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The effect of a management development programme on need for achievement

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test, it was requested that each participant issue a copy of the AMQ to a member of his organization on his return to work the following week. The recipients of these questionnaires formed the Control group. The Control group received the post-test at the same time as the Experimental group.

Data was collected from five Kepner-Tregoe 'Apex' programmes held during the period June 1971 to November 1971. Two of these courses were held in Johannesburg, two in Durban and one in Port Elizabeth. The number of candidates attending these courses varied from 8 to 15. Table 1 summarizes the number of candidates attending each course, the dates of each course and the venue of each course.

TABLE 1

The number of candidates attending each 'Apex' course, the dates and venue of each course

Course dates	Venue	Number of candidates
20. 6.71 - 25. 6.71	Port Elizabeth	8
1. 8.71 - 6. 8.71	Durban	12
12. 9.71 - 18. 9.71	Johannesburg	13
26. 9.71 - 1.10.71	Johannesburg	15
7.11.71 - 12.11.71	Durban	9

RESULTS

Analysis of the AMQ

Due to inaccurately completed questionnaires, only 88 of the original 104 questionnaires submitted were suitable for the first part of the questionnaire analysis. This analysis, which used only the data obtained on the pre-test, aimed to establish the internal reliability of the AMQ as measured by the Kuder Richardson formula 20. Data was analysed by means of the National Institute of Personnel Research NP50 Item Analysis programme. This programme permits successive iterations to be carried out, during which items with reliability indices below a specified level are rejected. Iterations continue until the optimum reliability of the measuring device is obtained. In the present study, nine of the original 34 items were rejected on the successive iterations of the NP50 programme, leaving a total of 25 items in the final scale (Appendix 2). The overall reliability of this final scale was shown to be 0,79. As can be seen in Table 2, the NP50 programme yields item parameters which are related to the parameters of the total test. Table 2 shows the item-test correlations of the 25 items in the final scale. Column 'RX' indicates the point-biserial correlation of each item with the remaining items in the scale, while column 'RXSJ' shows the point-biserial correlation of each item with the remaining items, multiplied by the standard deviation of that item. The NP50 programme has been fully described by Grant (1965; 1969). The revised 25 item AMQ was scored in the same way as the initial AMQ containing 34 items. Thus total scores

TABLE 2

The Item-Test correlations of the final AMQ

ITEM	RX	RXSJ
1	0,366	0,206
2	0,389	0,312
3	0,349	0,259
4	0,344	0,249
5	0,305	0,187
6	0,395	0,158
7	0,246	0,115
8	0,266	0,176
9	0,515	0,250
10	0,399	0,201
11	0,581	0,442
12	0,230	0,219
13	0,377	0,301
14	0,479	0,304
15	0,235	0,176
16	0,502	0,235
17	0,368	0,259
18	0,393	0,309
19	0,284	0,226
20	0,516	0,368
21	0,599	0,319
22	0,529	0,273
23	0,520	0,272
24	0,557	0,343
25	0,536	0,349

on the revised AMQ could range from 25-100, with high scores again indicating a high need for achievement.

In addition to inaccurately completed questionnaires, difficulties in tracing managers at the time of the post-test led to a further reduction in the number of questionnaires which could be utilized in the second stage of the questionnaire analysis. This reduction in questionnaires did not appear to be influenced to any great extent by a lack of response on behalf of subjects. In this stage of the analysis, the data obtained from 36 Control subjects on the pre-test and the post-test was used to determine the test-retest reliability of the revised AMQ. A Pearson Product Moment Correlation yielded a test-retest reliability coefficient of 0,77.

Data analysis

The scores obtained on the revised AMQ from 41 Experimental and 36 Control subjects on the pre- and post-tests were used to determine whether there was any difference between Experimental and Control subjects in need for achievement following the Kepner-Tregoe 'Apex' programme. A mixed design analysis of variance yielded no significant difference between the groups on the pre- and post-tests. However, McClelland (1956; 1958; 1961; 1962) and Brown (1965) have indicated that managers have a high need for achievement, a conclusion readily supported by their attainment of managerial positions. As a result of these studies it was decided to divide both the Experimental and Control groups into high and low achievers.

