

**A SOCIO - PSYCHOLOGICAL STUDY OF
UNEMPLOYED ENGINEERS AND DIPLOMATES**

A Thesis
Submitted for the Degree of
DOCTOR OF PHILOSOPHY
in the Faculty of Engineering

42

By

V. S. SHANTHAMANI



Department of Industrial Management
Indian Institute of Science
Bangalore-12
January 1971

ACKNOWLEDGMENT

It is my pleasant task to record my indebtedness to numerous individuals and organisations, who assisted me at several stages of the work and in making the present study a reality.

I am deeply indebted to my guide Professor Hafeez, A. for his inspiring guidance, thought provoking suggestions, constant encouragement and kind co-operation which enabled me to pass through successfully a good number of ordeals. I thank Professors Ramachandran, A. and Ganguli, T. for their wholehearted support, encouragement and necessary facilities extended during the course of this study. My thanks are also due to Dr. K.P. Nayak, Professors Luy Jack (University of Missouri) and Kuppuswamy, B. for their valuable suggestions.

I am deeply in obligation to Mr. Sampath Kumaran, the then Director of Employment and Training and his associate officers of the organisation for their kind co-operation in securing groups of unemployed people for testing and for giving ready access to their office records and for providing all other facilities.

My sincere thanks are also due to the General Manager, Hindusthan Aeronautical Ltd., and Heads of various Departments for providing employed engineers for the testing programme.

It would not have been possible for me to complete this arduous task, but for the general financial assistance and facilities provided by the Indian Institute of Science, Bangalore. I shall be failing in my duty if I do not thank the authorities of the Institute for this. In this context, I express my thanks also to Messrs. Rama Rao, Govindan and other staff of the department for their help at different occasions.

The subjects themselves who took the tests deserve a debt of gratitude for their contribution to the major aspect of this work, who willingly spared their time and energies to a pursuit, which most often have been of none too great an immediate benefit to them, but without whose co-operation this work would not have been possible.

I am thankful to my dear friends Dr. (Mrs) Anasuya Venkatesulu, Miss Prabhavati and Miss Gladys Sumitra for their affectionate encouragement and assistance. I also thank Mr. V.S. Kuppuraj and Mr. S.V. Lakshminarayan for their assistance in the typing of this thesis.

Bangalore

Mrs. V. S. SHANTHAMANI.

PREFACE

A basic requirement of social progress is that human needs are satisfied. To meet this requirement, industry must develop conditions which permit good health, opportunities for happiness and security against unemployment.

For any economy, unemployment means wasted man-power and loss of potential production of goods and services. The problem of matching its man-power resources to its economy is one that faces any advancing industrial society and is one that has become immensely more difficult, as a result of the rapidly progressing technological development. There are many reasons for unemployment and it cannot be traced to a single cause nor eliminated by a single cure.

Occupation has been regarded as an inseparable aspect of man's life-span and life is taken to be incomplete without an occupation. Occupation in relation to its possessor is said to have a tremendous emotional significance besides its material advantages and it is a necessary attribute to a normal good life.

Security against unemployment is one of the major responsibility of any nation. Unemployment is a great economic loss to society but this loss fades away when compared with the damage it does to individuals. Upto the present time, it has been treated almost entirely as an economic or social problem and the psychological characteristics of the man who is unemployed

have been scarcely dealt with. However, psychological studies of the unemployed in other countries reveal the significance of work in human life and without work the unemployed man becomes emotionally unstable, loses his sense of values, develops feelings of inferiority and loses self-confidence, becomes anti-social and acquires habits of loafing around and killing time. In short, one can recognise the distorted personality it produces. If the unemployment continues, his spirit is broken and he tends to become an unemployable man. Many employers still retain their prejudices against hiring persons who have been out of work for a long time. Thus, the problem of unemployment has a serious impact on both the individual and the society as a whole.

It is an ineffective society which fails not only to use man-power for productive purposes, but also creates a situation which destroys the effects of years of training in skill and years of experience in which emotional adjustment and democratic values have been built up. No member of a society, unless completely incapacitated by illness, should be forced to remain unemployed; rather efforts should be made to solve the problem in the early stages of unemployment; if not, prevent unemployment in the first place.

