RESULTS AND DISCUSSION: 2

STUDY II

RESULTS

Results of Study I have been described and discussed in Chapter Four. The results of the second part of the present study are elaborated in the present chapter.

The intent of the author here was to study the effect of Level of Aspiration, Intelligence and Academic Achievement on Test-Anxiety. For this purpose Level of Aspiration Test standardised by Shah and Bhargava (1983) and Hindi version of Cattell's Culture Fair Intelligence Test, Scale III, standardised by Rao (1980) were administered on 395 college-going students. The academic achievement in the last final examination of these students was also obtained from them. On the basis of high and low scores on the two tests and the examination marks, a total of 160 subjects were selected as per the design detailed in Table 2. Scores on the two tests and the academic
achievement of the selected subjects divided into eight subgroups are given in Appendix D.

The selected 160 subjects were administered Sharma's Test-Anxiety Scale. The test-anxiety raw data for the eight groups are given in Appendix E, and average scores are presented in Table 10.

Table 10. Average Test-Anxiety scores of eight subgroups formed on the basis of Level of Aspiration, Intelligence, and Academic Achievement.

<table>
<thead>
<tr>
<th>LEVEL OF ASPIRATION</th>
<th>ACADEMIC ACHIEVEMENT</th>
<th>INTELLIGENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Low</td>
<td>21.1</td>
<td>20.50</td>
</tr>
<tr>
<td>High</td>
<td>36.50</td>
<td>30.80</td>
</tr>
</tbody>
</table>

In order to test whether level of aspiration, intelligence, and academic achievement had any bearing on test-anxiety, a three-way ANOVA was calculated. The summary of results of three-way ANOVA is given in Table 11.
Table 11. Summary of three-way ANOVA taking Level of Aspiration, Intelligence and Academic Achievement as the main effects.

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>Variance</th>
<th>F-ratio</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspiration</td>
<td>2280.10</td>
<td>1</td>
<td>2280.10</td>
<td>71.50</td>
<td>.01</td>
</tr>
<tr>
<td>Intelligence</td>
<td>739.60</td>
<td>1</td>
<td>739.60</td>
<td>23.19</td>
<td>.01</td>
</tr>
<tr>
<td>Achievement</td>
<td>4080.40</td>
<td>1</td>
<td>4080.40</td>
<td>127.95</td>
<td>.01</td>
</tr>
<tr>
<td>Interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asp X Intt</td>
<td>52.90</td>
<td>1</td>
<td>52.90</td>
<td>1.66</td>
<td>ns</td>
</tr>
<tr>
<td>Asp X Ach</td>
<td>302.50</td>
<td>1</td>
<td>302.50</td>
<td>9.49</td>
<td>.01</td>
</tr>
<tr>
<td>Intt X Ach</td>
<td>6.40</td>
<td>1</td>
<td>6.40</td>
<td>0.2007</td>
<td></td>
</tr>
<tr>
<td>Asp X Intt X Ach</td>
<td>657.00</td>
<td>1</td>
<td>657.00</td>
<td>20.60</td>
<td>.01</td>
</tr>
<tr>
<td>Within set</td>
<td>4847.97</td>
<td>152</td>
<td>31.39</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

It has already been mentioned that three variables considered in Study II were level of aspiration, intelligence and academic achievement and in each of them two levels were chosen. Thus, the main problem was to study the effect of these individual variables on test-anxiety. The test-anxiety scores of high and low level of aspiration groups, high and low intelligence groups and high and low academic-achievement groups are depicted in Fig. 8, 9 and 10, respectively.

Since it was a factorial study, three first-order interactions between level of Aspiration X Intelligence,
FIG. 8. AVERAGE TEST-ANXIETY SCORES OF LOW AND HIGH ASPIRATION GROUPS.
FIG: 9. AVERAGE TEST-ANXIETY SCORES OF LOW AND HIGH INTELLIGENCE GROUPS.
LEVELS OF ACHIEVEMENT

LOW

HIGH

FIG. 10. AVERAGE TEST-ANXIETY SCORES OF LOW AND HIGH ACHIEVEMENT GROUPS.
Level of Aspiration X Academic Achievement, and Intelligence X Academic Achievement were also obtained. Data in Table 10 were, therefore, regrouped so as to present direct data for different first order interactions. Accordingly, average test-anxiety scores for the four sub-groups formed on the basis of level of aspiration and intelligence are presented in Table 12 and Fig. 11.

Table 12: Average Test-Anxiety Scores of Four subgroups formed on the basis of level of aspiration and intelligence.

