Biographical correlates of high Achievement in Aptitude Tests

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Abstract

The objective of the present study was to find out the relationship of certain biographical factors with the performance in the aptitude tests. The subjects of this study were all first class engineering graduates who were candidates for the job of Engineer in an organisation. An Aptitude Test and a Biographical Questionnaire were administered to this group of subjects. It was found that certain biographical factors, namely, medium of instruction in school, father's education, mother's education and per capita income do affect the achievement of aptitude scores of subjects.

Introduction

Certain biographical information is often utilised in employment. selection and placement mainly because such information can be easily obtained through application blank. But the important question which is associated with it is that whether the use of such information for selection purpose is profitable or not.

Earlier research results have demonstrated the utility of testing biographical and personal history data for the selection purposes. Some of the studies also indicate the value of biographical information in identification and prediction of many important factors. McDermid (1965) found that biographical information, especially which describe interests or achievements of a creative nature, are predictors of creative ability among engineering personnel. Buel (1965) also found that biographical data are useful for identifying the creative research personnel. Baehr and Williams

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(1967) attempted to identify the underlying dimensions of background data from a vocationally heterogeneous sample of 680 male subjects. The final factoring yielded 15 interpretable first order factors. A second order factor analysis yielded five uncorrelated factors thought to represent broad behaviour patterns associated with the needs and achievements of individuals.

Though the studies mentioned above deal with different biographical factors and explain their relation with so many other variables still there is need for further exploration. With this idea in mind the present study was undertaken. The objective of the present investigation was to explore the nature of the association of certain biographical factors with the performance in the Aptitude Tests.

Method

Subjects: The subjects included in this study were all candidates for the job of Engineer in an organisation. There were altogether 64 candidates with first class engineering degree and all of them were within the age range of 21 years to 27 years with a mean age of 23.27 years.

Tests used: An Aptitude Test specially constructed for this purpose was administered to this group of subjects. The Aptitude Test has five different parts: (1) Verbal Reasoning, (2) English Comprehension, (3) Data Interpretation, (4) Quantitative Reasoning, and (5) Space Relations. Along with this Aptitude Test, a Biographical Questionnaire was also administered. Information was collected on mainly four biographical factors. These are: (1) medium of instruction in school, (1) father's education, (3) mother's education, and (4) per capita income.

Results and Discussion

As the objective of the study were to find out the effect of certain biographical factors upon the aptitude scores, the subjects were first of all divided into two or three groups on the basis of some of the biographical factors.

First, the effect of medium of instruction in school on aptitude was investigated. The subjects were divided into two groups: (1) those who were taught in English medium school, and (2) those who were taught in schools where different regional languages viz. Hindi, Bengali, Telugu, Tamil, etc. were used as medium of instruction. It was found that 34

subjects had English as medium of instruction in their schools and 29 subjects came from such schools where different local languages were used as medium of instruction. The means and standard deviations for those two groups were calculated and the t-values indicating the significance of difference between the mean values were obtained for each part of the Aptitude Tests. These values are presented in Table 1.

It is observed that due to the difference in medium of instruction in schools there was difference in the averages of Aptitude Test scores. This difference, however, was significant for the tests of English Comprehension and Quantitative Reasoning, but not for Verbal Reasoning, Data Interpretation and Space Relation.

The effect of father's education on the Aptitude Test scores of subjects was also investigated. The subjects were divided into three groups of High, Average and Low on the basis of their father's educational level. High group consisted of those subjects whose father had college/university level of education. Average group consisted of those subjects whose fathers had primary or high school level of education. And the subjects whose fathers were literate but had no formal education constituted the

TABLE 1

Means, Standard Deviations and t-values of the two groups in
different parts of Aptitude Test†

Groups		Aptitude Tests				
		Part-I V.R.	Part-II E.C.	Part-III D.I.	Part-IV Q.R.	Part-V S.R.
English Medium N=34	Mean	23.26	15.24	16.77	12.06	17.88
	S.D.	4.78	2.87	3.48	3.30	4.16
General Medium N=29	Mean	23.86	13.46	15.18	9.46	16.70
	S.D.	4.88	3.30	4.08	3.55	5.02
	t-values	.22	2.28**	1.66	2.99*	1.01

*Significant at .01 level of confidence
**Significant at .05 level of confidence
†V.R. = Verbal Reasoning
E.C. = English Comprehension
D.I. = Data Interpretation
Q.R. = Quantitative Reasoning
S.R. = Space Relations.

low group   The number of subjects in these three groups were 35, 18 and
10 respectively.   As before, the means and standard deviations of each
of the Aptitude Tests were calculated for each group and t-values were
worked out to test the significance of the differences.   These values are
presented in Table 2.

It is observed that between the high and average groups there is no
significant difference between the   corresponding averages of the Aptitude
Tests.   But, in case of High and Low groups we find significant difference
with respect to all the five parts of the Aptitude Tests.   When average and
low groups were compared we find some significant differences.   The
difference was significant for Verbal Reasoning, English Comprehension
and Quantitative Reasoning tests.

