THE DIMENSIONS OF MORALE: AN ITEM FACTORIZATION OF
THE SRA EMPLOYEE INVENTORY

DISSERTATION

Presented in Partial Fulfillment of the Requirements
for the Degree Doctor of Philosophy in the
Graduate School of the Ohio State
University

By

ZILE S. ^{SINGH}DABAS, B. A. (Hons.), M. A.

The Ohio State University

1955

Approved by:

Adviser
Department of Psychology

ACKNOWLEDGMENTS

The writer is highly grateful to Dr. Robert J. Wherry for his continual guidance in the preparation of this dissertation.

Appreciation is also expressed for the courtesy extended by the SRA, Test Department, 57 West Grand Avenue, Chicago 10, Illinois, in permitting the writer to use the collected data.

TABLE OF CONTENTS

CHAPTER	PAGE
I. HISTORICAL SURVEY OF MORALE DIMENSIONS	1
II. THE STATEMENT OF THE PROBLEM	16
III. METHODS AND PROCEDURES	27
IV. RESULTS: IDENTIFICATION OF FACTORS	58
Generalized Over-all Attitude Factor (GOA). .	58
Over-all Opinion of Working Conditions (WC) .	60
General Satisfaction with Financial Reward for Effort (FR)	61
Over-all General Opinion about Immediate Supervisor (IS)	63
Over-all Confidence in Management (CM). . . .	65
V. DISCUSSION AND INTERPRETATION	93
VI. SUMMARY OF CONCLUSIONS	103
BIBLIOGRAPHY	108

LIST OF TABLES

TABLE	PAGE
I. Intercorrelations Between 14 Morale Categories or Sub-tests (Oblique Loadings) . . .	32
II. T_1 (Wherry-Doolittle)	34
III. Orthogonal Loadings	35
IV. T_2	37
V. Final Second Order Rotations	38
VI. Item Correlation: Original, Iterated Values and Constant Multiplier for Each of the 14 Categories	40
VII. Iterated Item Correlations	43
VIII. T_3	50
IX. Item Factor Loadings	51
X. Per Cent Measure of Variance by Factors	100

LIST OF FIGURES

FIGURE	PAGE
1. Relationship of the Factors to Each Other . . .	96

CHAPTER I

HISTORICAL SURVEY OF MORALE DIMENSIONS

Industrial morale is a very complex and challenging problem. The term has been and is being very loosely used by all the persons concerned, e.g., the industrial psychologist, sociologist, industrialist, etc. There are many definitions, rather too many. Most of the available definitions have been derived from personality theory and social theory in psychology. They reflect the "individual-organic emphasis," "group emphasis" and also "emphasis on individual-within-the-group on any specific occasion." They may be regarded as a mere guide for further research but they cannot be taken as adequate definitions.

Very often, the terms morale, job satisfaction and motivation are used synonymously. Morale may involve both motivation and job satisfaction but it is not identical to them. Even the definitions of motivations and job satisfaction are very vague and inadequate. For example, job satisfaction is defined as "any combination of psychological, physiological and environmental circumstances that causes a person truthfully to say, 'I am satisfied with my job'" (18). Maier, on the other hand, attempts to differentiate between morale and motivation. He thinks that

"morale is largely a social phenomenon and is subject to social influences. When social situation is not involved and we are dealing with an isolated individual, we speak of high motivation, persistence and self-confidence" (29).

A cursory perusal of the periodicals dealing with the industrial morale impresses on one a sense of urgency as expressed by various researchers to determine the dimensions of morale and also to construct valid scales for measuring these dimensions. But there is no implicit or explicit agreement as how to approach the problem. Two main approaches can be indicated, however.

One of the approaches to determine the dimensions of morale has, however, been in terms of what people do in the industry. It is an attempt to consider industrial morale as a positive group attitude towards perseverance in work. This approach also related to several external measures (or criteria) of morale such as:

1. Production:

- a. low production (could not produce more)
- b. restriction on output (could but did not)

2. Quality of Production:

- a. number of rejects
- b. unwarranted quantity of wasted and spoiled material
- c. records of errors

d. returned goods

3. Turnover:

a. length of service

b. quits

c. discharges

d. transfers either due to unsatisfactory performance or at the request of the employee

4. Lost time:

a. days present or number of absences

b. number of tardinesses

c. days sick

d. visits to first aid section

e. length or frequency of unauthorized rest pauses

5. Accidents:

a. unwarranted

b. incidental

c. periodic

d. situational or probable

6. a. undue tensions among workers indicated on the job

b. number of grievances

c. contribution to suggestion system

d. cost of work

It seems to be largely a matter of assumption that these objective behaviors are closely related to high morale.

High morale and favorable attitudes may not be correlated with high level of output. The results of researches on this topic (12, 14, 21, 23, 24, 25, 26, 27, 39, 43, 50) are not entirely consistent.

The second approach to industrial morale has been in terms of what people in the industry say. Here morale is related to internal measures--"morale was assumed to be a function of the worker's general attitude toward his job, toward his company as an employer." (42). This general attitude is influenced by attitudes on specific points such as hours, working conditions, supervision, etc. What people say can be estimated by (1) attitude surveys, (2) employee interviews; or (3) what informed observers such as management, supervisors and union representatives report and say. The defect of this approach lies in the unreliability of what the people say. After all, there is a great difference between conceptual, verbal or expressed and actual behaviors.

A really successful approach should probably combine both aspects: (1) "The employees with high morale should say that they are satisfied with their jobs and working environment," and (2) they "should demonstrate in their job behavior that they are satisfied." (2). This combined approach will necessitate the development of reliable and valid scales, interviews and ratings. And there will also be necessity to develop adequate, relevant, valid and

reliable external criteria for predicting job behavior. Very intensive and extensive research is needed to implement such a program.

