

CHAPTER VII

ANALYSIS OF DATA AND RESULTS - MULTIPLE REGRESSION AND CORRELATION ANALYSIS

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7.2 Results and Discussion

CHAPTER

ANALYSIS OF DATA AND RESULTS -

MULTIPLE REGRESSION AND CORRELATION ANALYSIS

As stated earlier, the second analysis of results is concerned with finding out the individual and joint effect of the independent variables (Predictors) on achievement in certain groups of subjects (Dependent variables or Criterion variables) by means of multiple regression and correlation analysis. The individual effect of a variable refers to its relative contribution when acting along with other variables. The analysis is confined to achievement in certain groups of subjects only and not to achievement in individual subjects. The criterion variables (achievement in certain groups of subjects) and Predictors analysed by the study are given below :

PredictorsCriterion Variables

I. Home Variables	1. Achievement in Languages - Males
1. Parental value on education and achievement	2. Achievement in Languages - Females
2. Emotional climate in the home	3. Achievement in MPC Group - Males
3. Parental encouragement	4. Achievement in CBZ Group - Males
4. Educational facilities in the home	5. Achievement in CBZ Group - Females
5. Socio-economic status	6. Achievement in HPoEc Group - Males
II. Need for achievement	7. Total achievement - Males
6. Need for achievement	8. Total achievement-Females
III. Intelligence	
7. Intelligence	
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9. Personality Factor C	
10. Personality Factor E	
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17. Personality Factor N	
18. Personality Factor O	
19. Personality Factor Q1	
20. Personality Factor Q2	
21. Personality Factor Q3	
22. Personality Factor Q4	

* For description of the factors, refer Chapter IV.

Thus, the analysis is confined to the above variables and results are discussed.

7.1 ANALYSIS OF RESULTS

Regression coefficients, β weights and multiple correlations are worked and the significance of variables as predictors and significance of multiple correlation (R) are checked as per the procedure explained in Chapter V.

The significant predictors for each criterion variable are identified, combined and individual effect of the variables in explaining the criterion variance is discussed and finally significant correlates found in correlation analysis and significant predictors found in regression analysis for each achievement criterion variable together with percentage of the criterion variance explained by the variables are given at the end.

The results of regression analysis and multiple correlations are presented in the Tables to follow and discussed.

(a) Significant Predictors of Academic Achievement in Languages - Males

The significant predictors are lack of emotional climate, educational facilities in the home, need for achievement, intelligence, personality factors Q3 (controlled, socially precise) and Q4 (tense, frustrated, impatient) (Variables 2,

Table -12 : b Coefficients, Beta Weights(B), and Multiple Correlation Between Variables and Achievement in Languages and Percentage of Variance Explained-MALES

Variable Number	6v	6c	6v/6c	b	B	r	rB	100rB@	t
1	13.3646	16.6741	0.8015	-.1046	.0838	.0407	.0034	00.34	1.1166
2	15.2785		0.9153	.1953	.1790	.0794	.0142	01.42	2.6909x
3	16.3116		0.9783	.1115	.1091	.0547	.0060	00.60	1.3856
4	17.3272x		1.0392	-.2032	.2112	.0585	.0124	01.24	2.9084x
5	04.1784		0.2506	.1237	.0310	0.210	.0007	00.07	0.5311
6	04.9282		0.2956	.3743	.1106	.1607	.0178	01.78	1.9922xx
7	10.2804		0.6165	.4301	.2652	.2808	.0745.	07.45	4.8198x
8	03.9424		0.2364	-.2335	.0552	.1209	.0067	00.67	1.0040
9	04.5538		0.2731	-.3530	.0964	.0068	.0007	00.07	1.6826
10.	04.1567		0.2493	.2654	.0662	.0204	.0014	00.14	1.2046
11.	04.6133		0.2767	-.0412	.0114	.0425	.0005	00.05	.2027
12.	04.0578		0.2434	-.2414	.0588	.0071	.0004	00.04	1.0474
13.	05.0329		0.3018	.0262	.0079	.0382	.0003	00.03	.1364
14.	03.4528		0.2071	-.0751	.0156	.0038	.0001	00.01	.2893
15.	03.7467		0.2247	-.0506	.0114	.0272	.0003	00.03	.2095
16.	04.3982		0.2638	-.0480	.0127	.0372	.0005	00.05	.2349
17.	03.7243		0.2234	-.1855	.0414	.0094	.0004	00.04	.7538
18.	04.2551 51		0.2594	.1952	.0506	.0282	.0014	00.14	.8605
19.	03.7995		0.2279	.2829	.0645	.0749	.0048	00.48	1.1498
20.	03.5819		0.2148	-.0497	.0107	.0576	.0006	00.06	.1972
21.	04.2243		0.2533	.6993	.1771	.2163	.0383	03.82	3.1456x
22.	04.4251		0.2654	-.4653	.1235	.1452	.0179	01.79	2.1371xx
Percentage of variance explained by									
R ² = .2033									20.33

Home : 3.67 R² = .2033 when R is multiple correlation.

Int. : 7.45 F ratio = 3.4684 x

Perso: 7.43 N = 322

N.A. 1.78 K = 22

Total: 20.33

x significant at .01 level
xx significant at .05 level
@ percentage of variance explained by each variable.