The median score obtained on the revised AMQ was used as the criterion by which the groups were divided. This method of dividing groups into high and low achievers has frequently been used in studies investigating achievement motivation (Atkinson and Litwin, 1960; Haber and Alport, 1958; Winterbottom, 1958; Zeigarnik, 1927). Those managers scoring 80 and above were classed as high achievers, and those managers scoring 79 and below were rated as low achievers. The Experimental group was divided into 24 high achievers and 17 low achievers, while the Control group consisted of 21 high achievers and 15 low achievers. The distribution of the scores of the Experimental and Control, high and low achieving groups, can be seen in Figs. 1 - 4, while the mean scores and standard deviations of these groups are shown in Table 3. A mixed design analysis of variance carried out on the high and low achieving Experimental and Control groups yielded a significant difference between high and low achievers ($F=94,64$, $df=1/73$, $p<,01$) (Table 4). In addition a significant Sessions X Achievement interaction was found ($F=13,48$, $df=1/73$, $p<,01$) indicating a difference between the four groups on the pre- and post-tests (Table 4). This finding was clarified by a Scheffe test which showed that the achievement motivation of the Experimental low achievers increased significantly from the pre-test to the post-test ($F=12,01$, $df=3/150$, $p<,01$) (Table 5). No differences in achievement motivation were found in the Experimental high achievers, the Control high achievers and the Control low achievers on the pre- and post-tests (Table 5). These findings are clearly seen in Fig. 5 which

shows the mean scores obtained by the high and low achieving Experimental and Control groups on the pre- and post-tests.

TABLE 3

Means and Standard Deviations of the Experimental and Control high and low achieving groups on the pre-test and the post-test

Groups	Means		Standard Deviations	
	Pre-test	Post-test	Pre-test	Post-test
Experimental high achievers	83,21	82,33	3,50	3,54
Experimental low achievers	73,76	77,12	4,98	3,96
Control high achievers	81,00	80,24	3,93	4,58
Control low achievers	80,60	81,80	3,50	3,55

