ENVIRONMENTAL FACTORS IN SELECTION OF OFFICERS FOR DEFENCE SERVICES

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This study points out the extent to which educational and socio-economic factors determine success at the Services Selection Boards for entry into the Indian Military Academy. Biographical questionnaries of 456 candidates are tabulated and statistically treated. Some of the factors are highly significant determinants of success. The findings are compared with a similar study carried out earlier on National Defence Academy entrants. The comparison points out the likelihood of these influences being superficial and temporary.

Young men who are desirous of joining the Defence Services as commissioned officers have to undergo a long procedure of screening. First they are required to qualify in a competitive examination conducted by the Union Public Service Commission. Successful candidates then appear before the Services Selection Boards (SSB) for a series of tests. Selection Board tests are classified as Interview technique, Psychological tests and Group tests. The pooled assessment of these three types of tests is the final score of a candidate at the SSB.

The selected candidates join either National Defence Academy or Indian Military Academy depending on their age and qualifications. Candidates who are $14\frac{1}{2}$ years to $17\frac{1}{2}$ years old and have passed only Matriculation or equivalent examination join the NDA. Those who are 18 to $20\frac{1}{2}$ years old and have passed Intermediate examination join Indian Military Academy.

When a candidate appears at the Services Selection Board he fills in a biographical questionnaire as part of the psychological test battery. It is meant to collect socio-economic and educational background of the candidate. This questionnaire is used by the Board psychologists as well as by the interviewing officers in assessing the candidates. This study is taken up to find out the usefulness of the biographical questionnaire in such a selection programme. It is also believed that the environmental influence on success at the Selection Boards may vary with age and level of education. The first paper[1] was written on a sample of the lowest age group eligible to enter the Defence Academy ($14\frac{1}{2}$ years to $17\frac{1}{2}$ years— NDA Course). The present study is carried out on a sample of boys who belong to the higher age group and possess higher educational qualifications.

AIM

The purpose of the study is to determine the influence and the importance of environmental factors in determining success at the Services Selection Boards. The study also aims at estimating the value of biographical questionnaire as a scientific tool in the assessment of personality for selection purposes. It will point out the diagnostic value of the questionnaire and will also be useful to the educationists and the parents to provide adequate environment to the students who are seeking commission to the Services.

THE SAMPLE

The sample consists of all the candidates (456) who appeared before the Services Selection Boards for screening to qualify to enter the Indian Military Academy in one course. These candidates are 18 years to $20\frac{1}{2}$ years of age and have passed intermediate or equivalent examination.

ANALYSIS OF DATA

Importance of each environmental factor in determining success at the Selection Boards is statistically worked out (Tables 1—17). Chi-square test has been applied to study the association of the pass/fail in the various categories in each variable. In case of significant value of χ^2 test of significance of the pass percentages in the various categories, taken in pairs, has been worked out and the coefficient of contingency as well as correction for broad categories has also been calculated.

TABLE 1.

INFLUENCE OF RURAL/URBAN BACKGROUND

Categories	Urban	Rural	Total No.
Pass	121	27	148
Pass percentage	34%	27%	32·45%
Fail	234	74	308

Value of $\chi^2 = 1·46$; (df=1) Non-significant.

TABLE 2

INFLUENCE OF AGE

	Ages	
Categories	Below 19	19 and above
Pass	48	100
Pass percentage	32%	32·68%
Fail	102	206

Value of $\chi^2 = ·0002$; (df=1) Non-significant.

TABLE 3

INFLUENCE OF COMMUNITY

	Communities		
Categories	Hindu	Sikh	Others
Pass	102	41	5
Pass percentage	31%	34%	62·5%
Fail	225	80	3

Value of $\chi^2 = 3·64$; (df=2) Non-significant.

TABLE 4
INFLUENCE OF TYPE OF SCHOOL

Categories	School		
	Mission	Public	Others
Pass	22	11	115
Pass percentage	51%	31%	30%
Fail	21	24	263

Value of $\chi^2 = 7 \cdot 59$; (df=2) Significant at 5% level.
Coefficient of contingency $= 0 \cdot 1280$ significant at 1%.
Corrected $= 0 \cdot 14$

PAIRWISE ANALYSIS

Pairs	1 & 2	1 & 3	2 & 3
Significance of comparison	Non-significant	Significant at 1%	Non-significant

Inferences—Pass percentage of the Mission school is highly significant. Their chances of success are very bright.