4, 6, 7, 21, and 22 respectively - Table No. 12). The percentage of the variance of the criterion (achievement in Languages) explained by the broad four variables and the significant predictors individually is :

Home variables	:	3.67
Need for achievement	:	1.78
Intelligence	:	7.45
Personality Factors	:	7.43
Total	:	<u>20.33</u>
Intelligence	:	7.45
Personality Factor Q3:	:	3.83
Personality Factor Q4:	:	1.79
Need for achievement	:	1.78
Lack of emotional climate:	:	1.42
Educational Facilities	:	1.24
Total	:	<u>17.51</u>

The percentage of the variance explained by four broad variables jointly is 20.33. The remaining 80 per cent of the variance must be attributed to factors not covered by the present study. Intelligence and personality factors together explained about 15 per cent of the variance of the criterion. The six predictor variables explained 17.51 per cent of the variance of the criterion and 90 per cent of the total variance explained by all the variables jointly. Among the significant predictors, the contribution of intelligence

Table -13 : b Coefficients, Beta Weights(B), and Multiple Correlation between variables and Achievement in Languages and Percentage of Variance Explained- FEMALES

Variable: Number	6v	6c	6v/6c	b	B	r	rB	100rB@	t
1	11.9246	15.6043	.7642	-.1225	.0936	.0344	.0032	00.32	.1475
2	14.4354		.9251	.1702	.1575	.1044	.0164	.9969	.9969
3	14.6037		.9359	.1130	.1058	.0864	.0091	00.91	.4627
4	18.8446		1.2077	.0411	.0496	.0901	.0045	00.45	.2905
5	5.2650		.3374	-.4868	.1643	-.0034	.0006	00.06	.9950
6	5.8307		.3737	-.1495	.6559	.0073	.0004	00.04	.3851
7	6.4255		.4118	.0885	.0365	.0958	.0035	00.35	.2441
8	4.5247		.2900	-.2985	.0866	-.0623	.0054	00.54	.5695
9	4.1804		.2679	.2884	.0773	-.0098	.0008	00.08	.4538
10	4.7954		.3073	.0883	.0271	-.0354	.0010	00.10	.1581
11	4.9295		.3159	1.0917	.3449	.1013	.0349	03.49	1.7751
12	4.1159		.2638	.6807	.1795	.1783	.0300	03.20	1.1786
13	5.5477		.3555	-.5116	.1819	-.0280	.0051	00.51	.9334
14	4.3854		.2810	.5178	.1455	.1058	.0154	01.54	.8046
15	3.8270		.2453	.3123	.0766	.0560	.0043	00.43	.4749
16	5.0771		.3254	-.3135	.1020	-.0173	.0018	00.18	.6660
17	3.4567		.2215	.2493	.0552	.1427	.0079	00.79	.3833
18	4.2577		.2729	.3830	.1045	.0202	.0021	00.21	.6642
19	3.3979		.2178	-.1733	.0377	-.0833	.0031	00.31	.2243
20	4.7763		.3061	.2154	.0659	.0046	.0003	00.03	.4047
21	4.3077		.2761	.7267	.2006	.0878	.0176	01.76	1.1877
22	4.8158		.3086	-.3733	.1152	-.0898	.0103	01.03	.6860
							R ² = .1828	18.28	

Percentage of Variance explained by : Home : 3.38 R² = .1828 Where R is multiple correlation.
N.A. : .04
Int. : .35
Perso.:14.51
Total :18.28
F raction = .5186*
N = 74
K = 22

@ Percentage of variance explained by each variable . * Not significant.

is relatively more-nearly 40 per cent of the explained variance is due to intelligence.

(b) Significant Predictors of Academic Achievement in Languages - Females

No variable reached the level of significance. Even the multiple correlation R is not significant. However, the percentage of variance explained by the four broad variables is (Table No. 13) :

Home variables	:	3.38
Need for achievement	:	0.04
Intelligence	:	0.35
Personality variables	:	14.51

Total	:	18.28

More than 80 per cent of the explained variance is accounted by personality variables. The contribution of intelligence and need for achievement is negligible. Though significantly not related, the following variables appear to contribute to explained variance (Table No. 13).

Personality Factor F	:	3.49
Personality Factor G	:	3.20
Personality Factor Q3	:	1.76
Lack of emotional climate	:	1.64
Personality Factor I	:	1.54
Personality Factor Q4	:	1.03

Total	:	12.66

Table - 14 : b Coefficients, Beta Weights (B) and Multiple Correlation Between Variables and Total Achievement in MPC Group and Percentage of Variance Explained - MALES

Variable Number	6v	6c	6v/6c	b	B	r	rB	100rB@	t
1	12.5106	27.7660	.4506	.2489	.1122	.0753	.0084	00.84	0.8232
2	17.3488		.6248	.2000	.1250	.1211	.0151	01.51	1.0055
3	16.1997		.5834	-.1233	.0719	.0029	.0002	00.02	0.5248
4	17.7510		.6393	.1416	.0905	.0331	.0030	00.30	0.6524
5	4.2003		.1513	-1.5323	.2318	-.1065 ⁵	.0247	02.47	2.1300xx
6	5.3348		.1921	.9767	.1877	.2024	.0380	03.80	1.85.90
7	9.6302		.3468	.8461	.2925 ³⁵	.2748	.0807	08.07	3.0103x
8	4.0136		.1446	-1.0496	.1517	-.1334	.0202	02.02	1.4325
9	4.3017		.1549	-.8796	.1363	-.1160	.0158	01.58	1.2091
10	3.9321		.1416	-.0111	.0016	.0156	.0000	00.00	0.0141
11	4.3760		.1576	.0892	.0141	.0124	.0002	00.02	0.1375
12	3.9935		.1438	.5229	.0752	.0611	.0046	00.46	0.7406
13	4.6442		.1673	.0552	.0082 ^{q2}	-.0195	.0002	00.02	0.0883
14	3.4250		.1234	.6469	.0798 ⁹⁸	.0334	.0027	00.27	0.8136
15	3.4003		.1225	-.3484	.0427	-.0831	.0035	00.35	0.4198
16	4.4407		.1599	-.0843	.0135	-.0696	.0009	00.09	0.1286
17	3.3629		.1211	-.6843	.0829	-.0709	.0059	.00.59	0.7959
18	4.3182		.1555	-.6560	.1020	-.0257	.0026	00.26	0.9558
19	3.4052		.1226	-.6284	.0771	-.1297	.0100	01.00	0.7275
20	3.3095		.1192	-1.4315	.0171	-.0382	.0007	00.07	1.7225
21	4.1963		.1511	-1.6829	.0254	-.0134	.0003	00.03	2.1522xx
22	4.6564		.1677	.3510	.0589	-.0155 ⁵⁵	.0009	00.09	0.5554
R ² = .2386 23.86									