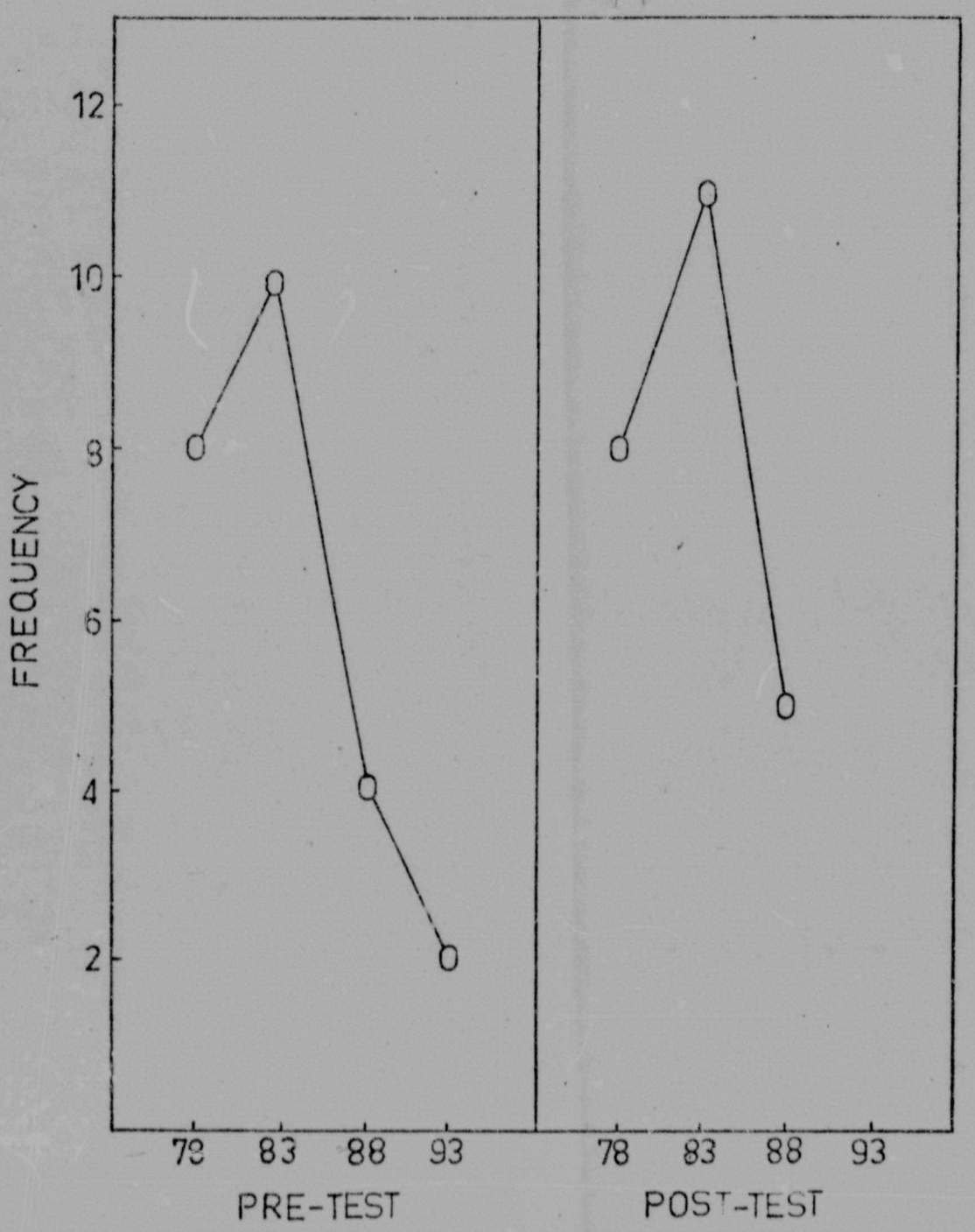


Fig. 1. Frequency distributions of scores of Experimental high achievers on the Pre- and Post-tests.

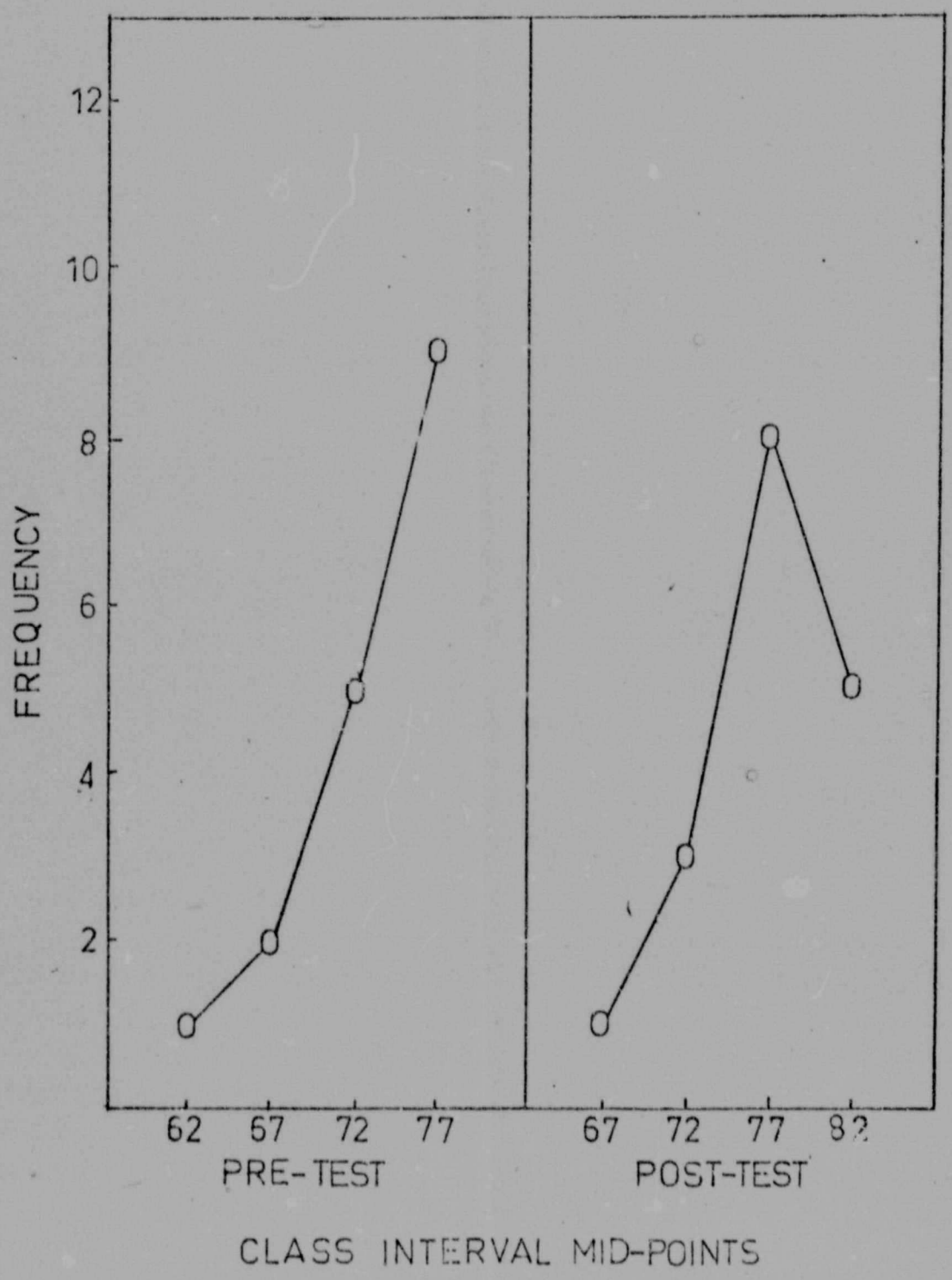


Fig. 2. Frequency distributions of scores of Experimental low achievers on the Pre- and Post-tests.