TABLE 5
INFLUENCE OF THE LEVEL OF EDUCATION

Categories	Level of Education	
	Intermediate	1st year B.A. and above
Pass	127	21
Pass percentage	32%	38%
Fail	273	35

Value of $\chi^2 = 0 \cdot 74$; (df=1) Non-significant.

TABLE 6
INFLUENCE OF DIVISION IN EXAMINATION

Categories	Division in Examinations			
	1	2	3	No Division
Pass	72	56	18	2
Pass percentage	33%	30%	37·5%	33%
Fail	146	128	30	4

Value of $\chi^2 = 0 \cdot 934$; (df=3) Non-significant.

TABLE 7

INFLUENCE OF MILITARY AND ALLIED TRAINING

Categories	Type of Military Training			
	ACC/NCC	ACC	NCC	None
Pass	15	11	53	69
Pass percentage	31%	30·5%	34%	32%
Fail	33	25	102	148

Value of $\chi^2 = 0·35$; (df=3) Non-significant.

Categories	Type of Military Training	
	ACC/NCC	None
Pass	79	69
Pass percentage	33%	32%
Fail	160	148

Value of $\chi^2 = 0·82$; (df=1) Non-significant.

TABLE 8

INFLUENCE OF RESIDENCE IN A PARTICULAR STATE

Categories	State				
	Delhi	Punjab	U.P., M.P., Rajasthan, Bihar	Andhra, Madras, Mysore	Others
Pass	39	77	22	7	3
Pass percentage	32·5%	36%	29%	37%	11%
Fail	81	135	55	12	25

Value of $\chi^2 = 8·17$; (df=4) Non-significant. Due to small number Assam, West Bengal, Orissa, Kerala, Maharashtra, Gujerat and others have been pooled together for calculation of χ^2.

TABLE 9

INFLUENCE OF HEIGHTS

Categories	Heights					Remarks
	Upto 64 in.	65—67 in.	68—69 in.	70—72 in.	72 in. & above	
Pass	18	58	40	28	4	4 candidates did not specify their height.
Pass percentage	29%	27%	37%	53%	29%	
Fail	44	157	68	25	10	

Value of $\chi^2 = 14 \cdot 38$; (df=4) Significant at 1% level.
Coefficient of contingency$=0 \cdot 1756$ Significant at 1%.
Corrected$=0 \cdot 19$

PAIRWISE ANALYSIS

Pairs	1 & 2	1 & 3	1 & 4	1 & 5	2 & 3	2 & 4	2 & 5	3 & 4	3 & 5	4 & 5
Significance of comparison.	Non-sig.	Non-sig.	Sig. at 1%	Non-sig.	Non-sig.	Sig. at 1%	Non-sig.	Non-sig.	Non-sig.	Non-sig.

Inferences—It appears that certain heights have got advantage in success at the boards.

TABLE 10

INFLUENCE OF WEIGHT

Categories	Weight in lbs.		
	Upto 120	121—140	141 & above
Pass	52	75	21
Pass percentage	26%	37%	41%
Fail	150	126	30

Value of $\chi^2 = 8 \cdot 06$; (df=2) Significant at 5%.
Coefficient of contingency$=0 \cdot 1318$ Significant at 1%.
Corrected$=0 \cdot 14$

PAIRWISE ANALYSIS

	Pairs		
	1 & 2	1 & 3	2 & 3
Significance of comparison	1% level	1% level	Non-sig.

Inferences—Candidates who weigh more than 120 lbs. have highly significant chances of success in comparison to those who are 120 lbs. or less.

