BEHAVIOURAL AND ENVIRONMENTAL CORRELATES OF ACADEMIC ACHIEVEMENT AND OVER-& UNDER-ACHIEVEMENT: A BI-VARIATE CORRELATIONAL APPROACH
The analysis in this chapter centers around finding out the analytical picture of characteristic behavioral and environmental correlates of academic achievement of the total final sample as well as the over- and under-achieving groups. The results given in Chapter IV confirmed the fact that though the total group (TFS), overachievers (OAs) and underachievers (UAs) were equated for their intelligence, yet they showed wide variations in academic achievement. But why there is so much discrepancy in academic achievement? In order to provide an answer to this question in the present chapter, the objective of analytical picture of the non-intellectual behavioral and environmental correlates of academic achievement is obtained by way of testing the following hypotheses:

1. 'Certain behavioral and environmental correlates of academic achievement are common to (i) the total group (TFS), overachievers (OAs), and underachievers (UAs), or (ii) at least two of the three groups.'

2. 'Certain behavioral correlates of academic achievement are specific to the total group or overachievers or underachievers.'

To verify the above hypotheses, the data were analyzed with the help of the statistical technique of Pearsonian bivariate (product moment) correlation between academic achievement and the thirty-four behavioral and environmental variables for each of the groups referred to above.
The values of coefficients of correlation between academic achievement and each of the 34 behavioural and environmental variables have been entered in Table 6.1.

**TABLE 6.1**

**PRODUCT MOMENT CORRELATIONS BETWEEN BEHAVIOURAL AND ENVIRONMENTAL MEASURES AND ACHIEVEMENT (CPN) FOR THE TOTAL FINAL SAMPLE (TFS), OVERACHIEVERS (OAs) AND UNDERACHIEVERS (UAs)**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Code</th>
<th>TFS</th>
<th>OAs</th>
<th>UAs</th>
<th>Common correlates (Groups)</th>
<th>Specific correlates (Groups)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>TFS</td>
<td>OAs</td>
<td>UAs</td>
<td>TFS &amp; OAs</td>
<td>TFS &amp; UAs</td>
</tr>
<tr>
<td>1.</td>
<td>HA</td>
<td>314*</td>
<td>282*</td>
<td>072</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>SA</td>
<td>203*</td>
<td>140*</td>
<td>118</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>HEA</td>
<td>136*</td>
<td>074</td>
<td>130</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>SCA</td>
<td>460*</td>
<td>384*</td>
<td>280*</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>TA</td>
<td>353*</td>
<td>287*</td>
<td>196*</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Measures of Adjustment**

6. A
7. B
8. C
9. D
10. E
11. F
12. G
13. H
14. I
15. J
16. O
17. Q
18. Q
19. Q

**Measures of Personality**

6. A
7. B
8. C
9. D
10. E
11. F
12. G
13. H
14. I
15. J
16. O
17. Q
18. Q
19. Q

**Measure of Socio-Economic Status**

20. SES

**Measure of Study Habits & Attitudes**

21. SHA

*Contd. on next page*
Table 6.1 represents three sets of thirty-four correlations for three groups, that is, (i) the total final sample (TFS) representing the total range of academic achievement and intelligence; (ii) the overachieving group (OAs), representing one extreme level of discrepant achievement, and (iii) the underachieving group (UAs) representing another extreme level of discrepant achievement.

The first five row-wise sets of correlations in Table 6.1 show the product-moment correlations between the measures of adjustment and academic achievement for three different groups. Out of these five sets, the first set

<table>
<thead>
<tr>
<th>Measures of Achievement</th>
<th>Motivation</th>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>22. S, AM</td>
<td>221* 157** 137** X</td>
</tr>
<tr>
<td>23. S, AM</td>
<td>244* 245* 263* X</td>
</tr>
<tr>
<td>24. T, AM</td>
<td>250* 255* 234* X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measures of Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>25. FA</td>
</tr>
<tr>
<td>26. LIT</td>
</tr>
<tr>
<td>27. SC</td>
</tr>
<tr>
<td>28. MD</td>
</tr>
<tr>
<td>29. AG</td>
</tr>
<tr>
<td>30. TECH</td>
</tr>
<tr>
<td>31. CR</td>
</tr>
<tr>
<td>32. OD</td>
</tr>
<tr>
<td>33. SP</td>
</tr>
<tr>
<td>34. HH</td>
</tr>
</tbody>
</table>

*N.B. (1) X indicates common correlates of three or two of the three groups
(ii) decimals omitted.*
representing home adjustment (HA) was found to be positively and significantly correlated with academic achievement of the total final sample (TFS) and overachievers (OAs) at .01 level. It was, however, not significantly correlated with the underachievers (UAs).