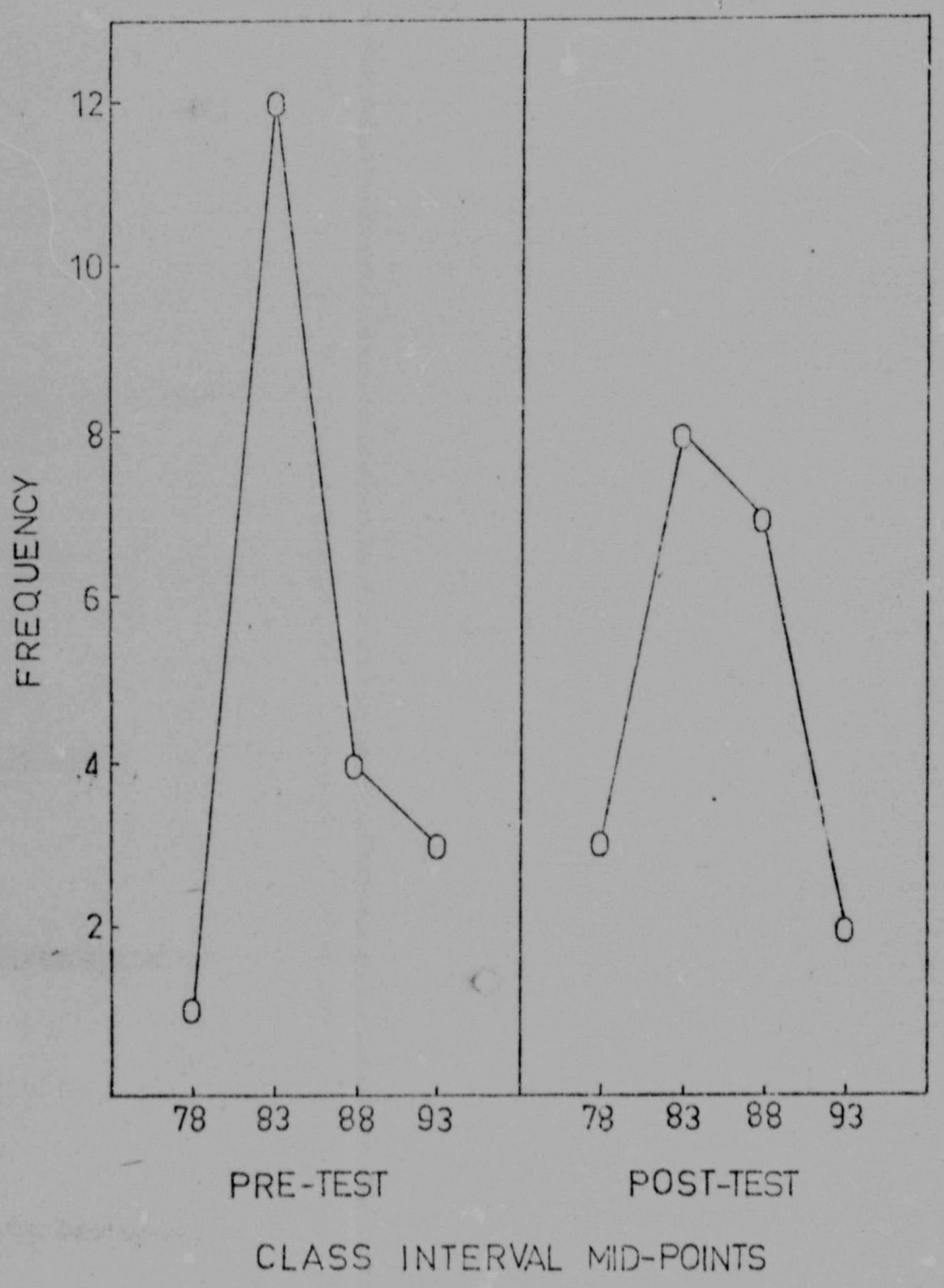


Fig. 3. Frequency distributions of scores of Control high achievers on the Pre- and Post-tests.