Percentage of Variance explained by :

Home : 5.14
N.A. : 3.80
Int. : 8.07
Perso. 6.85
Total:23.86

R² = .2386 where R is multiple Correlation
F ratio : 1.2393 *

N = 110
K = 22

x significant at .01 level
xx significant at .05 level
@ Percentage variance explained by each variable.

* Not significant.

Because of small size of the sample ($N = 74$), large number of predictors ($K = 22$) the coefficients have failed to reach the level of statistical significance.

(c) Significant Predictors of Academic Achievement in MPC Group - Males

The percentage of the variance of the criterion explained by the four broad variables individually is : (Table No. 14)

Home variables	:	5.14
Need for achievement	:	3.80
Intelligence	:	8.07
Personality Factors	:	6.85
Total	:	<u>23.86</u>

The significant predictors are socio-economic status, intelligence and personality factor Q3 (controlled, socially precise, high self-concept) (variables 5, 7, 21 - Table No. 14). The percentage of the variance of the criterion explained by them ^{is} ~~are~~ :

Intelligence	:	8.07
Socio-economic status:		2.47
Personality Factor Q3	:	0.03
Total	:	<u>10.57</u>

The four variables jointly explain 23.86 per cent of the variance of the criterion and the remaining 76.14 per cent of the criterion variation must be attributed to factors

Table : 15 : b Coefficients, Beta Weights (B) and Multiple Correlation Between Variables and Total Achievement in CBZ group and Percentage of Variance explained - MALES

Variable Number	6v	6c	6v/6c	b	B	r	rB	100rB@	t
1	14.0045	35.6912	.3924	-.9202	.3611	-.2066	.0746	07.46	2.6092xx
2	14.7679		.4138	.4798	.1985	.1180	.0234	02.34	1.7978
3	16.7432		.4691	.5200	.2439	.0005	.0001	00.01	1.5595
4	16.9239		.4748	-.4203	.1996	.0360	.0072	00.72	1.5261
5	4.1830		.1172	-.5211	.0611	.0525	.0032	00.32	.5900
6	4.7811		.1340	.8137	.1090	.1012	.0110	01.10	1.1705
7	8.3644		.2344	.1984	.0465	.1853	.0086	00.86	1.5076
8	3.7838		.1060	1.3269	.1407	.1276	.0180	01.80	1.4387
9	4.3709		.1225	.6119	.0750	.0476	.0036	00.36	.7206
10	4.3637		.1223	1.3497	.1651	.0925	.0153	01.53	1.7655
11	4.5514		.1275	.1667	.0213	-.0879	.0019	00.19	.2166
12	4.0659		.1139	2.5752	.2933	.2560	.0751	07.51	2.7975x
13	4.8952		.1372	-2.0412	.2801	-.2990	.0837	08.37	2.9223x
14	3.4586		.0969	1.7118	.1659	.1911	.0317	03.17	1.7821
15	3.9553		.1108	-.1805	.0200	-.0862	.0017	00.17	.2069
16	4.0833		.1144	-.3413	.0390	-.1667	.0065	00.65	.4192
17	3.7585		.1053	.7328	.0772	.1500	.0116	01.16	.8096
18	4.5071		.1263	-.9598 5%	.1207	-.0564	.0068	00.68	1.1828
19	4.0599		.1138	-.5924	.0674	.0423	.0029	00.29	.7150
20	3.6082		.1011	1.1197	.1132	.1339	.0152	01.52	1.1658
21	4.0487		.1134	.0978	.0111	.0898	.0010	00.10	.1179
22	4.1802		.1171	1.5868	.1858	-.0130	.0024	00.24	1.7866
R ² = .4055 40.55									

Percentage of variance explained by

Home = 10.85
N.A. = 04.10
Inst. = 00.86
Person. = 27.74
Total: = 40.55

R² = .4055 where R is multiple correlation
F Ratio = 2.6354x
N = 108
K = 22

x significant at .01 level
xx significant at .05 level
@ Percentage of variance explained by each variable.

not covered by the study. Intelligence contributes to one-third of the explained variance. Though variables Need for Achievement and Personality Factor A explain 3.80 per cent and 2.02 per cent respectively of the criterion variance, they are not found to be statistically significant. Though 23.86 per cent of the criterion variance is explained by the variables jointly and variables socio-economic status, intelligence and personality factor Q3 are found to be significantly related, the multiple R has not reached the level of statistical significance. Probably this might have been happened due to small size of the sample (N = 104) and large number of predictor variables (22).

