CHAPTER IV

EXPLORATORY WORK WITH MCCLELLAND'S
NEED ACHIEVEMENT TEST (ADAPTED VERSION)
In most of the available research on achievement motivation, the projective method developed by McClelland, et al. (1953) for assessing Achievement has been used. In order to make the results of the present study comparable to the results obtained in other studies on achievement motivation, McClelland's projective method was preferred to other methods of measuring achievement motivation.

McClelland and his associates actually adapted Murray's TAT technique (1938) for the measurement of human motivation. Murray had devised this procedure to discover the covert (inhibited) and unconscious (partially repressed) tendencies of normal persons. In this technique certain pictures are used to obtain stories from the subjects for analysing their motivation. McClelland and his group preferred Murray's TAT over self-descriptive methods and judgements by others because, as stated by McClelland (1958a), the latter are multidetermined. That is, these are influenced in complex ways by many variables other than the kind of motivation variables that they are supposed to measure. The study of human motivation by projective tests is widely recognized as sound and promising. It is believed that, in free associative or projective techniques, the subject's attention is directed towards interpreting the test material i.e. telling stories about the pictures. The subject becomes less conscious of himself and the examiner's
scrutiny, hence less vigilant in his defence. It is also assumed that this method penetrates somewhat below the peripheral personality and makes the subject disclose the latent strivings, images, and sentiments which he would be reluctant or unable to disclose in direct communication.

With the object of developing a valid and reliable method of measuring motivation, McClelland and his co-workers combined TAT with the experimental method of manipulating and controlling the strength of motivation. In their initial work, they deprived their subjects of food for varying numbers of hours. Thereupon, they asked them to write stories in response to pictures which suggested food seeking or eating in varying degree. The evidence of more food-related plots in the stories in cases of larger number of hours of food deprivation confirmed their premises that TAT was indeed sensitive to motivational influence i.e., number of hours of food deprivation. After this preliminary evidence they initiated a programme of research on the 'need to achieve' (Atkinson, 1964, p. 224). The development of the test and the objective-scoring system which was devised to assess the stories written under various achievement conditions has been fully described by McClelland, et al. (1953).

McClelland, et al. (1953), Atkinson (1968), and Veroff (1961) have pointed out the effects of cultural and situational factors on thematic apperception. It is stated by these researchers that people of varied social background may react differently to the same stimulus situation. In the light of
these research findings, it seemed essential to the research workers in India to develop fresh pictures to be used as the thematic apperceptive measure of Achievement. After great scrutiny and try-outs, Mehta (1967), on the basis of the theoretical model of McClelland, et al. (1953) developed twelve pictures to measure achievement motivation in high school boys under Indian conditions.

DEVELOPMENT OF THE INDIAN VERSION

In the initial stages of the development of the test, the pictorial cues for the thematic apperceptive test were selected keeping in view that: (i) the cues suggest situations which arouse Achievement Imagery (as defined by McClelland, et al.), (ii) these represent situations which are related to the achievement experiences of high school students, (iii) these contain situations which are familiar to the students irrespective of their socio-economic background, (iv) the sex and the age of the character of the pictorial cues is similar to that of the high school boys. Different magazines, newspapers, journals, and other similar sources were used to select suitable pictures in terms of the above-stated criteria. Some pictures used by McClelland and his colleagues in their research were also used.

For Try-Out I eighth class students served as subjects. In this try-out four pictures were used. These pictures were drawn on a poster paper and were shown to a group of 20 pupils. Five sheets clipped together were handed over to each subject. The first sheet was for writing the preliminary
information and the other four were meant for writing stories.
On each page of the answer sheet four questions (given in
McClelland, et al., 1953, p.98 for Chapter V of this study) were
printed. The Hindi translation of the instructions given by
McClelland and his associates were read out. Each picture was
shown for 20 seconds. The subjects were then given four minutes
to write a story about it on the basis of four questions printed
on each page of their answer sheets. At the end of four minutes
another picture was shown for the same duration and the subjects
were asked to write a story about it within the same time limit
i.e., four minutes. Similar procedure was followed for obtaining
stories for the remaining two pictures. The scoring of the
Achievement protocols was done according to the scoring manual
prepared by McClelland and his co-workers. Considerable time
was spent by the project staff to attain proficiency in scoring.
When the scores established the interscorer reliability of
.80 or more with the expert scoring for the practice materials
given in Atkinson (1958), they scored stories obtained in
Try_Out I.