To find out the   effect of mother's education on the Aptitude Test
scores of subjects, the subjects were divided into three groups: High,
Average and Low. High group consisted of those subjects whose mothers
had college/university or high school level of education. Here, high
school level of education was included in high group because for females

TABLE 2

Means, Standard Deviation and t-values of high, average and low
groups as per father's education

| Groups | | Aptitude Tests | | | | |
		Part-I V.R.	Part-II E.C.	Part-III D.I.	Part-IV Q.R.	Part-V S.R.
High Group N=35	Mean S.D.	24.53 4.44	15.04 2.75	16.79 3.34	11.77 3.48	18.23 3.54
Average Group N--18	Mean S.D.	23.92 4.09	14.74 3.09	16.21 3.33	11.28 2.97	17.13 4.75
Low Group N=10	Mean S.D.	19.38 5.13	11.68 3.44	13.10 4.86	6.90 2.63	14.58 6.28
H × A	t-values	.48	.36	.60	.51	.96
H × L	t-values	3.12*	3.23*	2.77*	4.09*	2.38**
A × L	t-values	2.56**	2.41**	2.01	3.88*	1.21

*Significant at .01 level of confidence
**Significant at .05 level of confidence

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it was found that very few cases fall in college/university level category. Average group consisted of those subjects whose mothers had primary school level of education. And the subjects whose mothers were literate but no formal education constituted the low group. The number of subjects in these three groups were 26, 20 and 16 respectively. The means, standard deviations and t-values for the three groups are presented in Table 3.

As observed in case of father's education here also it is observed that there is no significant difference between the Aptitude scores of high and average groups as per mother's educational level. But, for the high and low groups there was significant difference between the averages of the Aptitude scores in case of English Comprehension, Data Interpretation and Quantitative Reasoning tests. For the average and low groups significant difference was found only in case of Quantitative Reasoning test.

The effect of per capita income on the Aptitude Test scores of subjects was also investigated. Per capita income was obtained by dividing the total monthly family income by the number of members in the family. In

TABLE 3

Means, Standard Deviations and t-values of high, average and low
groups as per mother's education

Groups		Aptitude Tests				
		Part-I V.R.	Part-II E.C.	Part-III D.I.	Part-IV Q.R.	Part-V S.R.
High Group N=26	Mean	24.78	15.17	17.46	11.83	18.65
	S.D.	4.32	2.57	3.01	3.05	4.43
Average Group N=20	Mean	23.60	15.02	15.86	11.70	17.01
	S.D.	4.34	3.05	3.67	3.08	3.54
Low Group N=16	Mean	21.91	12.83	14.39	8.55	16.20
	S.D.	5.41	3.50	4.19	4.04	5.14
H × A	t-values	.91	.18	1.63	.14	1.36
H × L	t-values	1.90	2.49**	2.76*	2.98*	1.63
A × L	t-values	1.04	2.01	1.12	2.65**	1.45

*Significant at .01 level of confidence
**Significant at .02 level of confidence

this way an income distribution was obtained. On the basis of another study, per capita income distribution thus obtained was divided into three groups: high, average and low. The subjects whose per capita income were above Rs. 325/-, constituted the high group. Average group consisted of those subjects whose per capita income were between Rs. 126/- to Rs. 325/-. And the subjects whose per capita income were upto Rs. 125/- constituted the low group. The means and standard deviations of each of the groups along with the t-values indicating the significance of difference are presented in Table 4.

From Table 4 it is clear that the means of the Aptitude Tests of the average group are greater than the high group in case of three tests, that is Verbal Reasoning, Data Interpretation and Space Relations. This shows that the average group performed better in these three tests than the high group. However, the differences are not significant. In case of high per capita income and low per capita income groups we find significant differences between the averages in English Comprehension and Quantitative Reasoning tests. But, in case of average per capita income and low

TABLE 4

Means, Standard Deviations and t-values of Aptitude scores of high, average and low income gronps

Groups		Aptitude Tests				
		Part-I V.R.	Part-II E.C.	Part-III D.I.	Part-IV Q.R.	Part-V S.R.
High Group N=12	Mean	24.50	16.12	15.96	13.08	15.92
	S.D.	2.30	2.35	2.52	2.94	3.99
Average Group N=24	Mean	25.11	15.36	17.38	11.75	18 64
	S.D.	4.97	2.71	4.04	2.12	4.21
Low Group N=27	Mean	21.75	12.81	14.88	9.08	16.81
	S.D.	4.74	3.30	4.43	3.72	4.91
H × A	t-values	.40	.83	1.11	1.27	1.86
H × L	t-values	1.90	3.12*	.79	3.28*	.55
A × L	t-values	2.47**	3.00*	2.10**	2.84*	1.42

*Significant at .01 level of confidence
**Significant at .05 level of confidence

per capita income group, we find more significant differences. We find significant differences between the averages of Verbal Reasoning, English Comprehension, Data Interpretation and Quantitative Reasoning tests.

Conclusion

The objective of the present study was to find out the effect of biographical factors upon the aptitude scores of subjects. It has been found that certain biographical factors do affect the achievement of aptitude scores of subjects. These are: medium of instruction in school, parental education and per capita income. The subjects who had English as medium of instruction in their schools, score high in Aptitude Tests than the subjects who had other different local languages as their medium of instruction in schools. As per father's education, it is found that there is significant difference between the aptitude scores of high and low groups. In case of mother's education also significant difference is obtained between the high and low groups. But, in case of per capita income, we find the magnitude of differences between the average and low groups were more than that between high and low groups. It is observed that in some of these tests the performance of the average group was the best. This is an important point to be noted. On the whole, it has been observed that some biographical factors do affect the achievement of scores in Aptitude Tests.

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