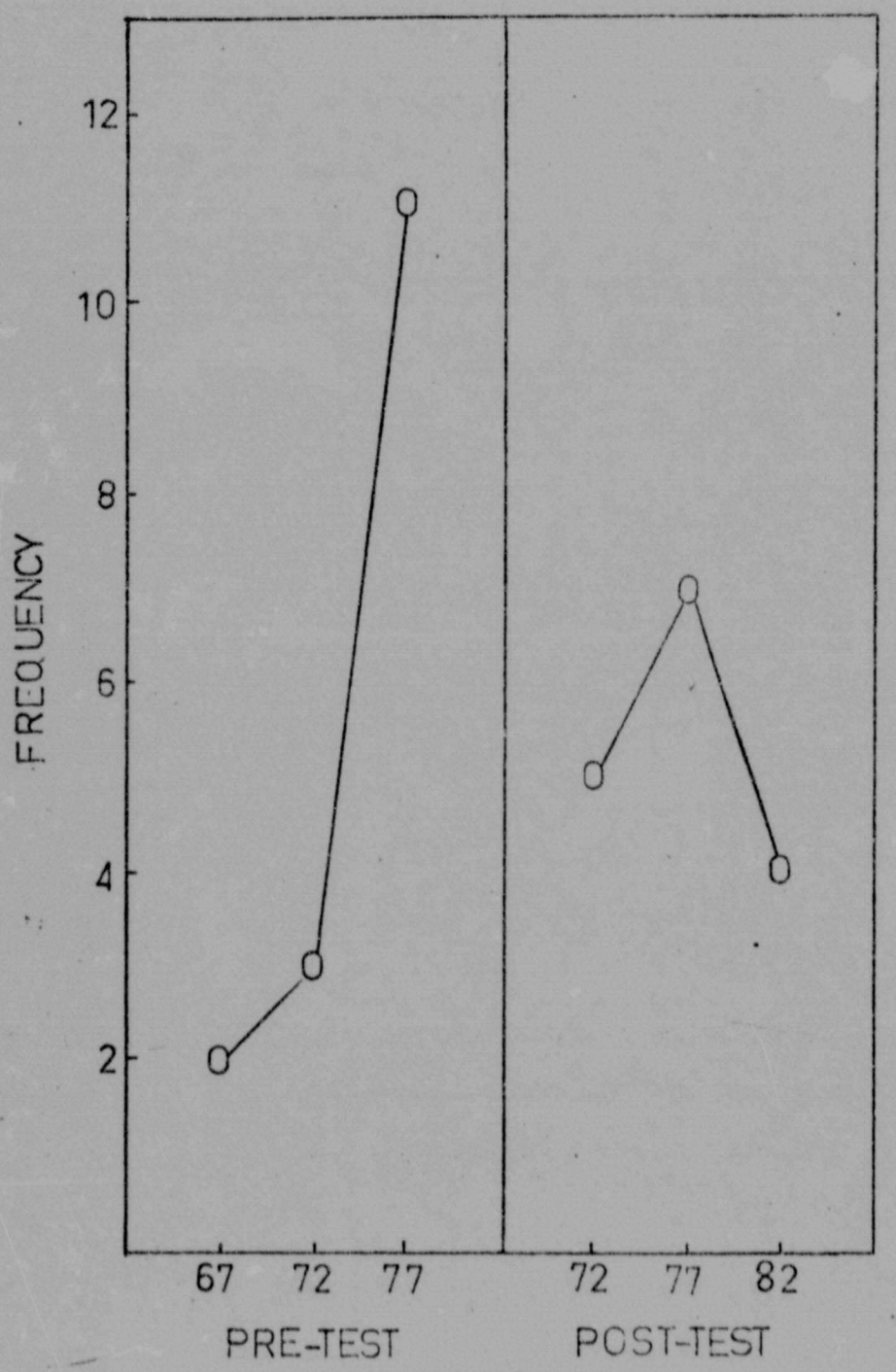


Fig. 4. Frequency distributions of scores of Control low achievers on the Pre- and Post-tests.

TABLE 4

An analysis of variance carried out on the data obtained from the high and low achieving Experimental and Control groups on the pre- and post-tests

Source of Variance	SS	df	MS	F	P
Total	4819,61	153			
Between subjects	4203,61	76			
A (Groups)	48,90	1	48,90	1,16	
B (Achievers)	2325,40	1	2325,40	94,64	p<,01
AB	35,85	1	35,85	1,46	
S/AB	1793,46	73	24,57		
Within subjects	616,00	77	8,00		
C (Sessions)	9,37	1	9,37	1,38	
AC	6,49	1	6,49	0,96	
BC	91,40	1	91,40	13,48	p<,01
ABC	14,01	1	14,01	2,07	
SC/AB	494,73	73	6,78		