For Try_Out II, six new pictures were developed. The
same eighth class students, who served as subjects in Try_Out I,
served as subjects in this try_out. This try_out was carried
out in the same manner in which Try_Out I had been carried out.

In Try_Out III, twenty-four pictures, in four sets of
six pictures each, were used. The pictures were semi-structured
and drawn in semi-vague lines. This time pictorial cues were
tried out on 121 ninth class boys from two schools. Approximately
an equal number of boys was tested for each set. Because of 
the lack of necessary facilities in the schools, it was not 
possible to present pictures by projecting slides on the screen. 
One card was prepared for each picture. Many cards containing 
the same picture were prepared. Six stories, in response to 
six pictures, were obtained from each subject. The procedure 
followed for obtaining the stories was the same as used in the 
Try-Out I.

Out of the twenty-four cues, twelve were to be selected 
so that they could be arranged in two sets of six cues each. 
For this purpose, each pictorial cue was examined with regard 
to its discriminating power in the achievement motive, evokability 
of Achievement Imagery, correlation of total score on the cues 
with total school marks, interscorer agreement on AI, rank 
difference interscorer correlation. Out of the twenty-four 
pictures those twelve pictures which showed high discriminating 
power, high evokability of Achievement Imagery, had some interscorer 
agreement on AI and showed correlation between total 
scores assigned by the two scorers, were selected for the final 
instrument. As reported by Mehta, out of the acceptable cues, 
some showed high positive, some negative, and some showed just 
no relationship with school marks. But the six pictures which 
were finally selected for the survey (Mehta, 1967) and which 
have been used in the present study had positive correlations 
with school marks.

Prior to scoring the stories obtained in Try-Out III 
sufficient time was spent on the practice materials given in
Atkinson (1958). Once again scorers’ scoring reliability of .80 was established with the expert for the practice materials. Each scorer first scored every story for Achievement Imagery. In order to enable the scorers to understand the objective method of scoring stories, arrangements for common discussions and staff seminars were made. In these seminars and discussions, scorers discussed their scores and the reasons for giving a particular score.

The project staff obtained low scores on subcategories. This raised doubts about the applicability of scoring system C under Indian conditions. To find out whether it was really not applicable under Indian conditions, all those stories which were scored for AI independently by two scorers were taken and examined by a trained scorer. This scorer recorded all the statements which, according to him, could not be scored under any subcategory of the scoring system C. These statements were further examined by another trained scorer. Thereupon, these were discussed in a staff seminar. In the discussion, it was found out that all such recorded statements were either similar to other statements which had already been scored under some category or were of little importance. It was thus inferred that the scoring system C was applicable to Indian conditions. The test-retest reliability figures for this test ranged from .39 to .56 and a split-half reliability of .58 corrected to .73. This test revealed theoretical validity as results, with regard to school annual examination, were consistent with the theory of achievement motivation.
Mehta found out the reliability of the test in terms of split-half and test-retest methods. He also correlated the test with the performance of the subjects at the school annual examination to find out the validity of the test.

For the sample of the present study, it was thought desirable that a fresh validity and reliability be found. Furthermore, all the pictures developed by Mehta contained male characters because they were primarily developed to measure achievement in high school boys. Therefore, necessity was felt to try the six pictures selected for use in the present study containing male figures on girls to find out whether the sex of the figures in the pictures would affect girls' achievement scores.