The second variable of social adjustment (SA) again, was a correlate in the total final sample as well as in the overachievers, whereas it was not a significant correlate in the underachieving group.

The third measure of health and emotional adjustment (HEA) was a correlate of achievement in the total final sample alone.

The fourth and the fifth measures, that is, the school adjustment (SCA) and the total adjustment (TA) were the common and significant (.01 level) positive correlates of academic achievement of all the three groups (TFS, OAs and UAs).

Considering the fourteen measures of personality (vide Table 6.1) personality factor 'A-' *(a strothymia) was significantly correlated with the overachievers. It was, however, not significantly related with the academic achievement in the total final sample and the underachievers. Hence, it was a specific correlate of achievement in the overachieving group.

Personality factor 'B+' (higher scholastic mental capacity) was a significant common correlate of academic achievement.
Personality factor 'C+' (emotional stability) was not a correlate of academic achievement in any of the three groups (TFS, OAs and UAs).

Personality Factor 'D+-' (Phlegmatic, deliberate) was a significant correlate of academic achievement in the total final sample (TFS) as well as in the underachievers (UAs). For the overachieving group, though the trend of correlation was the same as in the above mentioned groups, yet the correlation did not reach any statistically accepted level of significance.

Personality Factors 'E-,' (submissiveness), 'F+,' (urgency), 'G+,' (stronger superego strength), 'H+,' (Parmia) were the specific correlates of academic achievement in the total final sample only.

Personality Factor 'I-,' (Pronia) was specifically associated with the overachieving group (OAs). Personality Factors 'J' (doubting) and 'O' (apprehensive) did not go significantly with any of the three groups. Personality factor 'O2+' (self-sufficiency) was a significant specific correlate in the underachievers.

Personality factor 'O3+' (high self-concept control) was a significant 'common' correlate of academic achievement in the total final sample as well as the over- and under-achievers. Personality Factor 'O4' did not go significantly with any of the three groups studied here.
From Table 6.1 it is apparent that the measure of study habits and attitudes ($V_{21}$) was a significant positive correlate of the criterion (academic achievement) and was common to all the three groups (TFS, OAs and UAs).

Table 6.1 again indicates that all of the three measures of achievement motivation, as represented through the scores on the first story, second story and the totals ($S_{1AM}$, $S_{2AM}$ and $TAM$) were significant common positive correlates of academic achievement in all the three groups (TFS, OAs and UAs).

Table 6.1 also refers to different interest areas that were associated with academic achievement of the three groups. Interest area of fine arts (FA) was a significant common negative correlate of academic achievement in all the three groups.

Interest in agricultural activities was specifically and negatively correlated with the underachieving group only. Interest in technical activities was specifically and negatively correlated with the total final sample. Interest in crafts again showed significant negative correlation in the total group as well as in the underachieving group. It did not go with the academic achievement of the overachieving group. Interest in household activities was a significant negative and a common correlate of academic achievement in all the three groups. Rest of the five interest areas (IIT, SC, MD, OD, SP) did not go significantly with achievement in any of the three groups.
As regards the environmental measure of socio-economic status ($V_{2q}$), it was related to academic achievement, and it was a significant and positive correlate of academic achievement common to all the three groups (TF3, QAs and UAs).

**DISCUSSION OF RESULTS**

**HYPOTHESIS I**

The obtained results (vide Table 6.1) show that two common correlates of academic achievement in the different areas of adjustment were those of school and total adjustment (SCA and TA). This means that better school adjustment as well as total adjustment go with higher attainment within a particular group being studied. These findings are in line with the findings of Resnick (1951), Dane and Baker (1961), Mittal (1962), Motley (1965), Kingness (1965) and Chawla (1970). These results, however, don't go with Gough's (1949) findings as he obtained low but negative relationship of adjustment (as measured by Bell Adjustment Inventory) with academic achievement.

With regard to fourteen factorially independent dimensions of personality, as measured by High School Personality Questionnaire (HSPO), only two personality measures, that is, personality Factor $B^+$ (crystallized intelligence and $Q_e$-strength) were found to be the common personality correlates of all the three groups.
This means that the individuals who score high on personality Factor E of crystallized intelligence (Cattell, 1963a,b), also score high in academic achievement. That is, in a particular group studied, intelligence and academic achievement go together in the same direction.

Again, common correlate of personality factor ‘O3’ implies that within the group compared, high academic attainers have high self-concept, self respect, regard for social reputation, are socially precise, self-disciplined and show strong control over their emotions and general behaviour on the whole. The above findings further confirm the findings of Cattell et al. (1961), Crary (1962), Butcha et al. (1963), Cattell and Sealy (1965), Parton et al (1971, 1972a, 1972b), Koul (1969).