TABLE 5

Scheffe test of group comparisons

Group comparisons	F	p
Exp. high achievers: Pre-test vs. Post-test	1,15	
Exp. low achievers: Pre-test vs. Post-test	12,01	p<,01
Cont. high achievers: Pre-test vs. Post-test	0,76	
Cont. low achievers: Pre-test vs. Post-test	1,35	

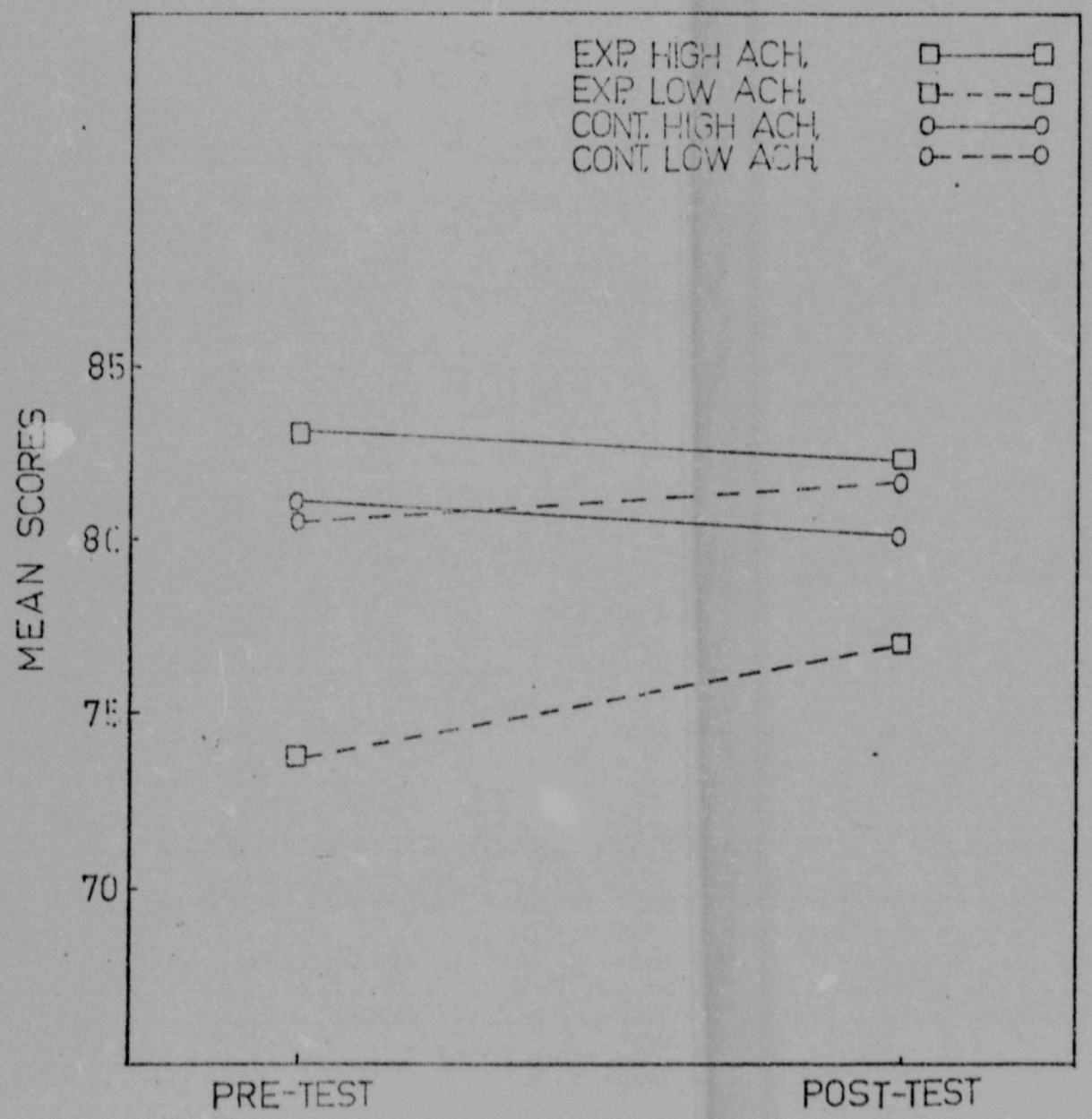


Fig. 5. Mean scores of the four groups on the Pre- and Post-tests.

DISCUSSION

The results of the present study indicate that the Kepner-Tregoe programme caused a significant increase in need for achievement in managers initially scoring low in achievement motivation. Those managers initially high in achievement motivation did not show an increase in need for achievement following the course.