We will now proceed to have a look at the present status of the attempts to determine the dimensions of industrial morale. These fall into two broad classes: Theoretical discussions of "what they should be" and empirical investigations of "what they are."

One theoretical attempt is concerned with what "it is within the employee that is being satisfied." Kretch and Crutchfield (28) in outlining the "determiners of morale" include the satisfaction of the needs of the individual such as (a) gregariousness or participation, (b) self expression, (c) recognition, (d) prestige or status seeking. Most investigators do consider these needs, but the difficulty with need dimensions is that the satisfaction of any need may involve many factors. Also it is very difficult to develop need satisfaction criteria.

An empirical investigation concerning need-dimensions was attempted by Gordon (15). He collected data concerning:

- a. recognition of the individual
- b. structure of expectations (how well understood are the goals, etc.)
- c. belonging
- d. status--self-opinion, prestige

- e. self expression
- f. opinion about group leader
- g. comfort

Gordon then factor analyzed the data and found four common factors:

- a. over-all satisfaction with need fulfillment
- b. need for social recognition of status
- c. need for self-respect
- d. self expression (not very clear).

He defined morale as a function of over-all need satisfaction.

Johnson (19) wanted to develop an instrument to measure job satisfaction which for him is synonymous with morale. He constructed a questionnaire of nine main categories, the first seven were found to be important in prior literature.

His categories were:

- a. physical and mental exertion
- b. relations with associates
- c. relations with employers
- d. security, advancement and finances
- e. interest in, liking for and emotional involvement
in the job
- f. job information and status
- g. physical surroundings and work conditions
- h. future: goals and progress towards goals

i. evaluation in retrospect

Maier (29) gives categories based partly upon speculation and partly upon various previous researches. His categories are as follows:

- a. firm convictions and values--(in agreement with the group)
- b. attitude toward the employer
- c. job satisfaction based upon steady work, comfortable working conditions, good working companions, good boss, opportunity for advancement, high pay, opportunity to use ideas, opportunity to learn on the job, good hours, easy work.
- d. psychological factors including participation in group activity, the experience of progress toward a goal, tolerance and freedom within the group, confidence in the leaders.

Another fairly satisfactory list of categories of morale has been given by Harrell (16). His categories are taken from selected prior researches. They are as follows:

- a. security--steady work
- b. job satisfaction includes type of work, occupational status, geography, i.e., place of plant, sex, time on the job, personality, skill, conditions of work, responsibility, supervision, benefits, union, management and government.

- c. chance for promotion
- d. promotion on merit
- e. reputation of company--good place to work
- f. fair pay systems
- g. rest pauses
- h. adoption and care for safety measures
- i. small cities
- j. small plants
- k. counseling facilities

He points out that age, education and intelligence are not important in the sense that there is no clear evidence.

Harrell also summarizes the ranks given by industrial workers to such factors according to several surveys (49, 17, 20, 34). The ranks are:

- (1) steady work; (2) opportunity for advancement;
- (3) good working conditions; (4) high pay; (5) good boss; (6) comfortable working conditions; (7) benefits; (8) opportunity to learn a job; (9) good hours;
- (10) opportunities to use your ideas; (11) easy work.

Another approach to the dimensions of morale was undertaken by Evans and Laseau in the General Motors "My Job Contest" survey (9). The essays were broken down into minor elements. Dr. Wherry (mimeographed release by General Motors) did a factorial analysis of 37 of these elements. The factorization led to the identification of

seventeen schemas or general themes around which essays or proportions of essays were organized. These seventeen factors were:

- A. Job Stability
- B. Sound Company Product
- C. Personal Financial Security
- D. Financial Reward for Labor
- E. Fair Supervision of Wage and Promotion Policies
- F. Comparative Wage and Promotion Policies
- G. Plant Equipment and Facilities
- H. Working Conditions
- I. Comparatively Clean Cafeterias
- J. Concern of Associates and Supervisors for Health and Safety
- K. Company Concern for Employee Health
- L. Well-rounded Employee Services Program
- M. Fair Management Bargaining Practices
- N. Comparative Non-Discrimination
- O. Group Membership
- P. Personal Accomplishment
- Q. Job Assignment

Katz (22) summarizes the findings of the Survey Research Center studies and points out that the following four factors are important determiners of morale.

1. satisfaction with the supervision

- a. supervisors of high productivity place less emphasis upon production as goal
- b. encourage worker participation in decision making
- c. are more employee centered
- d. spend more time in supervision and less in production work

(These are the qualities of effective supervisors but employee attitude toward supervision are not mentioned.) Comrey, Wallace and Wilson (8) point out that the over-all organizational effectiveness is apt to benefit from the kind of supervision which has (1) sensitivity to the needs and rights of human beings, i.e., keeps subordinates informed; allows them to express their opinions; is willing and able to help them with job problems and is sympathetic to their personal difficulties; (2) the personal qualities of technical competence in organizing, planning, technical skills, safety enforcement, and in reaching good decisions. Fleishman (10, 11) has shown that the supervisor's consideration of employees and imposition of structure independently lead to effective supervision. It also appears to this writer that the amount of prestige and authority which the

supervisor enjoys with the management in carrying through his policies and employee problems contributes to effective supervision.

2. Satisfaction with job: Miller (31) points out that there are three job factors related to morale, i.e. social approval due to job; chance for advancement; return from labor.
3. Satisfaction with the company.
4. Satisfaction with mobility or progress.

These above factors were obtained by factor-analyzing a morale questionnaire using the multiple group method. Schooler (38) notes that when the centroid method is applied to the same questionnaire data, changes occur in the factors extracted. In particular, the mobility factor does not appear. He concludes that there is no general morale factor and suggests that morale is in fact a complex of several kinds of attitudes.