This study is an empirical investigation and the main objective of the present study is to investigate whether any measurable differences in intelligence, aptitude, interest or any character and personality traits between representative groups of unemployed and employed be established by psychological tests and also the impact of socio-economic factors on their employment status.

The first part of this thesis gives a general introduction about the problem of unemployment. An attempt has been made to clarify the nature and analysis of the problem and the problem of unemployment among engineers and diploma-holders in particular. Man-power planning and requirements of the country has also been touched upon. Definition of the term 'unemployment' has also been given.

The second part deals with the psychological aspects of the problem, which include work and its significance, psychological effects of unemployment and review of the studies of the unemployed. Concepts used in the study have been defined. Description, validity and reliability of the tests and questionnaires used in the study have also been presented.

The third part of the study deals with the statement of the problem and the research design. A battery of psychological tests has been used to assess the intelligence,

special aptitudes, interest as well as the personality traits of the unemployed, after pilot studies. Information pertaining to the socio-economic background of the subjects were obtained through the use of a general information data sheet. Thus the primary data of the present study falls into two classes:

First, data from a battery of psychological tests and questionnaires; Secondly, facts relating to the personal history, educational and occupational background along with the aspirations and opinions expressed by each subject.

The fourth part gives a complete report of the results of this study, which was conducted at the Employment Exchange. The two classes of people selected were, unemployed engineering graduates and unemployed engineering diploma-holders. In all, 243 engineers were tested by the stratified random sampling technique. For the purpose of comparison, 55 employed engineering graduates and 85 employed engineering diploma-holders were selected from a big public engineering industry. Each one of them, in both the groups, were given a battery of psychological tests, along with a general information data sheet.

Significant differences were found between representative groups of unemployed and employed in engineering aptitude, certain personality variables, interest patterns as well as in socio-economic status. These tentative conclusions pertain exclusively to this study.

C O N T E N T S

PART I

GENERAL BACKGROUND OF THE PROBLEM.

<u>Chapter</u>		<u>Page</u>
1.	Introduction	1
2.	a. Nature and Analysis of the problem.	5
	b. Situation in the Mysore State.	6
3.	Problem of unemployment among engineers and diploma-holders.	9
4.	a) Man-power planning.	15
	b) Man-power requirements and problems of the country.	20
5.	What is unemployment?	29

PART II

PSYCHOLOGICAL BACKGROUND OF THE PROBLEM

6.	Work and its significance	35
7.	The psychological effects of unemployment.	41
8.	Studies of the unemployed reviewed.	50
9.	Definitions of Concepts.	61
	a) Intelligence	62
	b) Aptitude	66
	c) Personality	71
	d) Interest	82
	e) Values	82/6
10.	Description, Validity and Reliability of the tests and questionnaires used in the study.	
	a) Raven's progressive matrices	86
	b) Mechanical Reasoning	91
	c) Space Relations	92
	d) Personality Inventory	95

<u>Chapter</u>		<u>Page</u>
	e) Interest Inventory	103
	f) Values	106
	g) General Information Data.	108

PART III

RESEARCH PROJECT AND DESIGN OF THE STUDY

11.	a) Background of the problem	115
	b) Purpose and Methodology	116
12.	The pilot study	118
13.	a) Final study and selection of the sample	137
	b) Certain limitations and difficulties of the study.	144

PART IV

REPORT OF THE STUDY

14.	Discussions of test correlations	147
15.	a) Comparison of unemployed and employed engineering graduates in various tests - progressive matrices, mechanical reasoning, space relations, personality inventory.	155
	b) Comparison of unemployed and employed engineering diploma-holders in various tests - progressive matrices, mechanical reasoning, space relations and personality inventory.	156
	c) Comparison of engineering graduates and engineering diploma-holders in various tests - progressive matrices, mechanical reasoning, space relations and personality inventory.	157
	d) Overlapping of distributions.	158
	e) Comparative study of the percentile scores of various groups.	163