(d) Significant Predictors of Academic Achievement in CBZ Group - Males

The significant predictors are parental value on education and achievement, personality factors G (conscientious, persevering, rule-bound) and H (venturesome, socially bold, uninhibited) (Variables 1, 12, 13 - Table No. 15). The percentage of the variance of the criterion explained by the four broad variables and significant predictors individually is :

Home variables	:	10.35
Need for achievement	:	1.10
Intelligence	:	0.86
Personality Factors	:	27.74

Total	:	40.55

Table - 16 : b Coefficients, Beta Weights (B) and Multiple Correlation between Variables and Total Achievement in CBZ Group and Percentage of Variance Explained- FEMALE

Variable Number	6V	6C	6V/6C	b	B	r	rB	100rB@	#t
1	11.9246	27.9785	.4262	.1040	.0443	.0270	.0012	00.12	.2377
2	14.4354		.5159	.0889	.0459	.1616	.0074	00.74	.3302
3	14.6037		.5220	-.1174	.0613	-.0408	.00245	00.25	.3050
4	18.8446		.6735	.3429	.2309	.2481	.0573	05.73	1.5388
5	5.2650		.1882	-.228979	.0523	.1297	.0068	00.68	.3603
6	5.8307		.2084	-.8288	.1727	-.1200	.0207	02.07	1.3539
7	6.4255		.2297	.4837	.1111	.1668	.0185	01.85	.8456
8	4.5247		.1617	-1.2954	.20985	-.0884	.0185	01.85	1.5678
9	4.1804		.1494	.5795	.0866	.0353	.0031	00.31	.5783
10	4.7954		.1714	-1.2803	.2194	-.1346	.0295	02.95	1.4533
11	4.9295		.1762	.0123	.0022	-.0963	.00042	00.02	.0141
12	4.1159		.1471	.9665	.1422	.1201	.0171	01.71	1.0616
13	5.5477		.1983	.7215	.1431	.0518	.0074	00.74	.8349
14	4.3854		.1567	-.0039	.0006	.0370	.0000	00.00	.0000
15	3.8270		.1368	.3797	.0519	.1849	.0096	00.96	.3662
16	5.0771		.1815	-2.2551	.4093	-.3039	.1244	12.44	3.0384x
17	3.4567		.1235	1.6065	.1984	.2015	.0400	04.00	1.5665
18	4.2577		.1522	.7858	.1196	.0218	.0026	00.26	.8645
19	3.3979		.1214	.6474	.0786	-.0638	.0050	00.50	.5314
20	4.7763		.1707	.9902	.1690	.0936	.0158	01.58	1.1857
212	4.3077		.1540	-.1958	.0302	.0407	.0012	00.12	.1857
22	4.8158		.1721	.1907	.0328	-.0743	.0024	00.24	.2223

R² .3912
39.12

Percentage of variance explained by
Home : 7.52 R² = .3912 where R is multiple correlation
N.A. : 2.07 F Ratio : 1.4897 *
Int. : 1.85 N : 74
Perso.:27.68 K 22
Total: 39.12

x significant at .01 level
xx significant at .05 level
@ Percentage of variance explained by each variable
* Not significant.

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Personality Factor H :	8.37
Personality Factor G :	7.51
Parental value on education and achievement	: 7.46
Total :	23.34

The total percentage of variance of the criterion explained by four broad variables jointly is 40.55. The unexplained 59.45 per cent of the criterion variance must be attributed to factors not included in the study. Nearly 75 per cent of the explained variance is accounted by personality variables and about 25 per cent by home variables. The contribution of need for achievement and intelligence is small. More than half of the explained variance is the contribution of the three significant predictor variables, each of which contributes nearly 8 per cent. Though personality factor I explains 3.17 per cent of the criterion variance, it does not reach the level of statistical significance.

(e) Significant Predictors of Academic

Achievement in CBZ Group - Females

Personality factor M (imaginative, unconventional, unconcerned, over every day matters) is the only significant predictor. The percentage of variance of the criterion explained by the broad four variables and the significant predictor individually is :

Table -17 : b Coefficients, Beta weights (B) and Multiple Correlation between Variables and Total Achievement in HPOEc groups and Percentage of Variance explained-MALES

Variable number	6v	6c	6v/6c	b	B	r	RB	100rB @	100rB @
1	13.3440	25.5878	.5215	-.8878	.4630	-.0367	.0355	03.55	2.8763 x
2	13.0101		.5084	-.0517	.0263	-.0315	.0008	00.08	.2015
3	15.4374		.6033	.7705	.4648	.1387	.0645	06.45	2.7232 x
4	16.5449		.6466	.1159	.0749	-.0464	.0035	00.35	.5557
5	4.0074		.1566	.1267	.0198	.0116	.0002	00.02	.1778
6	4.6460		.1816	.6691	.1215	.2505	.0304	03.04	1.9728
7	9.1091		.3559	1.2016	.4278	.1116	.0477	04.77	2.2131xx
8	4.0485		.1582	.3016	.0477	.0587	.0028	00.28	.4368
9	4.8717		.1904	-.7127	.1357	.0281	.0038	00.38	1.1904
10	4.1450		.1620	.0023	.0004	-.0205	.0000	00.00	.0000
11	4.9029		.1916	.1427	.0273	.0282	.0008	00.08	.2512
12	4.1329		.1615	-1.4272	.2305	.0971	.0224	02.24	2.0859xx
13	5.3835		.2104	.6764	.1423	.0110	.0016	00.16	1.1679
14	3.4217		.1337	1.4191	.1897	.2041	.0387	03.87	1.5871
15	3.8286		.1496	-.0871	.0130	.0010	.0000	00.00	.1233
16	4.5506		.1778	-1.469	.0261	-.0439	.0011	00.11	.2504
17	4.0657		.1589	-.8824	.1402	.0807	.0113	01.13	1.3259
18	4.0326		.1576	-.1210	.0191	.0197	.0004	00.04	.1797
19	3.9009		.1525	.7175	.1094	.0850	.0093	00.93	.9372
20	3.8337		.1498	-.5852	.0877	.1285	.0113	01.13	.7686
21	4.3721		.1709	1.2902	.2205	.2675	.0590	05.90	2.0613xx
22	4.4128		.1725	-.0165	.0028	.0943	.0003	00.03	.0245
Percentage of variance explained by Home : 10.45 N.A. : 3.04 Inpt. : 4.77 Perso. : 16.28 Total : 34.54 R² = .3454 where R is multiple correlation F ratio : 1.9429xx N : 104 K : 22									
Percentage of variance explained by xx significant at .01 level xx significant at .05 level @ percentage of variance explained by each variable.									
R² = .3435 3454									