Baehr (4) did a factorial study of the SRA Employee Inventory. She found the following four oblique factors common among two groups and some specific factors for each group:

1. integration in the organization
2. job satisfaction
3. immediate supervision
4. friendliness and cooperation of fellow employees

She believes that these four factors "represent some of the basic components of the work situation They cover areas which are crucial to the industrial employee. It seems a reasonable inference that the needs and expectations of employees are met in these crucial areas" (p. 331).

Ash (2) also did a factor analysis of the SRA Employee Inventory on a different sample. He found five oblique factors including:

- (1) job rewards
- (2) management effectiveness
- (3) immediate supervision
- (4) job satisfaction
- (5) friendliness and cooperation of fellow-employees

Ash asserts that his findings are similar to those of Baehr (4) and the factor analysis of morale items made by the Survey Research Center of the University of Michigan (21, 23).

Dr. Wherry (44) did an orthogonal re-rotation of the Baehr (4) and Ash (2) studies of the SRA Employee Inventory. He pointed out the faults of Baehr and Ash approach and finally extracted one General Bias or Attitude factor and four group factors common to all three samples. He also showed that the type of organization is less important than Baehr's oblique solutions lead one to believe. His four group factors are:

1. Working conditions and environment
2. Financial reward
3. Immediate supervision
4. Effective management and administration

One very important result of Dr. Wherry's findings is the General Bias or Attitude factor. What this General Attitude factor indicates is that the sub-tests in the SRA Employee Inventory act "as if" there is one general factor and psychologically the existence of such a factor as the sole link in the sub-tests seems to be a reasonable hypothesis. Parenthetically, the word "existence" here does not mean that any physical entity exists which can be identified with this general factor. It does mean, however, that, as far as the experimental evidence goes, there is some aspect of the causal background which acts "as if" it were a single unitary factor in these tests (40:227). This assertion can be very easily substantiated by quotations from Ash (2), Baehr (4) and the General Manual of the SRA Employee Inventory (13). To begin with the General Manual first, here the morale is defined in terms of group and organization (7) and it is suggested on page 9 that first of all, the company-wide profile and the general morale level of the group should be determined. This above suggestion makes sense only if the general factor is extracted and emphasized. It is also pointed out on the same page

that the general morale level of the group should be determined in terms of prescribed procedure, i.e., whether or not the obtained profiles are "uniform," "predominant" and "mixed." And the definitions and illustrations are given in such a way as if a general factor exists and is being emphasized. Thus, the determination of the general morale level becomes meaningful only in terms of the general attitude factor. Furthermore, it is very strongly stressed that the employees share common attitudes because of (1) immediate work group; (2) common traditions and standards; (3) common management; (4) the same company; and finally, (5) broad social sentiments that form the framework of the so-called American way of life (pp. 20-21). Baehr in her article (4) on page 320 builds up a very similar thesis. And the logic of this thesis points toward the existence of a General Bias or Attitude factor. There seems to be, however, a discrepancy between what Ash and the authors of the SRA Employee Inventory--Baehr being one of the authors--say and what they do. This discrepancy is due to the inadequate factorial approach which they bring to the analysis of data. They believe in and practice the so-called "Thurstone approach" or the oblique solution approach. They do not only deny the existence of the general factor but they also do not accept its possibility. Baehr (4) says: "It is a frequent but regretable circumstance that employee

morale is expressed as the summation of the degree of favorability of attitudes expressed by employees toward a conglomerate of elements in the work environment. . . ."

Similarly, Ash (2) says: "the early pioneering work in this field . . . was generally characterized by an attempt to measure a single global job satisfaction factor." In fact, the investigation of Baehr (4) was "concerned with those fundamental common attitudes in the industrial population which cut across specific work groups, specific occupations and specific organization" (p. 320). She was, thus, trying to extract only the group and specific factors and also trying very hard to avoid even the semblance of a factor like the general factor. In order to achieve this end, she adopted very devious ways of analysis which Dr. Wherry (44) has so skillfully exposed and emphasized. This writer agrees with Dr. Wherry's statement that "oblique factors are never justified and always misleading." The presence of the general attitude factor, however, makes the interpretation of the results meaningful and relevant. The existence of the general factor, thus, adds to the potency and force of the generalizations made.

CHAPTER II

THE STATEMENT OF THE PROBLEM

The necessity and urgency for the development of valid and reliable scales was pointed out in the previous chapter. The SRA Employee Inventory is an attempt at such an instrument. According to Burns (7) the development of the Inventory drew from and utilized many sources and types of data. These were:

- a. survey of the literature of morale, specially the survey findings gathered by Sears Roebuck and Co. (so the emphasis upon organization)
- b. non-directive interviews with employees and supervision in a number of representative firms
- c. records of participant observers stationed in selected work situations
- d. insights and judgments of management officials and union leaders (insights of the Survey Research Center findings therefore psychologically vague and scientifically inadequate categories)

Then Baehr (4) proceeded to determine the important aspects of the work situation. Her study covered seven aspects of the work environment. These were: (1) physical conditions of work; (2) the financial rewards and benefits;

(3) the personal relations with fellow employees; (4) supervision; (5) management; (6) the individual satisfaction on the job; and (7) operating efficiency of the organization in general. But the General Manual for this Inventory points out that the 78 statements are grouped into five broad areas: (1) job and conditions of work; (2) financial rewards; (3) personal relations in the company; (4) operating efficiency; and (5) individual satisfactions.