<table>
<thead>
<tr>
<th>INTELLIGENCE</th>
<th>LEVEL OF ASPIRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Low</td>
<td>28.80</td>
</tr>
<tr>
<td>High</td>
<td>25.65</td>
</tr>
</tbody>
</table>

Similarly, average test-anxiety scores for the sub-groups formed on the basis of level of aspiration X academic achievement are presented in Table 13 and Fig. 12, and that for the intelligence X academic achievement in Table 14 and Fig. 13.
FIG. 11. AVERAGE TEST-ANXIETY SCORES OF FOUR SUBGROUPS FORMED ON THE BASIS OF LEVELS OF ASPIRATION AND INTELLIGENCE.
FIG. 12. AVERAGE TEST-ANXIETY SCORES OF FOUR SUBGROUPS FORMED ON THE BASIS OF LEVELS OF ASPIRATION AND ACHIEVEMENT.
Fig. 13. Average test-anxiety scores of four subgroups formed on the basis of levels of intelligence and achievement.
Table 13. Average Test-Anxiety Scores of four subgroups formed on the basis of level of aspiration and academic achievement.

<table>
<thead>
<tr>
<th>ACADEMIC ACHIEVEMENT</th>
<th>LEVEL OF ASPIRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Low</td>
<td>20.80</td>
</tr>
<tr>
<td>High</td>
<td>33.65</td>
</tr>
</tbody>
</table>

Table 14. Average Test-Anxiety Scores of four subgroups formed on the basis of intelligence and academic achievement.

<table>
<thead>
<tr>
<th>ACADEMIC ACHIEVEMENT</th>
<th>INTELLIGENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Low</td>
<td>28.30</td>
</tr>
<tr>
<td>High</td>
<td>38.00</td>
</tr>
</tbody>
</table>

The average test-anxiety scores for eight subgroups formed on the joint basis of level of aspiration X intelligence X academic achievement have already been given in Table 10. These scores have further been depicted in Fig. 14.
FIG. 14. AVERAGE TEST-ANXIETY SCORES OF EIGHT SUBGROUPS FARMED ON THE BASIS OF LEVELS OF ASPIRATION, INTELLIGENCE AND ACHIEVEMENT.
DISCUSSION

Study II aims at determining the individual as well as joint effects of level of aspiration, intelligence and academic achievement on the degree of test-anxiety. For this purpose, a three-way ANOVA was computed whose results have been summarized in Table II and are discussed in pages to follow. First we will discuss the main effects and then their joint effects.

Main Effects

LEVEL OF ASPIRATION: One of the independent variables subjected to empirical investigation was level of aspiration for which low and high level of aspiration groups were formed and their test-anxiety was measured. A look at Fig. 8 reveals that subjects with high level of aspiration exhibit higher degree of test-anxiety as compared to subjects with low level of aspiration. It is also clear from Table II that the obtained F-ratio (71.50) for the difference between high and low level of aspiration groups in respect of their test-anxiety is very significant for df 1 and 152.
It was expected that the subjects possessing high level of aspiration would show higher test-anxiety than those having low level of aspiration. The obtained significant F-ratio confirms our hypothesis. In other words, it can be said that the subjects with high level of aspiration showed considerably higher degree of test-anxiety as compared to the subjects with low level of aspiration. The main reason for this is that because of his high level of aspiration the individual is usually not satisfied with the low goals where he always succeeds and thus sets a very high goal where he fears that he might fail. This expectation of failure makes him very sensitive to testing situations and, consequently, he shows quite high degree of test-anxiety. Moreover, because of his high level of aspiration, the individual is motivated cognitively and is very much involved in the task and is very much concerned with success and failure. Thus, any failure condition promptly disturbs him and he tends to be a test-anxious person. On the contrary, the individual with low level of aspiration sets low goals, succeeds on it and gets satisfaction for his achievement. Moreover, he is neither motivated cognitively nor involves himself in the task and, hence, remains calm and composed, with satiated feelings in testing situation.
INTELLIGENCE: The second problem of Study II was to investigate whether intelligence level of the person has any bearing on his anxiety in test situations. It was assumed that the high intelligence group would show lesser test-anxiety than the low intelligence group. To get the answer to this problem an F-ratio was computed (Table 11). The obtained F-ratio (71.50) is significant beyond .01 level of confidence for df 1 and 152 which provides sound statistical ground to retain our hypothesis. A look at Fig. 9 reveals that the high intelligence group (M=28.85) exhibits considerably lesser degree of test-anxiety as compared to the low intelligence group (M=33.15). The present finding is supported by similar ones by Sarason (1959), Berkley and Sproule (1973) and Fischer and Awrey (1973).