VALIDITY AND RELIABILITY OF THE INDIAN VERSION IN THE CONTEXT OF THE PRESENT STUDY

Validity

The construct validity of the test was investigated on the lines of Atkinson and Litwin (1960). Following Atkinson and Litwin, it was hypothesized that, stronger motive to achieve success should be associated with greater persistence, and stronger motive to avoid failure should be associated with less persistence (hypothesis derived from Atkinson's (1957) model of risk taking behaviour). Atkinson and Litwin studied the joint relationship of achievement and Test Anxiety to persistence (measured by recording time spent in an examination) and they found that subjects who were relatively stronger in the motive to avoid
failure left an examination earlier than the subjects who were relatively stronger in the motive to achieve success. The positive relationship between achievement and persistence is reported in studies by Thomas (1956), Winterbottom (1958), French and Thomas (1958), Atkinson and Litwin (1960).

Independent as well as joint relationship of achievement and test anxiety to persistence was studied in the present investigation. Persistence was measured by the time spent in solving problem eight in Alexander Pass Along Test of Bhatia Battery. The Bhatia Battery (1955) is standardized on Indian population and is widely used in India to measure intelligence in children. Alexander Pass Along Test is one of the eight tests which in MacArthur's (1955) study were found to be having high loading of general persistence. As stated by MacArthur, these tests are supposed to possess higher average persistence validity.

In the present study, only problem eight of Alexander Pass Along of Bhatia Battery was used to measure persistence in the subjects. The general conception of a persistence situation is that in which a subject is presented with a most difficult or insoluble task and no restriction is imposed regarding either the time or number of attempts he can work at it. Problem eight being the last in this test, was supposed to be the most difficult because problems in this test are arranged in an ascending order of difficulty. Moreover, Nijhawan's (1968) data showed none of the 250 ninth class (the same class as used in the present study) subjects could solve this problem.
It has been reported by MacArthur (1955) and is shown in the monumental research of Hartshorne, May, and Waller (in Atkinson and Feather, 1966), that there is a low positive correlation between persistence and intelligence scores. As regards the relationship of n Achievement and intelligence both positive significant and positive insignificant relationships are reported (e.g., Robinson, 1964; Mahone, 1960; Bruckman, 1966; Bartlett and Smith, 1966).

In the context of the above-stated studies with regard to relationship between persistence and intelligence, and intelligence and n Achievement, it was thought best to control the influence of intelligence while establishing the validity of the n Achievement measure by correlating it with persistence.

Subjects

The subjects in this study are 50 boys and 50 girls, randomly selected from ninth classes of two Government higher secondary schools - one for boys and other for girls.

Measurement of Anxiety, Intelligence, and n Achievement

An adapted version of Test Anxiety Scale for Children (TASC) developed by Sarason, et al. (1960) was administered to 115 boys and 115 girls in groups of six according to the standard procedure. Out of this, 13 boys and 10 girls were eliminated on the basis of their lie scores. The Test Anxiety

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1Procedure is described in greater detail in Chapter IV.
score consisted of the number of items in which the subject endorsed as self-descriptive some statement reflecting a symptom of anxiety in the classroom. The maximum possible score is 30.

The remaining 102 boys and 105 girls were administered the Standard Progressive Matrices according to the instructions contained in the Manual (Raven, 1960). The answer sheets were scored with the help of the scoring key. The maximum possible score is 60. Since intelligence was to be controlled, so subjects whose scores lay between 25th and 75th percentiles of the distribution for both boys and girls, were selected.

The sample now consisted of 50 girls and 50 boys who were administered an adapted version of a Achievement test (Mehta, 1967). The test was administered under neutral conditions according to the standard procedure (McClelland, et al., 1953). Scoring system C was followed for scoring a Achievement protocols. The investigator had scoring reliability of .80 with the expert on practice materials provided by Atkinson (1958).

Following Atkinson and Litwin, Test Anxiety was conceived as the motive to avoid failure and a Achievement as the motive to approach success. Success motivated subjects were defined as those High on a Achievement and Low on Test Anxiety. Failure threatened subjects were defined as those High on Test Anxiety and Low on a Achievement. When the subjects were grouped according to their positions above or below the median score on both a Achievement and Test Anxiety, 9 boys and 14 girls were classified as High a Achievement—High Anxiety, 14 boys and
11 girls as High n Achievement-Low Anxiety, 15 boys and 13 girls as Low n Achievement-High Anxiety, and 12 boys and 12 girls as Low n Achievement-Low Anxiety. Subjects classified as High n Achievement-Low Anxiety (success motivated) and Low n Achievement-High Anxiety (failure motivated) were compared with regard to persistence. The comparison was made for the boys and girls separately as well as for the combined group. Independent relationship of n Achievement and Test Anxiety to persistence was also studied for the two sexes separately as well as taking them together.