These five areas have been broken down into fourteen categories. The selection of these fourteen categories was based on the analysis of non-directive interviews conducted in many different industrial settings (13:23). Thus, the claim of Burns (7) as regards the utilization of many sources and types of data in the development of this Inventory seems to be an act of academic exaggeration. It is claimed that these "categories range from the most materialistic elements in the work environment, such as pay, benefits, conditions of work, to categories relating to the interpersonal relations in the organization and to the intangible, non-financial incentive and individual satisfactions (13:23). In other words, it is asserted that they cover all aspects of the situation. These categories are:

1. job demands

2. working conditions
3. pay
4. employee benefits
5. friendliness and cooperation of the fellow employees
6. supervisor-employee interpersonal relations
7. confidence in the management
8. technical competence of supervision
9. effectiveness of administration
10. adequacy of communication
11. security of job and work relations
12. status and recognition
13. identification with the company
14. opportunity for growth and advancement

The question arises whether or not the categories are adequate, relevant and valid. This writer undertook to investigate the adequacy of those 14 categories because of the following reasons:

1. The problem is of great importance to the industrial world.
2. It appears from the historical survey of morale in the previous chapter that this Inventory has not embraced some other areas which may be very important regarding the dimensions of morale. Even Dr. Baehr (4) on page 321 expressed her

well-founded doubt that "it is not possible to state from the results of this investigation that all the components of the work situation have been identified." As no further investigation has been made, her doubt concerning the inadequacy of the Inventory still stands. But Dr. Baehr did not stop with her doubt; on the contrary, she made an assertion on the basis of general psychological knowledge that the factors she found in her two groups "would seem to represent crucial areas in the work of the employee." Even the adequacy of these obtained factors has been questioned by Dr. Wherry (44). The Inventory does not include, for example, the union-management category. The Inventory also seems to concentrate too much on the work situation and organization.

3. This Inventory is neither based upon nor is supported by adequate and sufficient research. A careful reading of the "General Manual" for the Inventory along with the bibliography attached at the end of it provides substantial evidence to the above assertion. The claim made for the high reliability of the Inventory as such is too much exaggerated to stand a thorough scrutiny. The reported reliabilities of the categories and the

reliability of the Inventory as a whole are hardly reliable. They are calculated from data based upon a very small and selective sample. The rationale of some of the statistical procedures used in these computations is also not suited to the situation concerned.

4. The categories were based upon the analysis of non-directive interviews conducted in many industrial settings. Ash (2) did a statistical analysis of this Inventory on a different sample. He points out that the 14 categories are factorially complex and over-lapping. He also found that the relationship between categories and interviews (the basis of Inventory categories) was "much less close--low or negligible" in five cases. These five categories were:

I. Job demands

X. Adequacy of communication

XI. Security of job and work relations

XII. Status and recognition

XIII. Identification with the company.

There should have been a reasonable consistency between the interviews and categories for most of the individuals. That is, "those employees who give favorable responses to the questions in

category on the Inventory, tend also to say favorable things in the interviews." Thus, Ash concluded that "except for Job Demands, most employees said little that could readily be fitted into these (other) categories." What this boils down to is that the fourteen categories of morale in the Inventory are not validated. Hence the validation data for the Inventory is very inadequate.

5. The 76 items in the Inventory have been grouped into fourteen categories. The number of items for each category ranges from four to eight items. There is no prescribed basis for assigning different number of items to different categories. The procedure of assigning different number of items to different categories can be justified only if the differential value of the categories has already been determined. But no such investigation is either conducted or mentioned at any place. This arbitrary assignment of items to different categories contributes to the inadequacy and irrelevancy of the dimensions of morale. In other words, an item may belong to a particular category but may not contribute to the measurement of morale by that category; it may very well be

that the item concerned either goes into some other category or it may not belong to the Inventory at all. No factorial study of items of the Inventory has so far been made. Dr. Baehr (4) and Ash (2) factor analyzed only the sub-tests in the Inventory and Dr. Wherry re-analyzed their data for review and thereby prepared a separate article. But Ash suggested that an item analysis needs to be done and the editor of the "Personnel Psychology," Dr. Edwin K. Taylor, invited any of his readers to perform such study and consequently to submit it to Personnel Psychology. The present study undertook the analysis of items.

6. The determination of the adequate dimensions of morale has become difficult because of the use of different statistical methods in the analysis of data and also the interpretation of the factors found in factorial investigations of morale. The factor analysts use different methods of analysis with the same data and come out with different results and different interpretations of the dimensions of morale. Broadly speaking, one group of factor analysts applies oblique solution to the data and extracts common factors and unique factors

such as Baehr, Ash and others. On the other hand, the other group of factor analysts applies orthogonal solution and extracts a general factor along with group and specific factors from the same data as Dr. Wherry and others. This problem of the adequacy of orthogonal vs. oblique solution poses a serious situation. This study attempts to apply the "extended" method suggested by Thomson (40). This method seems to be a "distinct step towards a reconciliation between the analyses of the Spearman school and those of Thurstone using oblique factors."

7. The determination of the dimensions of morale also poses the problem of "location effects" on morale. In other words, what are the possible differences in morale, if any, because of the location of a plant in the east, west, midwest, south and also out of the United States?
8. There is also the problem of possible relationship between the dimensions of morale and certain jobs. Ash (2) suggested that the measured attitudes are more likely to be a reflection of the "real" job situation. He states that the differences in attitude scores among production, office, sales and supervisory groups tend to corroborate

this observation. Moore (32) did the study of the professional employee in the industry. He found that "among the natural scientists the category scores are definitely more favorable with regard to job demands (category I), working conditions (category II), and status and recognition (category XII). They are definitely less favorable with regard to effectiveness of administration (category IX) and adequacy of communication (category IX)." He points out that these employees are career-oriented rather than company-oriented. Thus, the jobs seem to be positively or negatively related to the dimensions of morale. The present study proposes to investigate this problem of relationship between the jobs and the dimensions of morale.

9. Sample: The studies conducted so far concerning this Inventory had very small and selective samples. For example, Dr. Baehr (4) had two groups. One group was taken from central offices: junior executives; stenographers; clerical. The total number in this group was only 134. The second group was taken from a branch plant: 65 production workers; 98 salaried routine. This second group had only 163 people. These two

groups of employees used in this investigation were different, as Baehr claims with respect to (a) the kind of organization, (b) the type of occupation and (c) the status level of the employees whom they represented. From this sample of two groups, Dr. Baehr makes the generalizations of the following nature:

"Those factors which were common to the two groups of employees were regarded as the components of the work situation that are widely operative in the general industrial population" (p. 321).