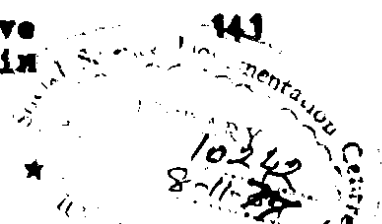
<u>Chapter</u>		<u>Page</u>
16.	Comparison of engineering graduates and diploma-holders with other related studies in India.	169
17.	Comparison of unemployed and employed groups in value preferences.	183
18.	Comparison of the interest pattern of the unemployed and the employed groups.	190
19.	A) Analysis and comparison of the unemployed and the employed graduates with regard to:	
	a) Personal and family background	206
	b) Educational and occupational background	224
	c) Aspirations and Opinions	242
	B) Analysis and comparison of the unemployed and the employed diploma-holders with regard to:	
	a) Personal and family background	255
	b) Educational and occupational background	271
	c) Aspirations and Opinions	287
20.	Comparison of the unemployed and employed engineering graduates and diploma-holders in various tests, based on socio-economic status.	300
21.	Relationship between length of unemployment and neuroticism.	315
22.	Relationship between aptitude tests and branch of study.	318
	SUMMARY AND CONCLUSION	325
	BIBLIOGRAPHY	335
	APPENDICES A, B, C and D.	
	GRAPHS	

LIST OF TABLES

<u>Table No.</u>		<u>Page</u>
1.	Estimated requirements of engineering personnel during 1971-1986.	19
2.	Retest reliability and inter-correlation of the progressive matrices and the Mill Hill vocabulary scales at different ages.	89
3.	Coefficient of correlation of two DAT tests included in the present study along with other tests - Henmon Nelson, Ohio State Psy. Exam, Otis Q.S. Otis, S.A.	93
4a.	Reliability of the 40 item personality inventory used in the present study.	96
4b.	Various reliability measures as obtained by Dr. Raman for neurotic inventory.	97
5.	Mean, S.D. and C.R. of the 27 % of the extreme high scores and extreme low scores of the personality inventory for the employed graduates' group.	99
6.	Mean, S.D. and C.R. of the 27 % of the extreme high scores and extreme low scores of the personality inventory for the unemployed graduates' group.	100
7.	Mean, S.D. and C.R. of the 27 % of the extreme high scores and extreme low scores of the personality inventory for the employed diploma-holders' group.	100
8.	Mean, S.D. and C.R. of the 27 % of the extreme high scores and extreme low scores of the personality inventory for the unemployed diploma-holders' group.	101
9.	C.R. of high scoring group of employed graduates with low scoring group of unemployed graduates.	101
10.	C.R. of high scoring group of unemployed graduates with low scoring group of employed graduates.	102
11.	C.R. of high scoring group of employed diploma-holders with the low scoring group of the unemployed diploma-holders.	102

<u>Table No.</u>		<u>Page</u>
12.	C.R. of high scoring group of the unemployed diploma-holders with the low scoring group of the employed diploma-holders.	103
13.	Median ranks, rank of ranks and difference between ranks of 15 values.	107
14.	Broad areas of investigation and the number of items in each category: - Personal and family background; - Educational and occupational background; - Aspirations and opinions.	109
15.	Weightages that are given for the socio-economic data in the present study.	113
16.	The distribution of the total scores earned by a household.	114
17.	Coefficients of correlations between the test data of 26 unemployed and 18 employed diploma-holders.	123
18.	Coefficients of correlations between the test data of 28 unemployed Certificate-holders and 26 employed Certificate-holders.	125
19.	Coefficients of correlations between the test data of 51 unemployed clerks and 22 employed clerks.	126
20.	Mean, Median, S.D. and C.R. of 26 unemployed and 18 employed diploma-holders.	128
21.	Mean, Median, S.D. and C.R. of 28 unemployed and 26 employed Certificate-holders.	129
22.	Mean, Median, S.D. and C.R. of 51 unemployed and 22 employed clerks.	130
23.	C.R. of different combinations of groups.	132
24.	Unemployed graduate engineers on the Live Register of Employment Exchange in the Mysore State.	138
25.	The size of the strata and the size of the sample in different strata.	140
26.	Unemployed diploma-holders on the Live Register of the Employment Exchange in the Mysore State.	141