It has been proposed that the tendency to achieve that is expressed in performance of a particular task in a particular situation appears to be jointly determined by the personality disposition of achievement motivation and by immediate environmental influences (Atkinson and Litwin, 1960). However, the results of the present experiment cannot be attributed to immediate environmental influences, unless the environmental influences acting on the Experimental low achievers at the time of the post-test, were significantly different from those acting on the groups at all other testing sessions. It is more feasible to propose that the behaviour measured by the AMQ in the present study related directly to the personality disposition of achievement motivation.

Furthermore, it has been found that persons who score low in need for achievement act as if they were motivated more by a fear of failure than by a tendency to seek and enjoy success. It may be that in the present study the Kepner-Tregoe programme offered the Experimental low achieving managers a tool for avoiding failure rather than an aid to achieving success. This would account for the fact that the Experimental low achievers in the present experiment evidenced an increase in achievement motivation following

the Kepner-Tregoe course while the Experimental high achievers did not. However, it must be remembered when considering this explanation of the results of the present study, that both the high and low achieving groups were derived from a managerial group, a group acknowledged in previous research to be a high achieving group (Brown, 1965; McClelland, 1956; 1958; 1961; 1962).

An alternate explanation of the findings of the present study is derived from the fact that the high achieving groups scored close to the maximum achievement score obtainable on the AMQ on the pre-test, while the low achieving groups did not. It is possible that a 'ceiling effect' (Mills, 1959) caused by the AMQ, inhibited the high achieving groups from improving their scores on the post-test but did not affect the scores of the low achieving groups. This explanation would account for the finding that the Experimental and Control high achieving groups did not show an increase in achievement motivation on the post-test while the Experimental and Control low achieving groups scored higher on the post-test than on the pre-test. The difference between the pre- and post-test scores of the Control low achievers was not significant while that of the Experimental low achievers was significant indicating that the Kepner-Tregoe course undertaken by the Experimental low achievers possibly influenced the post-test achievement motivation scores obtained by this group.

However, a further explanation of the results of the present experiment can be made in terms of the Law of Initial

Values (Wilder, 1957). According to this Law, the higher the pre-stimulation level of an activity, the more difficult it is for that activity to increase following stimulation. As applied to the present experiment, the Law of Initial Values implies that it would be more difficult for high achievers to improve their achievement motivation scores on the post-test than low achievers, because the achievement motivation of high achievers is at a higher level on the initial pre-test than that of low achievers. This explanation would account for the results of the present study which showed that high achievers did not increase in achievement motivation following the Kepner-Tregoe programme while low achievers did. Further research on the AMQ is necessary to investigate whether a 'ceiling effect' does inhibit the scores of high achievers, or whether the Law of Initial Values is accountable for the failure of high achievers to improve on the second administration of the questionnaire.

In the present study it is possible that the responses to the AMQ given by the Experimental subjects were influenced by the 'perceived demand characteristics' of the situation (Orne, 1962). Because the subjects may have had an idea of what the experiment was investigating, and because they may have wanted to appear in a better light, it is possible that the subjects tended to give 'higher' responses on the second completion of the questionnaire. An explanation of the results of the present study in terms of the 'perceived demand characteristics' of the situation must not be rejected even though the subjects were chosen from a group which was unlikely to be aware of the 'need

for achievement' concept. Consequently, it is unlikely that the subjects used in the present study were able to hypothesise the aim of the experiment accurately. In addition, the 'perceived demand characteristics' of the situation could only have influenced the Experimental low achieving group's improved responses to the second questionnaire, if the subjects had remembered their initial responses to the first questionnaire completed approximately six months prior to the second. It is unfortunate that due to the nature of the experimental variable it was not possible to design the study to experimentally control for the effects of 'demand characteristics' by means of either a 'post-experimental interview', a 'pre-experimental inquiry' or 'simulating' subjects (Orne, 1962).

It has been proposed that people with a high need for achievement gain more from a Kepner-Tregoe course than others (Rhodes, 1972). Even though the management group as a whole are considered a high achieving group (Brown, 1965; McClelland, 1956; 1958; 1961; 1962) it would be interesting to examine whether managers with a high need for achievement benefit more from the course than managers low in achievement motivation. However, it must be remembered firstly, that the distinctions between high and low achievers are difficult to draw, and secondly, that the measurement of some of the benefits that people derive from a course of this nature, for example, feelings of confidence, are subjective and difficult to quantify. In addition, the contribution made by the course to team building (Rhodes, 1972) is also difficult to verify quantitatively.