Measurement of Persistence
As stated previously, problem eight of the Alexander Pass Along Test of the Bhatia Battery was used as the measure of persistence in the present study. This test consists of a number of wooden blocks coloured in blue and red and eight cards depicting certain designs which constitute problems. There are thirteen blocks of different sizes and shapes.

The subjects were tested individually on the Pass Along Test. One subject was called at a time to the testing room. When he had taken his seat and felt comfortable, the first problem was administered to the subject by the experimenter. It was pointed out to the subject that red blocks had been kept near the blue end and the blue blocks near the red end. He had to reverse the positions of the blocks as red blocks had to come to the red side and blue blocks to the blue side, as in the card. It was emphasized that he had to do this
by sliding the blocks with his finger only and had not to lift them. Subsequent to these instructions for the test, the subject was asked to make the first design on his own. When he could make it, problem eight was given to him. As this problem was used for measuring persistence, it was expected that the subject would be allowed to work at it for as long as he wanted. Since problem eight had been found insoluble (as shown by Nijhawan’s data) there was a possibility that some subjects would be taking extremely long over it. So some time restriction seemed necessary. A try-out on ninth class students revealed that two of the forty students persisted for 21 and 25 minutes while the rest of them left before 20 minutes. On the basis of this, a time restriction of 20 minutes was put. The time prescribed for this problem in the manual is 4 minutes. In the light of this, the time limit of 20 minutes was considered enough to obtain wide variance in persistence scores. The subjects were not told about the time restriction involved in the test. They were asked to solve problem eight by making the design depicted in the card. If the subject stopped working before 20 minutes, the time was noted and if he persisted after this period he was asked to leave the task.

Results

The raw scores for the boys and girls on anxiety, achievement and persistence are given in Appendices 2a and 2b respectively. Persistence for subjects, high and low in achievement for boys, girls, and the combined group of boys
and girls, is shown in Table 1.

### TABLE 1

Median score on persistence for Boys (N=50), Girls (N=50), and the Total group (N=100) for Ss classified high or low in n Achievement and the percentage of subjects above or below the combined group median.

<table>
<thead>
<tr>
<th>Group</th>
<th>n Achievement</th>
<th>High</th>
<th>Low</th>
<th>U</th>
<th>Z</th>
<th>p</th>
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<td></td>
<td></td>
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<tr>
<td>N</td>
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<td>27</td>
<td></td>
<td>U = 446</td>
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<td>.005</td>
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<tr>
<td>Median</td>
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<td>10.63</td>
<td></td>
<td>Z = 26.8</td>
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<td></td>
</tr>
<tr>
<td>% above combined group median</td>
<td>60.87</td>
<td>25.93</td>
<td></td>
<td>p = .005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
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<td>25</td>
<td></td>
<td>U = 561</td>
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<td>.00005</td>
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<tr>
<td>Median</td>
<td>17.16</td>
<td>11.62</td>
<td></td>
<td>Z = 4.8</td>
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<td></td>
</tr>
<tr>
<td>% above combined group median</td>
<td>84</td>
<td>20</td>
<td></td>
<td>p &lt; .0005</td>
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<td></td>
</tr>
<tr>
<td>Combined</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>48</td>
<td>52</td>
<td></td>
<td>U = 2007.5</td>
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<td></td>
</tr>
<tr>
<td>Median</td>
<td>16.70</td>
<td>11.17</td>
<td></td>
<td>Z = 5.26</td>
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<td></td>
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<tr>
<td>% above combined group median</td>
<td>72.92</td>
<td>23.08</td>
<td></td>
<td>p &lt; .00005</td>
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</table>

* Mann-Whitney U Test. All tests of significance are one-tailed tests.