TS 264



<u>Table No.</u>		<u>Page</u>
27.	The size of the strata and the size of the sample in different strata of the diploma-holders.	142
28.	Coefficient of correlations between test data of 95 unemployed graduates - progressive matrices, mechanical reasoning and space relations.	147
29.	Coefficient of correlations between test data of 95 unemployed graduates - neuroticism, extroversion and introversion.	147
30.	Coefficient of correlations between test data of 55 employed graduates - progressive matrices, mechanical reasoning and space relations.	148
31.	Coefficient of correlations between test data of 55 employed graduates - neuroticism, extroversion and introversion.	148
32.	Combined coefficient of correlations between test data of 95 unemployed and 55 employed graduates - progressive matrices, mechanical reasoning and space relations.	149
33.	Combined coefficient of correlations between test data of 95 unemployed and 55 employed graduates - neuroticism, extroversion and introversion.	149
34.	Coefficient of correlation between test data of 148 unemployed diploma-holders - progressive matrices, mechanical reasoning and space relations.	150
35.	Coefficient of correlation between test data of 148 unemployed diploma-holders - neuroticism, extroversion and introversion.	150
36.	Coefficient of correlation between test data of 85 employed diploma-holders - progressive matrices, mechanical reasoning and space relations.	151
37.	Coefficient of correlation between test data of 85 employed diploma-holders - neuroticism, extroversion and introversion.	151

<u>Table No.</u>		<u>Page.</u>
38.	Combined coefficient of correlations between test data of 148 unemployed and 85 employed diploma holders - progressive matrices, mechanical reasoning and space relations.	152
39.	Combined coefficient of correlations between test data of 148 unemployed and 85 employed diploma-holders - neuroticism, extroversion and introversion.	152
40.	Comparison of unemployed and employed engineering graduates in various tests - progressive matrices, mechanical reasoning and space relations and personality inventory.	155
41.	Comparison of unemployed and employed diploma-holders in various tests - progressive matrices, mechanical reasoning, space relations and personality inventory.	156
42.	Comparison of engineering graduates and engineering diploma-holders in various tests - progressive matrices, mechanical reasoning, space relations and personality inventory.	157
43.	Mean and S.E. of different groups of subjects - whole group, B.E. I and B.Sc. I yr. B.E. I year, B.Sc. I year and B.A. I yr.	169
44.	C.R. for differences of mean scores of B.E. I, B.Sc. I, B.A. I, whole group and combined group.	170
45.	Mean and S.E. values of B.E. I, B.Sc. I, and B.A. I year students and senior students, engineers and research scholars and American 12th Grade boys.	171
46.	C.R. for differences of mean scores between I year students and senior students, research scholars and engineers and American 12th grade boys.	172
47.	Comparison of unemployed and employed graduates with the performance of other groups - B.E. I year, B.S. Final year, Engineers and Research Scholars.	175

<u>Table No.</u>		<u>Page</u>
48.	Mean, Median, Mode, S.D. Correlations and C.R. of final year 'Roorkee' engineering students.	177
49.	Mean, S.D. and C.R. between Roorkee group and unemployed engineering group.	178
50.	Mean, S.D. and C.R. between Roorkee group and employed engineering group.	179
51.	Mean, S.D. and C.R. between Roorkee group and engineering graduates.	179
52.	Mean and S.D. of American boys in various grades in mechanical reasoning test.	180
53.	Means and S.D. of American boys in various grades in space relations test.	180
54.	Comparison of performance of Indian unemployed and employed graduates with the performance of American subjects in aptitude tests.	180
55.	Comparison of performance of Indian unemployed and employed diploma-holders with the performance of American subjects in Aptitude tests.	182
56.	Comparison of unemployed graduates and employed graduates in value preferences.	184
57.	Comparison of unemployed and employed diploma-holders in value preferences.	186
58.	Comparison of employed graduates and employed diploma-holders in their value preferences.	188
59.	Comparison of unemployed graduates and unemployed diploma-holders in their value preferences.	189
60.	Weights, in terms of critical ratios, when 60 per cent of group B (employed) like an item and the percentage of group A (unemployed) varies from 60 to 5.	192
61.	An example to illustrate the scoring procedure of Interest inventory.	194
62.	Comparison of unemployed and employed graduates on Interest patterns.	196

