32
1.90	1.90
1.61	0.66
3.52	3.14
3.52	2.56
2.38	2.09
1.14	4.75
0.95	3.09
2.95	4.40

Contd.....

Contd.....Table No. 12

COOPERATIVE GROUP	COMPETITIVE GROUP
2.38	4.50
0.00	4.75
2.30	6.00
0.00	4.40
4.70	4.60
1.60	4.60
2.75	2.20
2.20	3.52
3.40	3.42
1.80	4.90
1.65	2.28
0.55	3.85
1.87	4.10
3.85	0.33
2.07	4.75
3.52	3.85
2.20	3.20
1.87	2.77

Contd.....

Contd.....Table No. 12

COOPERATIVE GROUP	COMPETITIVE GROUP
2.07	3.32
2.07	2.97
2.90	2.40
1.32	5.50
1.10	2.42
1.10	2.95
2.75	4.95
0.00	5.50
4.30	6.15
0.00	2.10
0.50	4.40
1.57	4.39
2.40	2.00
2.00	3.30
2.82	2.30
1.57	2.62
1.57	5.02
0.52	3.65

Contd.....

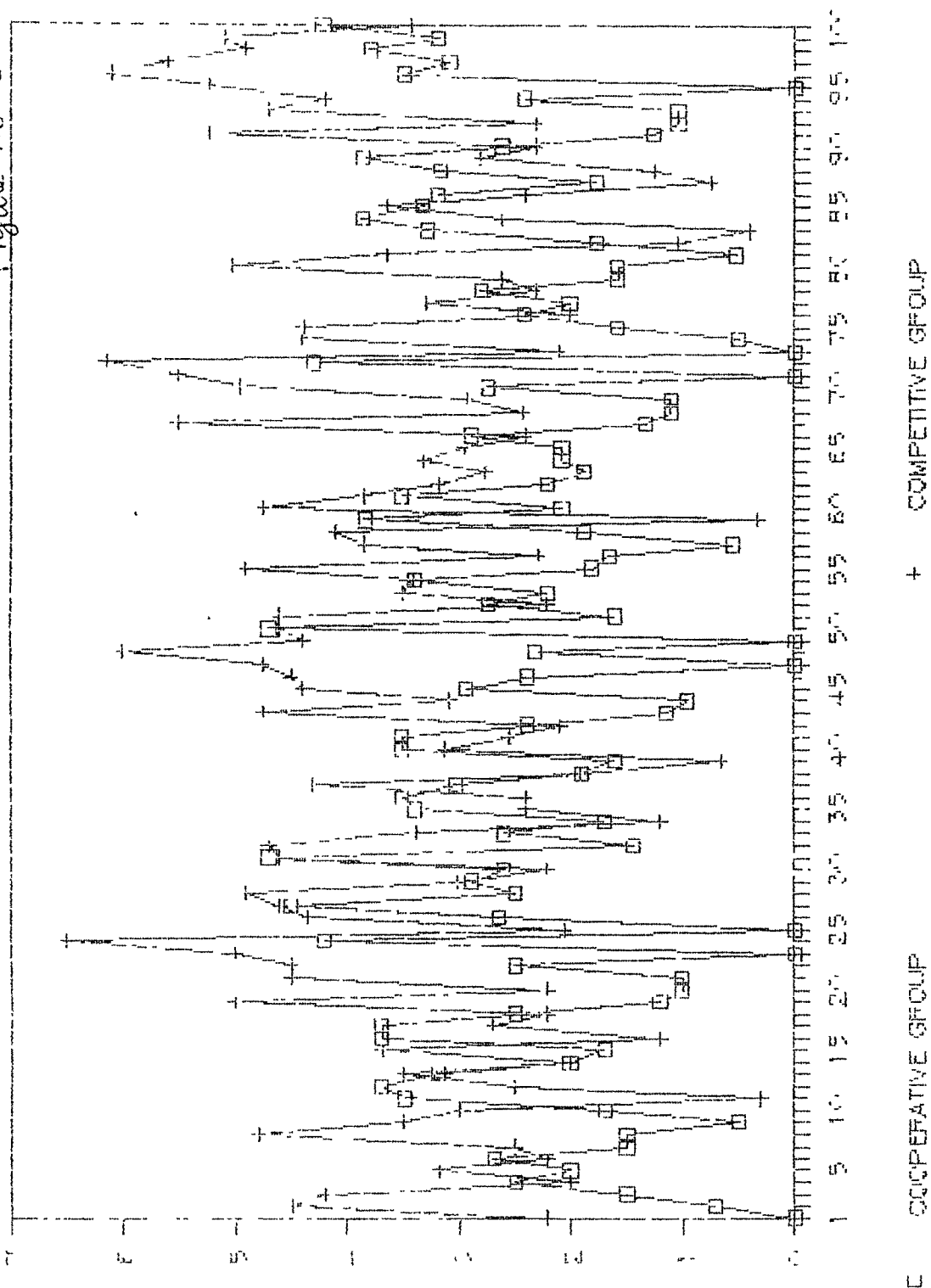
Contd.....Table No. 12

COOPERATIVE GROUP	COMPETITIVE GROUP
1.77	1.04
3.30	0.40
3.87	2.62
3.34	3.65
3.20	2.40
1.77	0.73
3.17	1.25
3.87	2.82
2.62	2.30
1.25	5.23
1.04	2.30
1.04	4.70
2.40	4.20
0.00	5.23
3.50	6.10
3.10	5.60
3.80	4.90
3.20	5.10
4.22	3.45

AVG. SCORE OF ANXIETY INDIVIDUALLY

OF COOP. & COMP. GROUP.

Figure No 20



On the basis of above analysis/discussion it can be concluded that :-

- 1) "In cooperative group there will be a good interpersonal relationship while in competitive group the interpersonal relationship is not so good" (Significant at .01 level). The members of cooperative group like each other and their relationship tends towards positive valence, whereas in competitive group the interpersonal relationship tend towards negative valence. Further,
- 2) "there will be greater work satisfaction among the members of cooperative group as contrasted with members of competitive group." (significant at .01 level). Finally,
- 3) "there will be more anxiety in competitive group than in cooperative group" (significant at .01 level).

Hence in this study it was found that the members of competitive group were more anxious than the members of cooperative Group.