"The factors common to the two groups would seem to represent crucial areas in the work life of the employee" (p. 321).

These are very broad generalizations unsupported by the data based upon a small sample.

There are only 167 steel fabricating-plant employees in Dr. Ash's (2) study. But Ash is very careful in drawing conclusions and points out that the data involved was too limited to afford firm convictions.

In the present study a sample of 996 people was drawn. This sample was taken from the United States and abroad--from the west, 17; from

outside, 208; from midwest, 199; from east, 433 and from south, 139. This sample was drawn from different plants producing different products and materials. How were the job categories formed, will be described in the next chapter. It is only emphasized here that the present sample is very adequate and representative to make generalizations meaningful and relevant.

CHAPTER III

METHODS AND PROCEDURES

The SRA Employee Inventory is published by Science Research Associates. This consulting firm sells this Inventory and also administers it to the employees of any industrial enterprise which consults it concerning the problems of morale. We explained to the Test Department of this firm the nature of the intended study and requested use of collected data. The amount and type of data asked for was such as to enable us:

- (1) to assemble as many job categories as possible--
at least fifteen jobs.
- (2) to get at least 50 or more persons in each job category.
- (3) to have data from different plants.
- (4) to secure data covering or spreading over the whole country, south, east, west, and midwest, etc.
- (5) to obtain a sample of approximately 1,000 persons.

The data arrived as requested. Then 17 job categories were assembled on the basis of similarity of job in a particular plant or in different plants. For example, packing and shipping forms one job category. It is hard to

find 55 packers and shippers in only one industrial establishment. Hence the data for packers and shippers was assembled from different plants located at different places. All the job categories constitute a sample of 996 persons. The 17 job categories with the number of persons in each job category are as follows:

Job Category	Persons
1. Food service engineers	52
2. Sales (wholesale)	65
3. Accounting (general)	57
4. Buyers	51
5. Warehouse workers	55
6. Packing and shipping	55
7. Repair (at factory and warehouse)	65
8. Service (installation and repair)	56
9. Office employees	54
10. Sowers	54
11. Sales clerks (department store)	54
12. Product workers (female)	50
13. Retail sales (milk truck drivers)	50
14. Product workers (male)	55
15. Service engineers (treating and shooting)	50
16. Top level advisers and supervisors	98
17. Lower level supervision	<u>75</u>
	996

Next, these 17 job categories were combined into three broad job classifications: A (Administration) classification was formed by putting together all the employees directly concerned with administration and supervision; O (office workers) classification was obtained by combining all the job categories dealing with office work; P (product workers) classification was constituted by bringing together all the job categories involving employees directly concerned with production. The purpose of forming these three broad job classifications was to discover the differences in the dimensions of morale due to three broad job classifications and 17 job categories. In short, the end in view was to make the findings more meaningful and relevant. These three broad job classifications were as follows:

Job categories included	Persons
A. 16, 17	173
O. 2, 3, 4, 9, 11	281
P. 1, 5, 6, 7, 8, 10, 12, 13, 14, 15	<u>542</u>
	996

It was mentioned in the previous chapter that the sample included employees from all over the country (U.S.A.) and also from outside the country. These location category counts are given here for convenience:

Category	Location	No. of Employees
1	Midwest	199
2	East	433
3	West	17
4	South	139
5	Outside	<u>208</u>
		996

As soon as the 17 job categories were assembled and the three broad job classifications were formed, then the scoring of the 14 sub-tests or categories proceeded according to the procedures prescribed in the "General Manual" for the Inventory. Thus, the 14 categories were scored for each person through each of the 17 job categories and 3 job classifications. The scoring of the items, too, followed the procedures prescribed in the "General Manual."

The location of each person was also coded along with category scores on the same page.

The complete data including persons, job categories, job classifications, morale categories, 78 Inventory items and location, was punched into I.B.M. cards. It is not deemed necessary to describe how the information was punched into the I.B.M. cards.

The punched scores for 14 morale categories, the 78 Inventory items, 17 job categories, 3 broad job classifications and 5 location items were organized and tabulated for correlations by using the Accounting Machine types 402 and

403. These tabulations involved two operations. The first operation was taken in getting a 14 by 14 intercorrelation matrix. The second operation was made in tabulating all the items, i.e., 78 Inventory items, 17 job category items, 3 job classification items and 5 location items, by 14 morale categories matrix. Thus, the tabulations on Accounting Machine types 402 and 403 were completed.

The statistical method used and the steps taken in the computations and analysis of data are as follows:

Step 1: The interrelations between 14 morale categories were computed by using the following basic correlation formula:

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum Y^2 - (\sum Y)^2]}}$$

Thus, a 14 by 14 intercorrelation matrix was prepared. These are intercorrelations between 14 sub-tests or morale categories or criteria--call them what one may. These intercorrelations are given in Table 1 on page 32. In fact, these are oblique loadings for 14 morale categories.