It is possible, however, to speculate on what factors contribute to the benefits which can be derived from the Kepner-Tregoe course. McClelland (1961) has emphasised that for arousal of the motive to achieve in performance of some activity, the individual must firstly, consider himself responsible for the outcome of such activity; secondly, there must be explicit knowledge of results so that the individual knows when he has succeeded, and thirdly, there must be some degree of risk concerning the possibility of success. These three factors - responsibility, knowledge of results and some degree of risk or challenge - are similar to the motivators proposed by Herzberg (1966; 1968) and utilized in theories of job enrichment (Foulkes, 1969; Ford, 1969; Scott-Myers, 1970). These theories of job enrichment suggest that by introducing these motivators into the work situation, performance on the job will improve (Foulkes, 1969; Ford, 1969; Scott-Myers, 1970). Kepner and Tregoe (1965) have also placed emphasis on responsibility, knowledge of progress and calculation of risk taking in the work situation. Although it seems that these factors are possibly common ingredients of successful motivation development programmes, further investigation is needed to establish precisely which of the many course inputs are essential for developing motivation (McClelland, 1971).

Past research has indicated that there are often circumstances which prevent the achievement motivation of workers from being directed towards their work, e.g. work group norms may restrict output often resulting in achievement behaviour directed to off the job activities (Brown, 1965; Brown, 1967). The direction of achievement motivated behaviour towards work

objectives can sometimes be accomplished by radical changes in the work situation (Brown, 1965) e.g. with job enrichment programmes. In these programmes the behaviour of workers is altered to provide among other things, opportunities for achievement. It is expected that with the alterations in overt behaviour, the underlying attitudes to work will also change. This has been found to be the case (Ford, 1969). Similarly, McClelland (1965a; 1965b) in his attempts to develop achievement motivation, concentrated on changing the thinking patterns of his subjects (Brown, 1965). This change in thinking behaviour leads to a change in the underlying attitudes of achievement motivation. It can therefore be seen that the approaches adopted by both theories of job enrichment as well as McClelland follow a learning theory model of behaviour which implies that attitudes can be changed through behaviour modification. It can further be argued that the application of Kepner-Tregoe procedures, by altering behaviour in the work situation, leads to a change in the attitudes underlying this behaviour. The results of the present study which indicated that attitudes towards achievement are possibly increased as a result of Kepner-Tregoe training, provide support for this hypothesis. It seems then that the learning theory model of behaviour provides a useful framework in which to examine some management development programmes.

The present study has also yielded a questionnaire measure of achievement motivation, applicable to managerial levels. The internal reliability of the scale (0,79) compares favourably with that of the Hermans (1970) scale

(O,81). The majority of research in this area in the past has used projective techniques to quantify the strength of the achievement motive (McClelland et al., 1958; McClelland and Winter, 1969). The most commonly used projective measures are McCle land's TAT lelland et al., 1953), the French Test of Insight (French, 1958) and the Iowa Picture Completion Test (Johnston, 1957). Sometimes the TAT is taken together with the Test Anxiety Questionnaire (Mandler and Sarason, 1952) as a combined measure of achievement motivation (Feather, 1961). Several problems arise with regard to projective measures of need for achievement. Klinger (1966) points to their lack of internal consistency and lack of test-retest reliability; while Carnay (1966) and Atkinson (1964) showed that the TAT was more sensitive to irrelevant situational cues than a questionnaire measure of need for achievement.

Questionnaire measures of the need for achievement, however, also have drawbacks. The most frequently used questionnaire is the achievement scale of the Edwards Personal Preference Schedule. Others are two scales of the California Personality Inventory; the achievement via conformance scale, and the achievement via independence scale (Gough, 1953). Further scales of achievement motivation have been constructed by Lynn (1969), Hermans (1970) and Mukherjee (1965). Thus far the validity of these questionnaires against external criteria has not been convincing (Weinstein, 1968; Hermans, 1970).

The need to construct a reliable questionnaire measure of achievement motivation is evident. The present scale has yielded satisfactory indices of internal reliability and test-retest reliability. An examination of Appendix 2 indicates that the present scale also shows considerable face validity. It would be of value to examine how well the AMQ correlates with both the projective and questionnaire measures of achievement motivation that have been devised. Finally, and possibly of most importance, the correlation between the present scale and actual performance remains to be seen. It is evident that future research is necessary to throw some light on these issues.

To summarize, the results of the present experiment indicated that the Kepner-Tregoe programme possibly increased the need for achievement in managers initially scoring low in achievement motivation. The discrepancy between the Experimental high and low achieving groups' scores could have been due to a 'ceiling effect' of the AMQ, or to the influence of the Law of Initial Values on the scores of high achievers or to the 'perceived demand characteristics' of the situation. In addition, a questionnaire measure of achievement motivation was developed in the present study and internal consistency as well as test-retest reliability indices of this questionnaire were established.

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