TABLE 11

INFLUENCE OF FATHER'S INCOME

Categories	Income levels in Rupees		
	Upto 500	501—1000	1001 and above
Pass	86	45	17
Pass percentage	25%	52%	53%
Fail	253	41	14

Value of $\chi^2 = 30 \cdot 35$; (df=2) Significant at 1%.
Coefficient of contingency=$0 \cdot 2498$ Sig. at 1%.
Corrected=$0 \cdot 26$

PAIRWISE ANALYSIS

Categories	Pairs		
	1 & 2	1 & 3	2 & 3
Significance of comparison	1% level	1% level	Non-sig.

Inferences—Pass percentage of the boys whose parents' income is Rs. 501 and above is significantly higher than the boys whose parents' income is less.

TABLE 12

INTELLIGENCE GRADES AND CHANCES OF SUCCESS

Categories	Grades				
	1	2	3	4	5, 6 & 7
Pass	12	43	50	33	10
Pass percentage	34%	36%	38%	32%	15%
Fail	23	76	81	69	56

Value of $\chi^2 = 11 \cdot 71$; (df=4) Significant at 5%
Coefficient of contingency=$0 \cdot 1582$ Sig. at 1%
Corrected=$0 \cdot 17$

PAIRWISE ANALYSIS

	Pairs									
	1 & 2	1 & 3	1 & 4	1 & 5	2 & 3	2 & 4	2 & 5	3 & 4	3 & 5	4 & 5
Significance of comparison.	Non-sig.	Non-sig.	Non-sig.	Sig. at 5%	Non-sig.	Non-sig.	Sig. at 1%	Non-sig.	Sig. at 1%	Sig. at 5%

Inferences—(i) Grade 1 is the highest intelligence rating while grade 7 is the lowest. It appears from this analysis that those who score grade 1 to 4 do significantly better in the selection board tests than others.

(ii) Pass percentage is particularly highly significant in grades 2 and 3 than in grades 5, 6 and 7.

(iii) From the Table those can be divided into two categories.

(iv) Low pass percentage in grade 5, 6 and 7 may be due to the fact that the candidates who get low intelligence gradings are not seriously considered on personality tests according to the prevalent conventions among selection board members.

TABLE 13

NUMBER OF BOOKS READ AS INFLUENCING FACTOR

Categories	Number of papers read					
	1	2	3	4	5	Nil
Pass	54	31	18	5	1	39
Pass percentage	37%	34%	36%	42%	12·5%	26%
Fail	91	59	32	7	7	112

Value of $\chi^2 = 6 \cdot 92$; (df=5) Non-significant.

TABLE 14

INFLUENCE OF NUMBER OF PAPERS READ

Categories	Number of papers read			
	1	2	3	Nil
Pass	72	41	10	25
Pass percentage	31%	34%	45%	30%
Fail	160	79	12	57

Value of $\chi^2 = 2 \cdot 22$; (df=3) Non-significant.

TABLE 15
INFLUENCE OF GAMES

Categories	Games		
	No games	Games played	Games with distinction
Pass	5	74	69
Pass percentage	14%	30%	39%
Fail	30	169	109

Value of $\chi^2=8\cdot96$; (df=2) Significant at 5% level.
Coefficient of contingency$=0\cdot1388$ Sig at 1%
Corrected$=0\cdot15$

PAIRWISE ANALYSIS

	Pairs		
	1 & 2	1 & 3	2 & 3
Significance of comparison	Sig at 5%	Sig at 1%	Non-sig.

Boys who play games have significantly higher chances of success than those who do not play.

TABLE 16
INFLUENCE OF PARTICIPATION IN DEBATES

Categories	Participation in debate	Non participation in debate
Pass	36	112
Pass percentage	40%	31%
Fail	55	253

Value of $\chi^2=1\cdot77$; (df=1) Non-significant.

TABLE 17
NUMBER OF HOBBIES AND CHANCES OF SUCCESS

Categories	Number of hobbies		
	Nil	1	2 & more
Pass	68	64	16
Pass percentage	30%	33%	39%
Fail	156	127	25

Value of $\chi^2=1\cdot35$; (df=2) Non-significant.

INFERENCES

1. Pass percentage of the boys who have had their education in mission or public school is significantly higher than others. The mission school boys do best at the selection boards.

2. Boys of certain heights (5'—10" to 5'—11") do significantly better than others.

3. Pass percentage of boys who are 121 lb. and above in weight is significantly higher than those who are 120 lb. and below.