Home variables	:	7.52
Need for achievement	:	2.07
Personality factors	:	27.68
Intelligence	:	1.85

Total	:	39.12
Personality Factor M	:	12.44

The four broad variables jointly explain 39.12 per cent of the criterion variance and the remaining 60.38 per cent of the variance has to be explained by variables not covered by the study. Nearly 75 per cent of the explained variance is the contribution of personality factors. Though variables 4 and 17 (educational facilities in the home, and personality factor N) explain 5.73 per cent and 4.00 per cent of the criterion variance, they have not reached the level of statistical significance. Though 39.12 per cent of the criterion variance is explained by all the variables jointly and variable 16 (Personality Factor M) is significantly related, multiple R has failed to reach the level of statistical significance probably due to small size of the sample (N = 74).

(f) Significant Predictors of Academic Achievement in HPoEc Group - Males

The five significant predictors are parental value on education and achievement, parental encouragement, intelligence,

personality factors G (conscientious, persevering, rule bound) and Q3 (controlled, socially precise, high self-concept control) (Variables 1, 3, 7, 12, 21 respectively - Table No. 17). The percentage of variance of the criterion explained by four broad variables and the significant predictors is :

Home variables	:	10.45
Need for achievement	:	3.04
Intelligence	:	4.77
Personality Factors	:	16.28

Total	:	34.54
Parental encouragement	:	6.45
Personality Factor Q3	:	5.90
Intelligence	:	4.77
Parental value on education and achievement	:	3.55
Personality Factor G	:	2.24

Total	:	22.91

The four broad variables jointly explain 34.54 per cent of the criterion variance and the unexplained 65.46 per cent of the variance must be attributed to factors not covered by the present study. Nearly half of the explained variation is due to personality factors, one-third is due to home variables and nearly two-thirds is due to the five significant predictors. Among the significant predictors, parental encouragement and personality factor Q3 contribute slightly more than the other variables.

Table -18 : b Coefficients, Beta Weights (B) and Multiple Correlation Between Variables and Total Achievement and Percentage of Variance Explained - MALES

Variable Number.	6v	6c	6v/6c	b	B	r	rB	100rB@	t
1	13.3646	41.0064	.3259	.6113	.1992	-.0441	.0088	00.88	2.6218x
2	15.2785		.3726	.4203	.1566	.0858	.0134	01.34	2.3265xx
3	16.3116		.3978	.4095	.0629	.0546	.0089	00.89	2.0438xx
4	17.3272		.4225	.3284	1387	-.0075	.0010	00.10	1.8881
5	4.1377	4.1784	.1019	.2584	0263	.0066	.0002	00.02	.4454
6	4.9282		.1202	1.4360	1726	.2065	.0356	03.56	3.0700x
7	10.2804		.2507	.9249	2319	.2643	.0613	06.13	4.1629x
8	3.9424		.0961	.0053	0005	-.0413	.0000	00.00	.0100
9	4.5538		.1111	.5872	0652	-.0023	.0001	00.01	1.1243
10	4.1567		.1014	.7587	0769	.0277	.0021	00.21	1.3826
11	4.6133		.1125	.1260	0142	-.0315	.0004	00.04	.2490
12	4.0578		.0990	.3994	0395	.0685	.0027	00.27	.6962
13	5.0329		.1227	.5030	0617	-.0967	.0060	00.60	1.0520
14	3.4538	2.8	.0842	.8576	0722	.0976	.0070	00.70	1.3274
15	3.7467		.0914	.57693	0621	-.0668	.0041	00.41	1.1292
16	4.3982		.1073	.4294	0461	-.0841	.0039	00.39	.8532
17	3.7243		.0908	.3588	0326	.0180	.0006	00.06	.5857
18	4.3251		.1055	.1103	0116	-.0373	.0004	00.04	.6175
19	3.7995		.0927	.0623	0058	.0042	.0000	00.00	.1015
20	3.5819		.0873	.2850	0249	.0897	.0022	00.22	.4544
21	4.2243		.1030	.9000	0927	.1297	.0120	01.20	1.6260
22	4.4251		.1079	.3488	0376	-.0579	.0022	00.22	.6435
						$R^2 = .1729$		17.29	

Percentage of variance explained by
Home : 3.23 $R^2 = .1729$ where R is multiple correlation
N.A. : 3.56 F Ratio : 2.8405x
Int. : 6.13 N : 322
Perso. 4.37 K : 22
Total: 17.29

x significant at .01 level
xx significant at .05 level
@ Percentage of variance explained by each variable

(g) Significant Predictors of
Total Achievement - Males

The significant predictors are parental value on education and achievement, lack of emotional climate, parental encouragement, need for achievement and intelligence (variables 1, 2, 3, 6, 7 - Table No. 18). The percentage of variance of the criterion explained by the broad four variables and the significant predictors is :

Home variables	:	3.23
Need for achievement	:	3.56
Intelligence	:	6.13
Personality Factors	:	4.37
Total	:	17.29
Intelligence	:	6.13
Need for achievement	:	3.56
Lack of emotional climate	:	1.34
Parental encouragement:		0.89
Parental value on education and achievement	:	0.88
Total	:	12.80

The percentage of the variance of the criterion explained by the four broad variables jointly is 17.29. The remaining 82.71 per cent of the criterion variance must be attributed to variables not included in the study. Intelligence and need for achievement contribute to nearly

Table -19 : b Coefficients, Beta Weights (B) and Multiple correlation between variables and tototal achievement and percentage of variance explained - FEMALES