Correlations between study habits and attitudes (SHA+) and academic achievement again show (vide Table 6.1) that it is a common correlate of academic achievement in all the three groups. Thus better study habits and healthy positive attitudes go side by side with better achievement within a particular group. Take, for example, within the underachieving group, those who are achieving better, have better study habits and healthy attitudes. These findings confirm the findings of Krenn (1941), Esther (1945), Altus (1947), Carter (1950,1962), Holtzman, Brown and Farcuhar (1954), Jamuar (1958), Faroqi and Vyas (1968), and Joshi and Pandey (1973).
In the field of achievement motivation, all the three measures ($S_1$, $S_2$, $T$) were found to be the positive common correlates of academic achievement in the three groups (TF5, OAs, and UAs). Thus high score on 'n-Ach' goes with high scores in academic achievement within a particular group. These findings go parallel with the findings of Murray (1938), Lowell (1952), McClelland (1953, 1958, 1961), Atkinson and Litwin (1960), Green and Farquhar (1965), Entwistle and Entwistle (1970), Entwistle and Brennan (1971) and Dutt and Subhrawa (1973). Carrzella's (1971) findings are, however, at odd with these results.

In the present study, out of the ten areas of interest, no interest area was found to be going positively with all the three groups studied here. Two interest areas, that is, interest in fine arts (FA) and household activities (HH) showed negative correlation with the academic achievement of all the groups. Thus, on the whole, there are just two interest areas (FA- and HH-) which are the negative common correlates of academic achievement in all the three groups. These results are not as encouraging as represented by Chen et al. (1967), and Katz and Norris (1972).

Last of all, the environmental measure of socio-economic status again, can be accepted as a 'common' correlate of academic achievement in all the three groups, because it was found to be going significantly and positively with all of them. These findings are in congruence with

In the light of the above discussion it is clear that out of the thirty four behavioural and environmental measures studied here, school adjustment, personality Factors 'B' (Intelligence) and $\gamma_3$ (self-concept), study habits and attitudes, three measures of achievement motivation, and the socio-economic status (SCA+, TA+, $O_3$, SHA+, $S_1$AM+, $S_2$AM+, TAM+ and SES+) are positively and significantly correlated with academic achievement of all the three groups and interest in fine arts and household activities (FA- and HA-) are negatively associated with academic achievement of these groups. Thus, these are the eleven 'common' behavioural and environmental correlates of academic achievement in these groups. So, the first part of the first hypothesis in this chapter, namely, 'there are certain behavioural and environmental correlates of academic achievement common to the total final sample, overachievers and underachievers', stands verified.

Another part of the first hypothesis is concerned with the behavioural and environmental correlates which are common to at least two of the three groups (TFS, OAs and UAs). According to Table 6.1, in the field of adjustment, the variable of home adjustment (HA+) goes with the total final sample as well as the overachievers. This measure doesn't go with the underachieving group. Perhaps, better
home adjustment is a causal factor of better academic achievement when total range of ability and achievement (TPA) as well as overachievement (OAm) are considered. Same is true of social adjustment (SA) which goes positively and significantly with the total final sample as well as the overachievers. These results lend support to the findings of Dane and Baker (1961). There is no other measure which goes commonly with these two groups, that is, the total group and the overachievers.

As regards the common correlates of the total final sample and the underachievers, entries in Table 6.1 show that phlegmatic dimension of personality (D-) is significantly correlated with the achievement in these two groups. Though the direction of correlation for the overachieving group is also the same yet the value doesn't reach a statistically significant level. These findings add another testimony to the findings by Gibb (1951) and Koul (1969).

Another measure which is a common correlate of academic achievement in the total group and underachievers is that of negative interest in craft centred activities (CR-). Thus high achievers within the two groups show dislike for craft-centred activities.

There is no measure which is common to only over- and under-achievers and does not go with the total final sample.
In brief, the second part of the first hypothesis is verified in a limited way in the sense that two measures (HA+ and SA) were commonly correlated with the academic achievement of the total final sample and overachievers; two measures (D- and CH-) were found to be commonly but negatively correlated with achievement of the total final sample and underachievers. No measure, however, was exclusively a common correlate of achievement of the over- and under-achievers.

**HYPOTHESIS II**

The second hypothesis outlined earlier in the beginning of this chapter is that there are certain behavioural and environmental measures which go specifically with any one of the three groups (TFS or OAs or UAs).

Table 6.1 indicates that there are six measures of health and emotional adjustment (HEA+), personality factors of submissiveness (E-), desurgency (F+), strong superego strength (G+) and Farmta (H+), and lastly, negative interest in technical activities (TECH-), which significantly and specifically go with the total final sample.