Step 2: Here the original intercorrelations between 14 morale categories are transformed into a Transformation Matrix by applying the Wherry-Doolittle technique. This Transformation Matrix (T_1) is given

TABLE I
INTERCORRELATIONS BETWEEN 14 MORALE CATEGORIES OR SUB-TESTS
(OBLIQUE LOADINGS)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1.000	.486	.253	.265	.272	.384	.374	.353	.301	.377	.446	.482	.365	.345
2	.486	1.000	.317	.341	.351	.429	.549	.537	.551	.503	.525	.499	.426	.436
3	.253	.317	1.000	.303	.179	.268	.406	.250	.344	.300	.422	.445	.275	.321
4	.265	.341	.303	1.000	.151	.198	.503	.249	.397	.413	.388	.306	.360	.278
5	.272	.351	.179	.151	1.000	.393	.375	.372	.319	.390	.365	.366	.334	.354 ⁶³
6	.384	.429	.268	.198	.393	1.000	.498	.720	.428	.499	.489	.503	.428	.487
7	.374	.549	.406	.503	.375	.498	1.000	.476	.669	.670	.635	.547	.592	.533
8	.353	.537	.250	.249	.372	.720	.476	1.000	.509	.460	.478	.467	.415	.453
9	.301	.551	.344	.397	.319	.428	.669	.509	1.000	.587	.530	.455	.499	.446
10	.377	.503	.300	.413	.390	.499	.670	.460	.587	1.000	.615	.537	.453	.496
11	.446	.525	.422	.388	.365	.489	.635	.478	.530	.615	1.000	.602	.502	.565
12	.482	.499	.445	.306	.366	.503	.547	.467	.455	.537	.602	1.000	.520	.578
13	.365	.426	.275	.360	.334	.428	.592	.415	.499	.453	.502	.520	1.000	.561

in Table 2 on page 34.

Step 3: This step was to obtain orthogonal loadings and it was accomplished by the 14 by 14 intercorrelation matrix by T_1 . These orthogonal loadings are given in Table 3 on page 35.

Step 4: This step was to prepare a second Transformation Matrix (T_2) which was built up transforming rotated factors mathematically. Thomson (40) points out that "Thurstone has not calculated the loadings of the original tests with other orthogonal second-order factors, the factor specifics. This can, however, clearly be done by the same method (as Thomson suggested)." He illustrates how this can be worked out in case of "a g plus an orthogonal simple structure." This suggested method can theoretically and mathematically be extended to many group factors. Bare (5) has shown in an unpublished article that this method is mathematically sound. This writer, however, has exploited this method in the analysis of his data and has found it working efficiently and smoothly with one general factor, 4 group factors and 14 specific factors. This method, then, is not only mathematically sound but it also works effectively in practice. Thus, this study can statistically be regarded as both an extension of Thomson's above suggestion and also

TABLE II
T₁ (WHERRY-DOOLITTLE)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1.000													
2	-.556	1.114												
3	-.138	-.269	1.061											
4	-.114	-.247	-.225	1.095										
5	-.134	-.290	-.065	-.008	1.079									
6	-.216	-.259	-.127	-.007	-.293	1.186								
7	-.016	-.358	-.210	-.441	-.169	-.349	1.441							
8	.041	-.407	.015	-.057	-.071	-.910	-.028	1.553						
9	.075	-.285	-.075	-.084	-.026	.055	-.647	-.294	1.451					
10	-.088	-.103	.033	-.139	-.140	-.246	-.501	.045	-.271	1.466				
11	-.188	-.115	-.217	-.047	-.065	-.099	-.320	-.083	-.053	-.338	1.480			
12	-.245	-.099	-.266	.039	-.082	-.171	-.118	-.052	.013	-.171	-.297	1.439		
13	-.081	.014	.083	-.101	-.081	-.087	-.400	-.025	-.175	.107	-.104	-.279	1.334	
14	.049	-.034	-.022	.042	-.054	-.140	-.069	-.047	.005	-.085	-.243	-.298	-.345	1.397

1	1.000
2	.486 .874
3	.253 .222 .941
4	.265 .243 .193 .912
5	.272 .250 .058 .007 .928
6	.384 .277 .116 .007 .229 .841
7	.374 .420 .231 .281 .165 .203 .694
8	.353 .418 .072 .044 .180 .496 .012 .644
9	.301 .463 .175 .187 .119 .160 .311 .130 .690
10	.377 .366 .131 .218 .202 .225 .294 .006 .128 .682
11	.446 .353 .245 .149 .151 .184 .228 .042 .055 .157 .675
12	.482 .303 .271 .057 .154 .197 .136 .032 .022 .114 .139 .696
13	.365 .284 .127 .185 .167 .183 .272 .040 .089 -.019 .081 .145 .749
14	.345 .307 .176 .085 .186 .244 .187 .046 .041 .087 .168 .184 .185 .715

validation of this extended method.

Step 5: This step is devoted to preparing final second order loadings or rotations. And these final second order rotations were obtained by multiplying Table 3 of orthogonal loadings with T_2 given in Table 4. This procedure produced a table of orthogonal loadings plus loadings for a general and group factors. These are the loadings of the extended method. These final second order loadings, however, are given in Table 5 on page 38.

Step 6: This was more or less a side step. Here the Pearsonian correlations for items were computed according to this formula:

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum Y^2 - (\sum Y)^2]}}$$

Correlations computed were for 78 Inventory items; 17 job categories items; 3 job classifications items; and 5 location items.

Step 7: This step was taken to obtain the correct values from the original item correlations. The necessity for correct values arose because of the spurious elements in the original item correlations due to their inclusion in one of the 14 sub-tests. These correct values were obtained by applying the