Variable Number	6v	6c	6v/6c	b	B	r	rB	100rB	t
1	11.9246	38.0543	.3134	-0.0106	.0033	-.0131	.0000	00.00	.0173
2	14.4354		.3793	-0.0769	.0292	.1067	.0031	00.31	.1995
3	14.6037		.3838	-0.0744	.0286	.0075	.0002	00.02	.1353
4	18.8446		.4952	0.4464	.2213	.2365 ⁴	.0523	05.23	1.4004
5	05.2650		.1384	0.3966	.0549	.1265	.0069	00.69	.3592
6	05.8307		.1532	1.1982	.1836	-.1096	.0201	02.01	1.3675
7	06.4255		.1689	0.4680	.0790	.1394	.0110	01.10	.5717
8	04.5247		.1189	1.3250	.1575	-.0808	.0127	01.27	1.1203
9	04.1804		.1099	1.1286	.1240	.0224	.0028	00.28	.7870
10	04.7954		.1260	1.5607	.1966	-.1572	.0309	03.09	1.2377
11	04.9295		.1295	1.3429	.1739	-.0228	.0040	00.40	.9678
12	04.1159		.1082	1.4588	.1578	.1454	.0229	02.29	1.1194
13	05.5477		.1458	0.1156	.0169	.0125	.0002	00.02	.0933
14	04.3854		.1152	0.4877	.0565	.1868	.0115	01.15	.3359
15	03.8270		.1006	0.3065	.0308	.1561 ⁴⁶¹	.0045	00.45	.2066
16	05.0771		.1334	-2.5550	.3408	-.2162	.0737	07.37	2.4052xx
17	03.4567		.0908	2.2491	.2042	.2333	.0476	04.76	1.5323
18	04.2577		.1119	1.1052	.1237	.0090	.0011	00.11	.8495
19	03.3979		.0893	0.5699	.0509	-.0742	.0038	00.38	.3268
20	04.7763		.1255	1.1915	.1495	.0630	.0094	00.94	.9968
21	04.3077		.1132	0.5215	.0590	.0754	.0044	00.44	.3458
22	04.8158		.1266	-0.0518	.0066	-.0102	.0001	00.01	.0424
R ² = .3232									32.32

Percentage of variance explained by

Home : 6.25
N.A. : 2.01
Int. : 1.10
Perso. :22.96
Total : 32.32

R² = .3232 where R is multiple correlation
F ratio : 1.1069 *

xx significant at .05 level
* Not significant

60 per cent of the explained criterion variation and the five significant predictors contribute to about 75 per cent of the explained variation. Relatively intelligence contributes more than the other significant predictors. Though the contribution of the variables-parental encouragement, and parental value on education and achievement-is small, they are yet significant. Though the contribution of variable 21 (Personality Factor Q3) is 1.2 per cent, it has not reached the level of statistical significance.

(h) Significant Predictors of
Total Achievement - Females

The percentage of the variance of the criterion explained by the broad four variables individually is (Table No. 19) :

Home variables	:	6.25
Need for achievement	:	2.01
Intelligence	:	1.10
Personality Factors	:	22.96

Total	:	32.32

There is only one significant predictor - Variable 16 (Personality Factor M, i.e. imaginative, unconventional, unconcerned over everyday matters) which explains 7.37 per cent of the criterion variance. The total criterion variance explained by the four broad variables jointly is 32.32 per cent. Personality factors contribute to about three-fourths of the explained variation of the criterion.

Table - 20 : Significant Correlates and Predictors for Certain Types of Achievement Criteria.

Achievement Variable	Languages			HPoEc			MPC			C B Z			Total Achievement			No. of times appeared signi- ficantly in		
	F			M			M			M			F			F		
	CA	RA	CA	CA	RA	CA	CA	RA	CA	CA	RA	CA	CA	RA	CA	CA	RA	CA
1																		
2																		
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x significant at .01 level
 xx significant at .05 level
 @ CA Correlation analysis
 RA regression analysis

Though educational facilities and personality factor N (Variables 4 and 17) explain 5.23 per cent and 4.76 per cent of the criterion variance, they do not reach the level of significance. Though personality factor M is significantly related and about one-third of the criterion variance is explained by the variables ^{under} study, the multiple R has not reached the level of statistical significance, probably due to small size of sample (N = 74). It appears that some factors other than those covered by the study have to be looked for for predicting the criterion.

7.2 RESULTS AND DISCUSSION

The significant predictors of achievement in certain groups of subjects and of total achievement found on the basis of regression analysis (Summary of Tables 12-19) are shown in Table No. 20. The significant correlates identified through correlation analysis are also shown in the same table for comparison purpose. The significant predictors for achievement in different groups of subjects or total achievement may be read from the Table No. 20 by going through the relevant column. For example, the potential predictors of achievement in Languages in the case of males are the variables Nos. 2, 4, 6, 7, 21, 22.

The following conclusions may be drawn :

1. In the regression analysis, Personality Factors A, C, E, F, I, L, N, O, Q1 and Q2 (Variables 8, 9, 10, 11, 14, 15, 17, 18, 19, 20 respectively) did not emerge as potential predictors of achievement in the groups of subjects studied (Table No. 20). Personality Factors C, E, F, L, O, Q1 and Q2 are also found to be not significantly related to achievement on the basis of correlation analysis (Table No. 20).
2. The remaining variables emerge as potential predictors for one type of achievement criterion or the other (Table No. 20).
3. No single variable emerged as a common potential predictor for all the achievement criterion chosen.
Parental Value on education
4. In the regression analysis, intelligence, and achievement, Personality Factor Q3, lack of emotional climate in the home, parental encouragement, need for achievement, Personality Factors G and M (Variables 7, 1, 21, 2, 3, 6, 12, 16 respectively) figured more times as potential predictors of achievement (Table No. 20, last column). In the correlation analysis also need for achievement, intelligence, personality Factor Q3 (Variables 6,7,21), besides educational facilities and personality factor I (Variables 4 and 14), appeared more frequently than the other variables (Table No. 20).