From Table 1 it can be seen that subjects high in n Achievement work for a longer time as compared to the subjects low in n Achievement. The differences between the High and Low n Achievement groups of boys, girls, and for combined group of boys and girls were tested by Mann-Whitney U tests (Siegel, 1956, pp. 116-126). Since the direction of difference was predicted, one-tailed tests were made. The differences between the two groups are all statistically significant. Table 1 also shows that 61.84% of the High n Achievement group fall in the predicted cell and 74.80% of the Low n Achievement group falls...
in the predicted cell. Smoothed curve for each of the two
High and Low n Achievement groups for boys, girls, and the
two sexes taken together is shown in Figure 1. In all the
groups it is shown that subjects high in n Achievement consis-
tently persist for a longer period as compared to the subjects
low in n Achievement. The distribution of scores for all the
high n Achievement groups i.e. of boys, girls, and combined
sample is negatively skewed whereas that of the low n Achieve-
ment groups is either positively skewed or normally distributed.

Table 2 gives information regarding persistence of
high and low Test Anxiety groups for boys, girls, and for
combined group of boys and girls.

**TABLE 2**

Median score on persistence for Boys (N=50), Girls (N=50),
and the Total group (N=100) for Ss classified
high or low in Test Anxiety and percen-
tage of Ss above or below the
combined group median

<table>
<thead>
<tr>
<th>Group</th>
<th>Test Anxiety</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td></td>
<td>versus</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low</td>
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<table>
<thead>
<tr>
<th>Boys</th>
<th>N</th>
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<th>26</th>
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<tbody>
<tr>
<td></td>
<td>Median</td>
<td>10.12</td>
<td>14.92</td>
</tr>
<tr>
<td></td>
<td>% above</td>
<td>20.83</td>
<td>61.54</td>
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<tr>
<td></td>
<td>combined group median</td>
<td>p = .02</td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td>N</td>
<td>27</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>14.22</td>
<td>15.44</td>
</tr>
<tr>
<td></td>
<td>% above</td>
<td>48.15</td>
<td>56.52</td>
</tr>
<tr>
<td></td>
<td>combined group median</td>
<td>p = .05</td>
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<tr>
<td>Combined</td>
<td>N</td>
<td>51</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>12.30</td>
<td>15.16</td>
</tr>
<tr>
<td></td>
<td>% above</td>
<td>35.29</td>
<td>59.18</td>
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<tr>
<td></td>
<td>combined group median</td>
<td>p &lt; .005</td>
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</table>

* Mann-Whitney U Test. All tests of significance are
one-tailed tests.
FIG.1—SMOOTHED FREQUENCY DISTRIBUTION OF PERSISTENCE SCORES FOR HIGH AND LOW ACHIEVEMENT GROUPS FOR BOYS, GIRLS, AND BOYS AND GIRLS COMBINED.
It can be seen in Table 2 that the Low Test Anxiety group persists for a longer period than the High Test Anxiety group for the two sexes separately as well as the combined sample. Mann-Whitney U tests were computed on the differences between the anxiety groups; one-tailed tests were made. The High and Low Test Anxiety groups differed significantly for boys (p=.02), for girls (p=.05), and the combined group of boys and girls (p<.005). It can be seen from Table 2 that 56.61% of the Low Anxiety group and 52.79% of the High Anxiety group fall in the predicted cell in relation to the combined group median. Smoothed curves for High and Low Test Anxiety groups for boys, girls, and combined groups are presented in Figure 2.

Examination of Figure 2 shows that curves for Low Test Anxiety groups for boys, girls, and the combined sample are negatively skewed whereas for the High Test Anxiety group the same are positively skewed. The skewness is more marked in the case of boys and the combined sample than in the case of girls.