Because of their better capacity to analyze and evaluate the situations and informations, high intelligence individuals have grasp of the situation and feel themselves quite confident while facing any testing situation and, hence, they do not exhibit much test-anxiety. On the contrary, individuals with low intelligence are unable to analyze and evaluate the situations and informations, have low grasp, because of which they are not confident of facing any testing situation; this leads to higher anxiety when their performance is on test.
ACADEMIC ACHIEVEMENT: Another factor considered in this study was academic achievement. For the purpose, high and low academic-achiever groups were formed and their test-anxiety was measured. It is clear from Fig. 10 that high academic achievers are high test-anxious ($M=36.05$) and low academic achievers are low test-anxious ($M=25.95$). This finding is also substantiated by the results in Table 11, which reveals that the two achievement groups differ considerably in their test-anxiety ($F=127.95$, significant at .01 level for df 1 and 152). This finding is also supported by those of Tryon et al. (1973), Rao (1974), Osterhouse 1975), Munz et al. (1975) and Wittmaier (1976) who reported positive correlation between academic achievement and test-anxiety. However, in many other studies working on the effect of test-anxiety on academic achievement a negative correlation was obtained between test-anxiety and academic achievement, that is, high test-anxious individuals showed poor academic performance as compared to low test-anxious individuals (Sarason, 1957; Sarason, 1960; Prell, 1973; Berkley and Sproule, 1973; Reid et al., 1973; Bierhoff-Alfermann, 1976; Oner, 1977; Limann, 1977; and Ajwani, 1986).
It seems that a strong desire to maintain one's high academic record and the same expectations of others from him make one highly test-anxious than his counterpart who has no specific desire as regards his academic achievement. The surrounding people too do not expect much from him to make him concern about his academic achievement and, thus, he is satisfied with his performance on tests and does not exhibit much test-anxiety.

Interaction Effects

Similar to Study I, here too joint effects of three independent variables — level of Aspiration, Intelligence and Academic Achievement — on test-anxiety would be discussed. We have observed above that all the three independent variables contributed significantly to test-anxiety. A natural curiosity arises as to investigate whether any two of the three factors or all the three factors affect test-anxiety jointly too. That is, whether these factors yield any interaction effect on test-anxiety.

LEVEL OF ASPIRATION AND INTELLIGENCE: The question raised here was whether an individual with low aspiration
and high intelligence level would show different level of test-anxiety as compared to another person having high aspiration and high or low intelligence level. It was expected that subjects with low aspiration and high intelligence level would show lowest test-anxiety and the subjects with high aspiration and low intelligence level the most, whereas the other subgroups would be occupying intermediary positions as regards their test-anxiety.

A three-way ANOVA taking level of aspiration, intelligence and academic-achievement as three main effects was computed wherein one of the first-order interactions was between the two levels of aspiration and two levels of intelligence. Average test-anxiety scores of the four subgroups are presented in Table 12 and Fig. 11 a look at which reveals that the low intelligence subjects show higher test-anxiety at both the aspiration levels than the high intelligence subjects. Similarly, subjects with high aspiration show greater test-anxiety at both the intelligence levels than do the low aspiration subjects. When put to ANOVA, this interaction yielded an insignificant F-ratio of $1.66$ (Table 11). This insignificant F-ratio clearly proves that both the factors—level of aspiration and intelligence—are independent in
respect of their effect on test-anxiety. This further signifies that test-anxiety exhibited by high and low intelligent individuals is not affected differently by their different levels of aspiration. In this way we see that our hypothesis does not stand the experimental test.