TABLE IV

 T_2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	0	W	F	S	M
1	.73	-.06	.03	.02	.01	-.03	.03	.02	.05	.02	.01	.01	.01	.02	.54	.40	-.04	.00	-.04
2	-.39	.61	-.14	-.06	-.01	-.01	.02	-.03	-.04	-.01	-.01	.00	-.01	-.01	.48	.27	.41	-.01	.05
3	-.09	-.18	.89	-.04	.02	.02	.00	-.05	-.02	.00	.01	-.01	-.01	.00	.26	-.24	.24	.01	-.03
4	.01	-.16	-.11	.85	-.05	-.01	.00	.01	-.06	-.01	.00	-.01	.00	.00	.07	-.08	.26	.00	.40
5	-.11	-.18	-.13	.01	.91	-.06	-.07	-.02	.01	-.02	-.01	.00	-.01	.01	.22	-.13	.00	.16	-.09
6	-.12	-.11	-.09	.01	-.21	.59	-.01	.00	.00	.01	.01	.01	.00	.00	.26	-.12	-.28	.64	.02
7	-.06	-.09	-.08	-.20	.01	-.07	.63	.03	-.08	.00	.00	.00	.01	-.01	.25	-.21	-.22	-.22	.58
8	-.05	-.04	-.04	-.03	-.09	-.43	-.03	.84	-.01	-.02	-.02	.00	-.01	-.01	.03	-.02	-.02	.32	.00
9	-.04	-.07	-.05	-.16	-.02	.01	-.28	.01	.87	-.01	.03	.00	.00	-.02	.04	-.07	.09	-.03	.35
10	-.07	-.06	-.07	.01	-.04	-.06	-.04	.00	.00	.98	-.02	-.01	.00	.01	.10	-.07	-.02	-.07	-.06
11	-.10	-.06	-.06	.04	-.08	-.09	-.07	-.01	-.02	-.05	.93	-.01	-.03	-.02	.17	-.10	-.12	-.13	-.13
12	-.14	-.05	-.07	.05	-.11	-.10	-.10	-.03	.01	-.08	-.15	.89	-.02	-.01	.20	-.12	-.14	-.17	-.13
13	-.10	-.09	-.08	.03	-.09	-.08	-.09	-.02	.00	-.08	-.12	-.18	.90	-.01	.18	-.11	-.09	-.13	-.13
14	-.10	-.06	-.07	.02	-.09	-.07	-.06	-.01	.01	-.08	-.10	-.16	-.16	.92	.14	-.10	-.08	-.11	-.08

TABLE V
FINAL SECOND ORDER ROTATIONS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	0	W	F	S	M
1	(.73) -.06	.03	.02	.01 -.03	-.03	.02	.05	.02	.01	.01	.01	.01	.02	(.54)	(.40)	-.04	00	-.04	
2	.02 (.51)	-.11	-.04	00	-.02	.01	-.03	00	00	-.01	00	-.01	00	(.68)	(.43)	(.35)	-.01	.03	
3	.02 -.05	(.82)	-.04	.02	.01	00	-.05	-.01	00	.01	-.01	-.01	.01	(.48)	-.06	(.31)	.01	-.03	
4	.09 -.05	.05	(.76)	-.04	-.02	00	00	-.06	-.01	00	-.01	00	00	(.37)	.05	(.37)	00	(.35)	
5	-.01	-.04	-.10	.01	(.84)	-.06	-.06	-.02	00	-.02	-.01	-.00	-.01	.01	(.49)	.04	.10	(.15)	-.08
6	.04	-.01	-.03	00	.03	(.47)	-.03	-.01	.02	.01	.01	.01	00	.01	(.64)	.07	-.11	(.58)	-.01
7	.01	.04	.03	.07	.10	.05	(.42)	.01	-.07	-.01	00	00	00	00	(.75)	-.01	.08	00	(.50)
8	-.02	.10	-.08	00	-.01	-.01	-.03	(.53)	-.01	-.01	-.01	.01	-.01	00	(.61)	.13	.04	(.55)	.02
9	-.06	.08	-.02	-.04	.04	.01	-.01	.11	(.56)	-.01	.02	00	00	-.02	(.62)	.04	(.21)	.07	(.49)
10	.00	00	-.07	.10	.10	.05	.10	00	.08	(.66)	-.01	-.01	00	00	(.68)	.03	.09	.06	(.24)
11	.04	00	.05	.08	.03	-.02	.05	.02	.01	.12	(.63)	-.01	-.02	-.01	(.76)	.03	.05	00	.10
12	.05	-.02	.09	.05	.01	-.01	-.02	-.01	.02	.05	.02	(.62)	-.02	00	(.78)	.02	-.01	-.01	-.03
13	-.01	-.06	-.08	.11	.01	-.03	.04	.01	.05	-.10	-.03	-.01	(.67)	-.01	(.71)	-.04	-.02	-.04	.12
14	-.08	-.05	-.04	.05	-.01	-.01	00	.01	.03	-.01	.03	.01	.04	(.65)	(.75)	-.06	-.05	00	.01

63
00

Wherry-Winer Iterative procedure (48) to all the original item correlations in each of the 14 sub-tests. Thus, the iterated values were obtained for each of the 14 clusters. Then a constant multiplier for each of the 14 sub-tests was computed and all the original item correlations (exclusive of the iterated values of each of the 14 sub-tests) were multiplied by each of the 14 constant multipliers respectively. In other words, all the original item correlations in the first sub-tests were multiplied by the constant multiplier of the first sub-test; in a similar way, all the original item correlations in the second sub-test were multiplied by the constant multiplier of the second sub-test, and so on. These original item correlations, their iterated values and the constant multiplier for each of the 14 sub-tests are given in Table 6 on page 40. And the iterated values of the original correlations of 78 Inventory items, 17 job category items; 3 broad job classifications items, i.e., A, O, P; and 5 location items are presented in Table 7 on page 43.