Table 3 shows the persistence of subjects simultaneously classified on n Achievement and Test Anxiety for boys, girls, and the combined group of boys and girls.
FIG. 2—SMOOTHED FREQUENCY DISTRIBUTION OF PERSISTENCE SCORES FOR HIGH AND LOW ANXIETY GROUPS FOR BOYS, GIRLS, AND BOYS AND GIRLS COMBINED.
TABLE 3

Median score on persistence for Boys (N=50), Girls (N=50), and the Total group (N=100) for Ss simultaneously classified high or low in n Achievement and Test Anxiety and percentage of Ss above or below the combined group median

<table>
<thead>
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<th>Group</th>
<th>n Achievement</th>
<th>Test Anxiety</th>
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<tr>
<td></td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>High-Low*</td>
<td>Low</td>
<td>High</td>
<td>versus Low-High</td>
</tr>
<tr>
<td>Boys N</td>
<td>14</td>
<td>9</td>
<td>12</td>
<td>15</td>
<td>U = 20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>16.2</td>
<td>12.0</td>
<td>12.0</td>
<td>14.86</td>
<td>p &lt; .001</td>
<td>44.44</td>
<td>60</td>
<td>6.67</td>
</tr>
<tr>
<td>% above</td>
<td>71.43</td>
<td>44.44</td>
<td>50</td>
<td>6.67</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Girls N</td>
<td>11</td>
<td>14</td>
<td>12</td>
<td>13</td>
<td>U = 2.5</td>
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<td></td>
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<tr>
<td>Median</td>
<td>19</td>
<td>16.32</td>
<td>12.36</td>
<td>10.75</td>
<td>p &lt; .001</td>
<td>78.57</td>
<td>25</td>
<td>15.38</td>
</tr>
<tr>
<td>% above</td>
<td>93.18</td>
<td>78.57</td>
<td>25</td>
<td>15.38</td>
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<tr>
<td>Combined N</td>
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<td>24</td>
<td>28</td>
<td>U = 298</td>
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<tr>
<td>Median</td>
<td>17.18</td>
<td>16.09</td>
<td>12.23</td>
<td>10.27</td>
<td>Z = 5.38</td>
<td>65.22</td>
<td>37.50</td>
<td>10.71</td>
</tr>
<tr>
<td>% above</td>
<td>80</td>
<td>65.22</td>
<td>37.50</td>
<td>10.71</td>
<td>p &lt; 0.005</td>
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</table>

* Mann-Whitney U Test. All tests of significance are one-tailed tests.

As can be seen from Table 3 the High n Achievement-Low Test Anxiety group and Low n Achievement-High Test Anxiety group differ significantly with regard to persistence for boys and girls separately as well as for the combined group. In line with prediction the High n Achievement-High Test Anxiety group and the Low n Achievement-Low Test Anxiety group generally fall between the two extreme groups. Mann-Whitney U tests of the differences between the High n Achievement-Low Test Anxiety group, employing one-tailed alternative hypotheses are all statistically significant. The computation of the percentages
of subjects above the combined median for each of the motivation groups revealed 71-98% of the High n Achievement-Low Test Anxiety fell in the predicted cell and 85-93% of the Low n Achievement-High Test Anxiety fell in the predicted cell. Smoothed curves for each of the four motivation groups describing the frequencies for persistence in terms of minutes, for the boys, girls, and the combined group are shown in Figures 3, 4, and 5 respectively.

Inspection of figures 3 to 5 reveals that High n Achievement-Low Test Anxiety and Low n Achievement-High Test Anxiety groups show marked differences in their persistence. The former group shows a tendency to persist for a longer period as compared to the latter. The remaining two groups i.e. High n Achievement-High Test Anxiety and Low n Achievement-Low Test Anxiety fall between these two extreme groups.

Figure 6 shows the comparison in the persistence of boys and girls irrespective of their n Achievement and anxiety scores. Girls are seen to be persisting more than the boys.

In addition to the above results, correlation between n Achievement and persistence was computed for boys, girls, and the combined sample. The values of correlations are given in Table 4.

### TABLE 4

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>50</td>
<td>.36*</td>
</tr>
<tr>
<td>Girls</td>
<td>50</td>
<td>.55*</td>
</tr>
<tr>
<td>Combined</td>
<td>100</td>
<td>.44*</td>
</tr>
</tbody>
</table>

*P<.01
FIG. 3—SMOOTHED FREQUENCY DISTRIBUTION PERSISTENCE SCORES FOR
THE SS CLASSIFIED AS HIGH OR LOW SIMULTANEOUSLY IN
ACHIEVEMENT AND TEST ANXIETY FOR BOYS.