Thus those who achieve better within the total range of achievement (TFC+) have better health and emotional adjustment (HEA+), tend to be humble, mild, accommodating and conforming (E-). Latter part of the present findings partially supports the findings of Cattell (1963b) and Werner (1966). These findings are at odd with the findings of Koul (1962).
Referring to Table 6.1, sobriety, prudence and seriousness (F+) contribute significantly to superior academic achievement in the total group. Besides, in the total group (TFS) those who academically achieve better are more conscientious, persevering and rule bound (G+). Personality Factor 'H+' going specifically and significantly with the total group implies that those who are venturesome, socially bold, uninhibited and spontaneous, academically achieve higher than others.

Negative interest in technical activities means that those who achieve better in the total group show dislike for technical activities.

Table 6.1 also indicates that there are only two measures which go specifically with the overachieving group. These measures are the personality dimension of s abruptness (A-) and tough-mindedness (I-). Thus, within the overachieving group, those who achieve better are characterised as more reserved, detached, and critical (A-). Also, the personality traits of tough-mindedness, self-reliance, independence and responsibility (I-) are significant correlates of academic achievement for the overachieving group. These findings, to a great extent confirm the findings made by Koul (1969) and Gibb (1951).

From Table 6.1 again, it is clear that there are two measures which go specifically with the underscoring group. These measures are personality Factor 'O2+' and negative interest in agricultural activities (AG-). Thus,
factor of self-sufficiency ($Q_2^+$) is a significant specific positive correlate of academic achievement in the underachievers, that is, within this group those who academically achieve better are more self-sufficient, prefer their own decisions and are resourceful.

Besides, interest in agricultural activities ($AG$) going negatively and specifically with the underachieving group means that the high achievers within the underachieving group exhibit relatively less liking for agricultural activities.

The second hypothesis that 'there are certain behavioural measures which are characteristic of the total final sample or the overachievers or the underachievers, thus stands tenable. Of course, greater number of specific correlates of the total final sample (six correlates) as compared to the number of specific correlates of over-achievers (two correlates) or the underachievers (two correlates) may be due to greater spread of achievement scores in the total group ($N = 761$) than the other two groups of over- and underachievers ($OAs = 264$ and $UAs = 219$).

To sum up the whole discussion of the two hypotheses in nutshell, better school adjustment, better total adjustment, high intelligence, high self-concept, better study habits and attitudes, higher achievement motivation as expressed by all the three measures of
achievement motivation, lower interest in fine arts and household activities and better socio-economic status (SCA+, TA+, P+, Q3+, SHA+, S1AM+, TAK+, FA+, HH+ and SES+) were found to be correlated significantly with the academic achievement of all the three groups. These are the 'common' behavioural and environmental correlates of academic achievement in the total group, the overachievers and the underachievers. In a way, they can be said to be the correlates of academic achievement which show their significant relationship with academic achievement in the positive discrepant achievers as well as in the negative discrepant achievers.

Again, superior home adjustment (HA+) and better social adjustment (SA+) are common to the academic achievement of the total group as well as the overachieving group.

Personality Factor 'D-' (Phlegmatic, deliberate) and negative interest in crafts (CR-) are common correlates of the total group and also the underachievers.

Health and emotional adjustment (HEA+) and Personality Factors 'E-' (submissiveness), 'F+' (happy-go-lucky, surency), 'G+' (conscientiousness), 'H+' (venturesome) and also negative interest in technical activities (T-CH-) go specifically with the academic achievement of the total group (TFS) but do not correlate significantly with any of the discrepant academic achievement (OAs or UAs).

Personality Factors 'A-' (reservedness) and 'L-' (self-reliance), specifically characterize the academic achievement of the overachievers.
Specific behavioural and environmental correlates characterizing the superior academic achievement of the undersachievers are just two, that is, personality Factor 'Q₂⁺' (self-sufficiency), and negative interest in agricultural activities (AG⁻).

Besides the above 'common' and 'specific' behavioural and environmental correlates of academic achievement of the total group, overachievers and undersachievers, there are a few behavioural (not environmental) measures which do not significantly correlate with the academic achievement of any of these groups in any of the directions, that is, positive or negative. These are those of Personality Factors 'C' (ego strength), 'J' (internal restraint), 'O' (guilt proneness), 'O₄' (tenseness), interest areas of literary, scientific, medical, outdoor and sports activities (LIT, SC, MD, O0, SP). But, though, at the very sight of Table 6.1, these measures do not go with academic achievement of any of the three groups, yet it is just possible that these measures may contribute to a great amount in explaining the variance in achievement when they are combined with other measures with the help of multivariate correlational analysis which often help in estimating the contribution of 'suppressor variables' (Nunnally, 1967, p.162) in different combinations.