5. In regression analysis, next to intelligence, home variables appeared more prominently as potential predictors (Table No. 20), whereas it is not the case on the basis of correlation analysis. Probably the home variables might have given rise to some of the variables that have been found, on the basis of correlation analysis, to be related to achievement. Unfortunately, the Investigator could not get the inter-correlations among the variables worked out, though desired, as his purse did not allow to bear the computer charges. In the absence of inter-correlations, it is difficult to check up whether the home variables, by their inter-action with others, have given^{rise} to some of the variables found to be related to achievement on the basis of simple correlation.
6. Personality Factor M (Variable 16 - imaginative, wrapped up in inner urgencies, unconventional, unconcerned over everyday matters) appear^{ed} as potential predictor in the case of females only.
7. The potential predictors appear to depend upon the achievement criterion chosen. That is, the predictors differ from achievement in one group of subjects to the other group. However, there are certain variables which are potential predictors for achievement in more than one group of subjects. The potential predictors for achievement in certain groups of subjects are found in Table No. 20.

Table - 21 : Comparative Position of the Significant Correlates found in Correlation Analysis and Significant Predictors found in Regression Analysis for Certain Types of achievement Criteria.

Achievement Criteria	Correlates in Correlation Analysis.	Predictors in regression analysis	Common in both analysis	Found in correlation analysis and not in regression analysis.	Found in regression analysis and not in correlation analysis.
1. Achievement in Languages- MALES	x _{6,7,8,21,22}	x _{2,4,6,7,21,22}	6,7,21,22	8	2,4
2. Achievement in Languages-FEMALES	-	-	-	-	-
3. Achievement in MPC Group-MALES	6,7	5,7,21	7	6	5,21
4. Achievement in MBZ Group- MALES	1,12,13,14	1,12,13	1,12,13	14	-
5. Achievement in CBZ Group-FEMALES	4,16	16	16	4	-
6. Achievement in HPOEc Group-MALES	6,14,21	1,3,7,12,21	21	6,14	1,3,7,12
7. Achievement in Total : MALES	6,7,21	1,2,3,6,7	6,7	21	1,2,3.
8. Total Achievement -FEMALES	4,17	16	-	4,17	16

x For description of the variables see section 1 of this chapter. These variables are also verbalised in order under columns 2 and 3 of table 22.

8. There are variations between the significant correlates identified through correlation analysis and the significant predictors identified through regression analysis for the same achievement criteria. The commonalities and the differences in the variables identified through correlation and regression analysis are presented in Table No. 21. The variables shown under column 5 (Table No. 21) disappeared in the regression analysis probably due to their interaction with the variables shown under column 4 or with the variables shown under column 6. Unfortunately, the Investigator did not have the inter-correlations to check up this statement. However, the fact seems to be that "relevance of a particular variable depends not only upon its simple correlation with the criterion, but also on its correlation with its fellows, and with their correlations among themselves" (Central Advisory Council for Education, 1967, pp. 179-180).

The percentage of the variance of the criterion explained by the potential predictors and four broad variables (Home, Intelligence, Need for achievement, and Personality) - jointly and individually - for different types of achievement criteria covered by the study is found in Table No. 22 (Summary of Tables 12-19).

Table ~ 22 : Percentage of the variance explained by Potential Predictors and four broad variables individually and jointly for certain types of achievement criteria.

Achievement Criteria	Percentage of variance explained									
	Potential Predictors					R ² xx				
						Total variance explained by four variables.				
1.										
1. Achievement in Languages-MALES	In , PFO3, PFO4, EF (7.45)* (3.83)	PFQ4, NACH (1.79) (1.78)	EC (1.42)	3.67	1.78	7.45	7.43	17.51	20.33	.45 S@
2. Achievement in Languages-FEMALES.				3.38	.04	.35	14.51	-	18.38	.43 NS
3. Achievement in MPC Group-MALES	In , SES , PFO2 , (C.07) (2.43) (.03)			5.14	3.80	8.07	6.85	10.53	23.85	x64x3x .49 NS
4. Achievement in CBZ Group-MALES	PFH , PFG , PVE (8.37) (7.51) (7.46)			10.85	1.10	.86	27.74	23.34	40.55	.64 S
5. Achievement in CBZ Group-FEMALES	PFM (12.44)			7.52	2.07	1.85	27.68	12.44	39.12	.63 NS
6. Achievement in HPOEc Group-MALES	PE , PFO3 , In , PVE , PFG (6.45) (5.90) (4.77) (3.55) (2.24)			10.45	3.04	4.77	16.28	22.91	34.54	.59 S
7. Total Achievement -MALES	In , nAch , EC , PE , PVE (6.13) (3.56) (1.34) (.89) (.88)			3.23	3.56	6.13	4.37	12.80	17.29	.42 S
8. Total Achievement-FEMALES	PFM (7.37)			6.25	2.01	1.10	22.96	7.37	32.32	.57 NS
Total Average										
Average on Significant Rs. only.										
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The following broad conclusions may be drawn from the data of the Table No. 22 :

1. The total contribution of the four variables for predicting achievement is more when compared to the individual contribution of the variables (comparing column 8 with columns 3, 4, 5 and 6).
2. The total contribution of the four variables for predicting achievement varies from achievement in one group of subjects to the other (comparing column 8 with column 1). For example, the total variance explained by the variables in the case of achievement in languages is different from the variance explained in the case of the group of subjects like MPC, CBZ.
3. The contribution of the same variable for predicting achievement varies from one group of subjects to the other (comparing columns 3 and 1, 4 and 1, 5 and 1 or 6 and 1). For example, intelligence contributes differentially to the achievement in the different subjects shown ^{under} ~~over~~ column 1. It contributes 7.45 per cent to achievement in Languages (males), whereas it contributes only 0.35 per cent to achievement in Mathematics (males).
4. The variables contribute differentially to achievement in the same group of subjects (observing differences in

columns 3, 4, 5 and 6 against any achievement criterion ~~under~~
~~ever~~ column 1). For example, the four variables
 contribute differentially to achievement in HPoEc Group.
 Home variables contribute 10.35 per cent, Need achieve-
 ment 3.04 per cent, Intelligence 4.77 per cent, and
 Personality 16.28 per cent.