ACHIEVEMENT—TEST ANXIETY

HH
HL
LH
LL

FREQUENCIES

PERSISTENCE IN MINUTES
FIG. 4—SMOOTHED FREQUENCY DISTRIBUTION OF PERSISTENCE FOR THE SS CLASSIFIED HIGH OR LOW SIMULTANEOUSLY IN ACHIEVEMENT AND TEST ANXIETY FOR GIRLS.
FIG. 5—SMOOTHED FREQUENCY DISTRIBUTION OF PERSISTENCE SCORES FOR THE Ss CLASSIFIED AS HIGH OR LOW SIMULTANEOUSLY IN \( y \) ACHIEVEMENT AND TEST ANXIETY FOR BOYS AND GIRLS COMBINED.

\( y \) ACHIEVEMENT-TEST ANXIETY

- \( HH \)
- \( HL \)
- \( LH \)
- \( LL \)
FIG. 6—SMOOTHED FREQUENCY DISTRIBUTION FOR PE BOYS AND GIRLS.
On the basis of the results stated above, high validity of the test may be concluded.

Reliability

One hundred subjects, 50 boys and 50 girls who had served as subjects for finding out validity of the adapted version of the TAT, were used as subjects for finding out test-retest and split-half reliability of this test. To find out test-retest reliability, boys were tested after a gap of three months and girls after a gap of one month. The test was administered under neutral conditions according to the standard procedure (McClelland, et al., 1953). The procedure for administration of the test is described in greater detail in Chapter V. The stories were scored on the basis of scoring system C presented by McClelland, et al. (1953, pp. 107-138). The scoring reliability of the investigator for the practice materials prepared by Smith and Feld (1958), was .87.

The n Achievement scores of boys and girls on two administrations of the test are given in Appendices 2c and 2d respectively. The values of Pearson product-moment correlations indicating test-retest reliability for boys and girls were .72 (N=50), and .70 (N=50) respectively. For split-half reliability, the n Achievement scores of both boys and girls (on 1st administration of the n Achievement test for test-retest reliability) on two equivalent sets, of three picture each, were correlated. The correlation coefficients of .31 (N=50) for the boys, .38 (N=50) for the girls, and .37

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1 Because of the administrative problems it was not possible to test them after an interval of more than one month.
for the combined sample were obtained. These
correlation coefficients, when corrected by the Spearman-Brown
formula, yielded an estimated reliability of .47, .55 and .54
for the achievement scores obtained from the six pictures
for the boys, girls, and the combined group of boys and girls
respectively. The reliability coefficients are presented in
Table 5.

TABLE 5
Reliability coefficients for n Achievement test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Type of reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Test-retest*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>50</td>
<td>.72</td>
</tr>
<tr>
<td>Girls</td>
<td>50</td>
<td>.70</td>
</tr>
<tr>
<td>Combined</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

* The test-retest reliability for the combined group was
  not found because the gap between the two administrations
  of the n Achievement test for boys and girls was not the same.

Morgan (1953) obtained correlations ranging from .56
to .64 for the three groups of high school children when two
twelve picture forms were administered under neutral conditions
after a gap of five weeks. Haber and Alpert (1958), who gave
two comparable six-picture forms to 26 college students over a
three week interval under relaxed orientation, obtained a
correlation of .56. Krumboltz (1957) reported a test-retest
reliability of .26 (N=169) for a nine week interval. Feld (1960)
obtained a test-retest reliability of .38 over an interval of
six years. Atkinson (1953) reported corrected split-half reliability of .65 for an eight story measure and a corrected split-half of .78 for a six story measure. Corrected split-half reliability of .73 (N=22) for a six story measure has been reported by Mehta (1967). Mehta obtained test-retest reliability of .39 (N=41) and .56 (N=42) for two groups of high school pupils who were retested after an interval of four months. McClelland (1958) has stated that because subjects' motives, their views of the test and the administrators cannot be the same on a second occasion as they were on the first, the test-retest reliability of the projective measures of motivation is not expected to be high. However, the test-retest reliability of .72 and .70 for the boys, and girls, for the present study is very satisfactory and compares favourably with the other test-retest reliabilities reported. This, together with the split-half reliabilities of .47, .55, and .54 for the boys, girls, and the combined group were considered good enough to regard the present n Achievement test as a reliable measure for the present sample.