LEVEL OF ASPIRATION AND ACADEMIC ACHIEVEMENT: It is also significant to study whether high-low aspiration level and high-low academic achievement interact with each other to effect test-anxiety in different degrees. The average test-anxiety scores of the four subgroups formed on the basis of aspiration and achievement combine are shown in Table 13 and Fig. 12. The interaction effect was tested while computing the three-way ANOVA for level of aspiration, intelligence and academic-achievement (Table 11). The obtained F-ratio for the interaction between two aspiration groups and two academic achievement groups is 9.49 which is significant at .01 level of confidence for df 1 and 152. In this regard, our assumption was that an individual with low aspiration level and low academic-achievement would show lowest test-anxiety whereas another with high aspiration level and high academic achievement would exhibit highest test-anxiety, and the other two groups would fall in
between these two extremes. The obtained significant
F-ratio provides sufficient basis to retain our
hypothesis that there exists considerable interaction
effect of aspiration level and academic achievement
on test-anxiety. In other words, the obtained difference
between high and low academic-achievers in respect of
test-anxiety varies according to their level of
aspiration. A reference to Table 13 and Fig. 12 reveals
that individuals with low aspiration level/low academic
achievement showed the lowest test-anxiety (M=20.80)
whereas individuals with high aspiration level and high
academic achievement exhibited highest test-anxiety
(M=38.45), and the other two groups of individuals with
high level of aspiration and low academic achievement,
and with low level of aspiration and high academic
achievement, stood second and third, respectively, in
respect of test-anxiety. Earlier we have found that
test-anxiety exhibited by the group with high level of
aspiration is higher than those with low level of
aspiration. Similarly, high academic achievers have
been found to exhibit high test-anxiety as compared
to low academic achievers. The factors affect test-
anxiety jointly as well indicating thereby a genuine
difference among the subgroups formed on the basis of
high and low level of aspiration and academic achievement
in respect of their test-anxiety.
INTELLIGENCE AND ACADEMIC ACHIEVEMENT: We have seen that subjects with high IQ or low academic achievement exhibit lesser test-anxiety than the subjects with low I.Q. or high academic achievement. A related question is: Whether the subjects with high I.Q. and low academic achievement would exhibit lesser test-anxiety than the subjects with low I.Q. and high academic achievement. The average test-anxiety scores arising out of intelligence X achievement interaction are presented in Table 14 and Fig. 13. In order to study the combined effect of intelligence and academic achievement, an interaction F-ratio was computed (Table 11). The obtained F-ratio (.20) is very negligible and not significant at any acceptable level of confidence for df 1 and 152.

In this regard our hypothesis was that since both low intelligence and higher academic achievement enhance test-anxiety, their interaction effect should still be more, and therefore, a person with low intelligence and high academic achievement would show highest anxiety in test situation. However, the obtained insignificant F-ratio proves to the contrary that high or low intelligence does not add to test-anxiety of high and low academic achievers. Thus, our assumption does not seem to sustain as both the factors
are found independent in respect of their effect on test-anxiety: if intelligence affects test-anxiety, it affects on its own and not that intelligence (high or low) of high academic achievers has more effect on test-anxiety than that of the low achievers.

High intelligence has been found to reduce test-anxiety by several investigators (Sarason, 1959; Berkley and Sproule, 1973; and Fischer and Awrey, 1973) and, likewise, academic achievement has also been found to be positively correlated to test-anxiety (Tryon et al., 1973; Rao, 1974; Osterhouse, 1975; Munz et al., 1975; and Wittmaier, 1976). Though the present work confirms the above findings, it does not reveal any joint effect of the two factors.

LEVEL OF ASPIRATION, INTELLIGENCE AND ACADEMIC ACHIEVEMENT: Upto now the effect of any two independent factors on test-anxiety was discussed. Since three independent variables were manipulated in the factorial frame-work, the joint effect of all the three factors — level of aspiration, intelligence and academic achievement — on test-anxiety could also be tested. In this regard, it was assumed that low aspiration level, high intelligence level and low academic achievement, if
combined, would result into lowest test-anxiety whereas high aspiration, low intelligence, and high academic achievement would cause highest test-anxiety. Other combinations of these three variables would produce varying degrees of test-anxiety falling between the two extremes.

The average test-anxiety scores of the eight subgroups formed the combined basis of intelligence level of aspiration and academic achievement are given in Table 10 and further illucidated in Fig. 14. In order to test the hypothesis, a second-order interaction F-ratio was computed in the three-way ANOVA treatment of the data. The obtained F-ratio for the second-order interaction among the three variables is 20.60 (Table 11) which is highly significant for df 1 and 152. This provides us with sound statistical ground to retain our hypothesis in respect of the interaction effect of three factors — level of aspiration, intelligence, and academic achievement — on test-anxiety. It indicates that the degree of test-anxiety exhibited by high and low scorers on any one independent factor varies considerably because of involvement of other independent factors.
It is clear from the above discussions that though all the independent factors are found to exert their effects on test-anxiety, out of the three possible first-order interactions between any two factors only one (between intelligence and academic achievement) is significant and the second-order interaction among the three factors—level of aspiration, intelligence and academic achievement—too is significant.