5. The contribution of the potential predictors also ~~varies~~
 from one group of subjects to the other and from one
 variable to the other (comparing column 2 ~~in~~ with
 column 1). ^{In} ~~The~~ terms of magnitude of contribution, if
 predictors related to two or more achievement criteria
 only are considered, the prominent predictors appear to
 be - Personality Factor M, Intelligence, Personality
 Factor G, Parental value on education and achievement,
 Parental encouragement, Personality Factor Q3, Need
 for achievement, and emotional climate.
6. The percentage of variance explained by the four broad
 variables ranges from 17 to 41 (roughly 20 to 40). It
 means, the unaccounted percentage of variance ranging
 from 60 to 80 is due to factors not covered by the study.
 If we take into account the four achievement criteria
 for which multiple R is significant, then the average
 variance explained by the four variables is 28 per cent,
 the individual average contribution of Home, Need for
 achievement, Intelligence, Personality being 7 per cent,

Table No.23 : Significant Correlates of academic achievement and Potential Predictors for different types of achievement criteria.

Achievement Criteria : Significantly related variables		Potential Predictors
1. Achievement in English-Males.	Need for achievement, Intelligence, personality Factor A (#) and Q 3.	For achievement criteria S.No. 1 to 15 regression analysis is not doe and therefore predictors are not identified.
2. Achievement in English-Females.	-- --	
3. Achievement in - Telugu-Males.	Need for achievement,Intelligence, Personality factors Q 3 and Q4 (-).	
4. Achievement in Telugu-Females.	Personality factor G.	
5. Achievement in Mathematics-Males	Intelligence, Personality Factor C (-) and Q1 (-).	
6. Achievement in Physics-Males	Need for achievement, Intelligence.	
7. Achievement in Chemistry-Males	Lack of emotional climate in the home, Need for achievement, Intelligence, Personality factors G and L.	
8. Achievement in Chemistry-Females	Personality factor M (-)	
9. Achievement in Botany-Males.	Parental Value on Education (-), Personality factors G,H (-),I,M (-)	
10. Achievement in Botany-Females	Personality Factor M (-)	

contd....

Table -23 contd...

Achievement Criteria : Significantly related variables		Potential Predictors.
11. Achievement in Zoology-Males	Personality factor H (-)	
12. Achievement in Zoology-Females	Personality Factor G, L.	
13. Achievement in History-Males	Personality factor Q 3.	
14. Achievement in Politics-Males	Personality factor 1 and Q 3.	
15. Achievement in Economics-Males	Parental encouragement, Need for Achievement, Personality factor Q 3.	
16. Achievement in Languages-Males (Total Marks in Telugu & English)	Need for achievement, intelligence, Factor A(-), Q.3, Q4(-).	Lack of emotional climate, educational facilities, Need for achievement, intelligence, personality factors Q3 and Q4.
17. -do- Females	-- -- -- --	-- --
18. Achievement in MPC Group-Males (Total marks in Mathematics, Physics and Chemistry.)	Need for achievement, Intelligence.	Socio-economic status, intelligence, personality factor Q 3
19. Achievement in CBZ group- Males. (Total marks in Chemistry, Botany and Zoology)	Parental Value on education(-), Personality factor G, H(-1), and I	Parental value on education personality factors G & H.
20. -do- Females	Educational facilities in the home, Personality factor M(-)	Personality factor M.
21. Achievement in HPE group-Males (Total marks in History, politics, Economics)	Need for achievement, Personality factors I and Q 3.	Parental value on education Parental encouragement, intelligence, personality factors G and Q 3.
22.		contd....

Table -23 : contd.....

Achievement Criteria : Significantly related variables		Potential Predictors.
22. Total Achievement in All Subjects. -Males	Need for achievement, Intelligence and Personality Factor Q3.	Parental value on education, lack of emotional climate, parental encouragement, Need for achievement and intelligence.
23. Total Achievement in All subjects- Females.	Educational facilities in the home, Personality factor N.	Personality factor M.

+ 1) - Ve sign indicates negative relationship.
2) For description of personality factors see chapter IV.

2 per cent, 5 per cent, and 14 per cent respectively. Roughly one-third variance in achievement may be attributed to the four variables studied.

7. The multiple R in the case of achievement in Languages (females), MPC Group (males), CBZ Group (females), total subjects (females) is not significant. It means, the variables are not helpful in predicting the achievement in these cases. In the case of females, the multiple R did not reach the level of significance due to small sample. If sample is large, even small values of correlation will reach level of significance.

For quick and early reference of the reader, an overview of the results of the study ^{is} ~~are~~ summarised and given in Table No. 23. As measured by the tests employed, the significant correlates found through correlation analysis and the potential predictors found through regression analysis for different types of achievement criteria are presented in this table. The extent of the relationships of the variables with different types of achievement criteria is shown in Table No. 10. The percentage of the variance of the criterion explained by the four broad variables and the potential predictors - individually and jointly - for different types of achievement criteria is found in Table No. 22. From these tables, results may be read easily and quickly.

The summary and suggestions are given in the chapter that follows.