<u>Table No.</u>		<u>Page</u>
63.	Total scores of the unemployed and employed graduates along with the differences between the two groups, part by part.	200
64.	Comparison of unemployed and employed diploma-holders on Interest patterns.	200
65.	Total scores of the unemployed and employed diploma-holders along with the differences between the two groups, part by part.	205
66.	Personal and family background of the unemployed and the employed graduates:	206
1A.	Place of birth	206
1B.	Place of upbringing	207
2 .	Ordinal position in the family	207
3 .	Marital status	209
4A.	Type of the family	209
4B.	Total number of family members	210
5 .	Dependence for maintenance	211
6 .	Employment status of the wife.	212
7 .	Living with parents or otherwise	212
8A.	Whether head of the family	213
8B.	Total number of dependents	213
9A.	Education of the father	214
9B.	Education of the mother	214
10.	Mother-tongue	215
11.	Occupation of the father	215
12.	Employment status of the father	216
13.	Income of the parents	216
14.	Staying with parents or otherwise	217
15.	Ownership of the house	217
16.	Mobility of the family	218
17.	Drinking habits of the individual	218
18.	Services in Defence	219

<u>Table No.</u>		<u>Page</u>
19.	Habit of visiting religious places	219
20.	Status of health	219
21.	Hobbies	220
22.	Factors emphasized at home	221
23.	Whether the family encouraged to be independent	222
24.	Attachment of family members	223
25A	Location of the native place	223
25B	Population of the native place	224
67.	Educational and occupational background of the unemployed and employed graduates:	224
1.	Total number of friends	224
2.	Duration of unemployment	225
3A	Employment status of their friends	225
3B	Number of unemployed friends	226
4.	Place of the High School studied	226
5.	Place of the College studied	227
6.	Types of jobs held	227
	Approximate period	228
	Approximate monthly salary	228
	How was the job obtained	229
7.	Year of passing matriculation	229
	Year of Graduation	230
	University	230
	Branch of study	231
	Details of distinctions	231
	Special technical and other qualifications	231
	Apprenticeship	232
8.	Academic grades	232
9.	Whether any classes repeated	233

<u>Table No.</u>		<u>Page</u>
10A	Three liked subjects of study	234
10B	Three disliked subjects of study	235
11A	Extra-curricular activities	235
11B	Nature of extra-curricular activities	236
11C	Was it a position of leadership?	236
12.	Persons who helped in solving problems	237
13.	Interest of the teachers	237
14A	Three liked jobs	238
14B	Three disliked jobs	239
15.	Number of times applied for jobs	239
16A	Number of times interviewed	240
16B	Reasons for not being selected	240
17.	Whether aware of all job opportunities	241
68.	Aspirations and opinions expressed by the unemployed and employed graduates.	242
1.	Minimum education considered necessary to get along in the world	242
2.	Target of highest positions	243
3.	Preference to be an Engineer/Businessman	243
4A	Preparedness for any job	245
4B	Job preference	245
5A	Aspiration of the father	246
5B	Aspiration of the mother	246
6.	Interest to take up training	246
7.	Readiness to work anywhere in India	247
8.	Whether regretting for the course already completed	247
9.	Reason for the present employment status	248
10.	Important factors for occupational success	248

<u>Table</u> <u>No.</u>		<u>Page</u>
	11. Aspiration for future job	252
	12. Aspiration for future salary	253
	13. Insecurity feeling for the job	254
69.	Personal and family background of the unemployed and the employed diploma-holders:	255
	1A. Place of birth	255
	1B. Place of upbringing	256
	2. Ordinal position in the family	256
	3. Marital status	256
	4A. Type of the family	257
	4B. Total number of family members	257
	5. Dependence for maintenance	258
	6. Employment status of the wife	258
	7. Living with parents or otherwise	258
	8A. Whether head of the family	259
	8B. Total number of dependents	259
	9A. Education of the father	259
	9B. Education of the mother	260
	10. Mother-tongue	260
	11. Occupation of the father	261
	12. Employment status of the father	262
	13. Income of the parents	262
	14. Staying with parents or otherwise	263
	15. Ownership of the house	264
	16. Mobility of the family	264
	17. Drinking habits of the individual	264
	18. Services in the Defence	265
	19. Habit of visiting religious places	266
	20. Status of health	266