The findings about reliability and validity of Mehta's adaptation of the n Achievement test are encouraging and indicate that this test can be used with high school subjects. On the basis of the findings pertaining to reliability and validity in the present study, six pictures which were selected for use in the present study are:
THE EFFECT OF MALE AND FEMALE FIGURES IN PICTURES ON
n ACHIEVEMENT SCORES OF HIGH SCHOOL GIRLS

In Lesser, Krawitz, and Packard's (1963) study, in
which a group of achieving and underachieving girls was studied,
it was found that a woman's response to achievement-oriented
conditions did not only depend on whether such conditions were
relevant to her role concept but also on the sex of the figures
in the pictures used in measuring her n Achievement. The results
of that study showed that, under arousal conditions, the scores
of the overachieving girls increased for pictures which contained
female figures and decreased for the pictures which contained
male figures. But the scores of under-achievers increased for
the pictures containing male figures and decreased for the
pictures containing female figures. On the basis of these
findings the possibility that pictures containing female figures
might increase or decrease n Achievement scores of the girls
was visualised. Before using the previously mentioned pictures
with the girls sample of the present study, a try-out was done
to find out how the girls responded to pictures containing
male figures in comparison to pictures containing female figures.

Subjects

Thirty-six ninth class girls, studying in a Government higher secondary school for girls, Chandigarh city, served as the subjects.

Description of the pictures

Three pictures containing male figures and three containing female figures were used. The pictures which contained male figures were three out of those six pictures which had been selected for use in the present study and have been mentioned previously. These pictures were B_4 — a doctor and a patient; D_4 — a boy learning 'tabla' from his teacher; A_5 — a boy with a book sitting on the cot. The contents and details of the other three pictures which contained female figures were the same as those of pictures containing male figures, the only difference being that instead of a male, a female character was substituted. For example, in picture B_4, instead of a male doctor a female doctor was substituted, in D_4, a girl instead of a boy was shown learning 'tabla' from a teacher and similarly in A_5 a girl instead of a boy was shown sitting with a book on the cot. The pictures containing female figures are given in Appendix lb.

Testing was done in two parts. In the first part, three pictures containing female figures were used and in
the second part, pictures containing male figures were used.

Measurement of n Achievement

Need for Achievement scores were obtained under neutral conditions from three TAT-type pictures containing female figures. The test was administered according to the standard procedure and is described in greater detail in Chapter V. The n Achievement protocols were scored according to scoring system C. There was no need of establishing reliability for practice materials as it had been established in the recent past. Only some practice was done before scoring the n Achievement protocols obtained in the first part of the testing.

According to the proposed design, the second part of the testing was carried on after two days. This time pictures containing male figures were shown to the subjects. The procedure for administration of the n Achievement test for this part was same as that for the first part.

Results

In order to see the effects of sex of the figures in the pictures, on high school girls' n Achievement scores, mean n Achievement scores for pictures containing female and male characters were found out separately (see Appendix 2e). On application of the formula for significance of difference between two means for correlated samples (Ferguson, 1959, pp.169-170) it was found that difference is not statistically significant. The
Mean n Achievement scores for pictures containing male and female pictures and 't' ratio are presented in Table 6.

**TABLE 6**

Means and 't' value for difference between the mean n Achievement scores obtained from female high school subjects (N=36) in response to pictures containing male and female characters

<table>
<thead>
<tr>
<th></th>
<th>3 male pictures</th>
<th>3 female pictures</th>
<th>Difference</th>
<th>'t'</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean n Achievement Score</td>
<td>...</td>
<td>5.06</td>
<td>4.36</td>
<td>.70</td>
<td>1.04</td>
</tr>
</tbody>
</table>

As can be seen from this table, the difference between the means on n Achievement score for the pictures containing male and female figures is not significant. It shows that the sex of figures of pictures does not have a bearing on n Achievement scores of high school girls. So the pictures containing male figures could be used with the girls of the sample of the present study.