4. Pass percentage of boys whose father's income is Rs. 501 p. m. and more is significantly higher than those whose father's income is less.

5. Pass percentage of the boys who score grades 1 to 4 on the intelligence test battery is significantly higher than those who score grades 5, 6 and 7.

6. Pass percentage of the boys who play games is higher than those who do not play games.

DISCUSSION

Certain height and weight of the body built seem to have advantage in success. The influence of this factor may be indirect as is pointed out by a number of research scholars. Kuhlen[2] found that boys are specially concerned about being short and lacking strength. Bayby and Tuddenham[2] found that "small boys show poorer adjustment than do those who more closely approximate the social norms". Bower[3] holds the correlation between height and strength (grip, feel and thrust $= \cdot 65$). It was also established that popularity was more closely related to physical strength (18 year age group) and skill in athletics than to intelligence and school achievement.   Tyron[3] concluded that traits such as 'daring', 'leadership', 'activity in games' and 'fighting' tend to go together to form a cluster that implies 'physical skill', 'strength', 'bravery' and 'capacity to take it'. This cluster of traits shows a high relationship to ease in social situations and to heterosexual adjustment; on the other hand very low rating on this cluster imply weakness, lack of skill in games and perhaps "sissy qualities". Cowell, Faquier and Dimock[3] think that ability in athletics and play may be an expression to a desire for 'novelty', 'adventure' and 'excitement'.

Studies on the influence of socio-economic status of the family on personality development are inconclusive and contradictory. Barbe[4] found that such students came from average background with respect to occupational and educational level and marital adjustment of their parents. Angelino, Dollis and others[5] found fears and worries in school children related to socio-economic status and age. West, Holling Shead and Kidd[6] hold that chances of social acceptance in a group are better with higher socio-economic status. Albrecht[7] writes " . . . Boys from better cultural milieus show more initiative and interest in their school work". Oppenhein[6] found adolescents' popularity and friendship bound up with the socio-economic status of the family but it is not the case with London Grammer School boys. Jersild[2] thinks motor ability is not distributed according to 'social class' or 'socio-economic status' to the same extent as intellectual ability. Kinsey Dolger, Ginandes and Stendler[3] maintain that boys from different socio-economic status have different attitude to moral values.

Higher intelligence is not always a social advantage. Jones Bouncy[7] and Latham[4] observe that intelligence and academic achievement do not at least in some adolescent groups influence friendship and social acceptance as much as some other characteristics do. Hollingworth and Sheldon[4] consider that in high school and college the most intelligent students are usually below average in popularity. Washburne[4] thinks that those whose intelligence is superior, but not too superior to that of the other members of the group, rank above average in popularity.

TABLE 18

SIGNIFICANT ENVIRONMENTAL FACTORS FOR NDA CANDIDATES

Environmental factors	Level of NDA Candidates	Significance IMA Candidates
Age	1%	..
State	1%	..
Community	5%	..
Mission and Public School education V/S other types	1%	5%
Military and Allied Training (NCC, ACC etc.)	1%	..
Weight	5%	5%
Father's income	1%	1%
No. of books read	1%	..
No. of papers and journals read	1%	..
Participation in debates	1%	..
Participation in other extra curricular activities	1%	..
Participation in games	1%	5%
Hobbies	1%	..
Intelligence grade	1%	5%
Height	..	1%

    The findings of this study can be compared to a similar study carried out on the candidates who seek entry to the National Defence Academy.

    From a comparative study (see Table 18), it appears that the influence of the environmental factors is more prominent in the NDA entrants who come straight from schools. That may be due to the reason that up to matriculation there are no one type of schools, but various types with varying standards, and as one goes to the college education, where there is some type of uniformity, the influence of environmental factors becomes gradually less. Actually it leads to a hypothesis that if all the boys are educated in one type of schools with compulsory hostel residence, there will be no effect of environmental factors on success. This may be either because those who have had the advantage of good environmental facilities develop good personality qualities earlier or it may be a prejudice on the part of the assessors to go by the superficial mannerism a good school builds in students. This difference irons out when all the students start living under similar environmental conditions.

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