<u>Table No.</u>		<u>Page</u>
	21. Hobbies	266
	22. Factors emphasized at home	267
	23. Whether family encouraged to be independent	269
	24. Attachment of family members	270
	25A Location of the native place	270
	25B Population of the native place	271
70.	Educational and occupational background of the unemployed and employed diploma-holders:	271
	1. Total number of friends	271
	2. Duration of unemployment	272
	3A Employment status of their friends	272
	3B Number of unemployed friends	272
	4. Place of the High School studied	273
	5. Place of the College studied	273
	6. Types of jobs held	274
	Approximate period	275
	Approximate monthly salary	275
	How was the job obtained	275
	7. Year of passing matriculation	276
	Year of completion of diploma	276
	Branch of study	277
	Details of distinctions	277
	Special technical and other qualifications	278
	Apprenticeship	278
	8. Academic grades	278
	9. Whether any classes repeated	279
	10A Three liked subjects of study	280
	10B Three disliked subjects of study	281

<u>Table No.</u>		<u>Page</u>
11A	Extra-curricular activities	281
11B	Nature of extra-curricular activities	282
11C	Was it a position of leadership	282
12.	Persons who helped in solving problems	283
13.	Interest of the teachers	283
14A	Three liked jobs	284
14B	Three disliked jobs	285
15.	Number of times applied for jobs	286
16A	Number of times interviewed	286
16B	Reasons for not being selected	286
17.	Whether aware of all job opportunities	287
71.	Aspirations and opinions expressed by the unemployed and employed diploma-holders:	287
1.	Minimum education considered necessary to get along in the world	287
2.	Target of highest position	288
3.	Preference to be an Engr/Businessman	289
4A	Preparedness for any job	289
4B	Job preference	290
5A	Aspiration of the father	290
5B	Aspiration of the mother	291
6.	Interest to take up training	291
7.	Readiness to work anywhere in India	292
8.	Whether regretting for the course already completed	292
9.	Reason for the present employment status	293
10.	Important factors for occupational success	293
11.	Aspiration for future job	298
12.	Aspiration for future salary	298
13.	Insecurity feeling for the job	299

<u>Table No.</u>		<u>Page</u>
72.	Socio-economic status of the unemployed and employed graduates	300
73.	Socio-economic status of the unemployed and employed diploma-holders	301
74.	Mean, Median and S.D. of the 95 unemployed graduates in various tests, categorised on the basis of socio-economic status.	301
75.	Critical ratios to indicate the intra-group differences in certain test variables, categorised on the basis of socio-economic status (Unemployed graduates)	303
76.	Mean, Median and S.D. of the 55 employed graduates in various tests, categorised on the basis of socio-economic status.	304
77.	Critical ratios to show the intra-group differences in certain test variables, categorised on the basis of socio-economic status (Employed graduates)	305
78.	Inter-group differences in certain test variables between unemployed graduates and employed graduates	306
79.	Mean, Median and S.D. of the 148 unemployed diploma-holders in various tests, categorised on the basis of socio-economic status	308
80.	Critical ratios to indicate the intra-group differences in certain test variables, categorised on the basis of socio-economic status (Unemployed diploma-holders)	309
81.	Mean, Median and S.D. of 85 unemployed diploma-holders in various tests categorised on the basis of socio-economic status	311
82.	Critical ratios to indicate the intra-group differences in certain test variables, categorised on the basis of socio-economic status (Employed diploma-holders)	312
83.	Inter-group differences in certain test variables between unemployed and employed diploma-holders, categorised on the basis of socio-economic status	313

<u>Table No.</u>		<u>Page</u>
84.	Mean, and S.D. of the Groups I, II, III and IV of the unemployed graduates on Neuroticism test	315
85.	C.R. showing the relationship between the length of unemployment and neuroticism of the unemployed graduates	316
86.	Mean and S.D. of the Groups I, II, III and IV of the unemployed diploma-holders on Neuroticism test	317
87.	C.R. showing the relationship between the length of unemployment and neuroticism of the unemployed diploma-holders	317
88.	Comparison of unemployed graduates and employed graduates in mechanical reasoning and space relations test, categorized on the basis of the branch of study	318
89.	C.R. showing the difference between the various branches of unemployed graduates in mechanical reasoning and space relations test	319
90.	C.R. showing the difference between various branches of employed graduates in mechanical reasoning and space relations test	321
91.	Comparison of unemployed diploma-holders and employed diploma-holders in mechanical reasoning and space relations test, categorized on the basis of the branch of study	322
92.	C.R. showing the difference between various branches of unemployed diploma-holders group in mechanical reasoning and space relations test	323
93.	C.R. showing the difference between the various branches of employed diploma-holders group in mechanical reasoning and space relations test.	324