Step 8: This step was needed to get a third Transformation Matrix (T_3). This T_3 was obtained by multiplying T_1 given in Table 2 by T_2 as given in Table 4. The purpose of preparing T_3 was to obtain

TABLE VI

ITEM CORRELATION: ORIGINAL, ITERATED VALUES
AND CONSTANT MULTIPLIER FOR EACH OF THE
14 CATEGORIES

Category	Items	Original r	Iterated r	Constant M
1	1	.457	.18	1.287
	27	.675	.60	
	28	.714	.70	
	53	.528	.30	
	54	.651	.54	
2	2	.564	.41	1.184
	3	.625	.51	
	29	.704	.66	
	30	.718	.68	
	55	.614	.50	
	56	.590	.45	
3	4	.718	.62	1.249
	5	.624	.40	
	31	.696	.56	
	57	.725	.64	
4	6	.659	.45	1.104
	32	.783	.68	
	58	.857	.85	
	59	.875	.89	
5	7	.649	.45	1.256
	33	.704	.58	
	34	.771	.78	
	60	.620	.39	
6	8	.699	.65	1.096
	9	.566	.46	
	10	.666	.60	
	35	.696	.65	
	36	.727	.69	
	61	.705	.66	
	62	.592	.50	
	63	.742	.71	

TABLE VI (continued)

ITEM CORRELATION: ORIGINAL, ITERATED VALUES
AND CONSTANT MULTIPLIER FOR EACH OF THE
14 CATEGORIES

Category	Items	Original r	Iterated r	Constant M
7	11	.712	.66	1.119
	12	.555	.43	
	37	.727	.69	
	38	.760	.74	
	39	.560	.43	
	64	.706	.65	
	65	.647	.56	
8	13	.693	.52	1.142
	14	.637	.53	
	40	.676	.59	
	41	.652	.55	
	66	.657	.56	
	67	.766	.75	
9	15	.565	.37	1.162
	16	.711	.63	
	42	.613	.45	
	68	.772	.75	
	69	.780	.77	
10	17	.616	.51	1.235
	18	.526	.35	
	43	.415	.18	
	44	.703	.68	
	70	.665	.60	
	71	.633	.54	
11	19	.481	.32	1.196
	20	.624	.54	
	45	.592	.49	
	46	.595	.49	
	47	.548	.42	
	72	.679	.64	
	73	.642	.58	

TABLE VI (continued)

ITEM CORRELATION: ORIGINAL, ITERATED VALUES
AND CONSTANT MULTIPLIER FOR EACH OF THE
14 CATEGORIES

Category	Items	Original r	Iterated r	Constant M
12	21	.692	.68	1.268
	22	.661	.61	
	48	.535	.37	
	49	.552	.40	
	74	.558	.41	
	75	.487	.29	
13	23	.767	.68	1.151
	24	.685	.51	
	50	.796	.75	
	76	.776	.70	
14	25	.651	.47	1.325
	26	.689	.58	
	51	.663	.50	
	52	.635	.44	

TABLE VII
ITERATED ITEM CORRELATIONS

Cate- gory	Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	.18	.30	.05	.18	.12	.15	.17	.16	.14	.13	.18	.14	.18	.08
	27	.60	.32	.17	.13	.19	.15	.19	.18	.16	.24	.31	.35	.37	.21
	28	.70	.45	.29	.18	.26	.37	.33	.35	.27	.39	.43	.49	.27	.36
	53	.30	.31	.21	.20	.26	.28	.27	.24	.21	.30	.36	.49	.35	.47
	54	.54	.35	.21	.20	.17	.31	.29	.28	.25	.32	.33	.33	.26	.24
2	2	.19	.41	.19	.20	.27	.21	.37	.33	.42	.31	.31	.27	.27	.32
	3	.41	.51	.27	.34	.26	.43	.53	.37	.49	.47	.43	.38	.38	.43
	29	.51	.66	.22	.20	.29	.30	.33	.39	.34	.42	.44	.52	.31	.40
	30	.49	.68	.27	.28	.28	.35	.39	.42	.40	.41	.38	.40	.32	.36
	55	.44	.50	.32	.23	.34	.31	.40	.39	.47	.46	.49	.46	.31	.35
	56	.33	.45	.23	.19	.25	.30	.33	.44	.34	.31	.35	.39	.29	.34
3	4	.20	.23	.62	.19	.09	.19	.27	.16	.27	.21	.32	.34	.15	.19
	5	.28	.25	.40	.16	.17	.19	.31	.18	.27	.25	.35	.36	.23	.28
	31	.19	.25	.56	.24	.15	.21	.32	.22	.29	.28	.36	.41	.23	.35
	57	.22	.31	.64	.33	.21	.22	.36	.22	.28	.28	.37	.45	.27	.35
4	6	.20	.21	.17	.45	.12	.12	.29	.13	.24	.28	.26	.20	.22	.23
	32	.26	.32	.35	.68	.08	.15	.42	.20	.35	.38	.32	.30	.33	.29
	58	.32	.38	.36	.85	.22	.23	.55	.31	.44	.49	.46	.38	.38	.34
	59	.31	.38	.33	.89	.20	.19	.52	.26	.44	.47	.43	.34	.39	.44

TABLE VII (continued)
ITERATED ITEM CORRELATIONS

Cate- gory	Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14
9	15	.18	.40	.28	.35	.27	.25	.56	.30	.37	.48	.39	.43	.47	.40
	16	.23	.43	.29	.27	.29	.33	.52	.38	.63	.51	.44	.35	.41	.39
	42	.30	.40	.27	.23	.23	.34	.41	.44	.45	.50	.39	.43	.32	.35
	68	.32	.54	.36	.34	.32	.36	.55	.48	.75	.52	.50	.43	.40	.46
	69	.28	.48	.29	.34	.28	.33	.57	.40	.77	.52	.48	.39	.43	.47
7	11	.35	.50	.39	.34	.38	.40	.66	.41	.58	.56	.51	.47	.51	.49
	12	.21	.34	.27	.23	.39	.41	.43	.35	.36	.51	.42	.41	.32	.43
	37	.31	.41	.33	.41	.27	.34	.69	.34	.59	.53	.50	.46	.52	.45
	38	.40	.51	.37	.48	.28	.37	.74	.36	.60	.63	.61	.54	.56	.52
	39	.24	.33	.30	.27	.29	.30	.43	.28	.37	.43	.43	.40	.39	.41
	64	.32	.47	.58	.51	.26	.34	.65	.39	.62	.56	.52	.39	.49	.45
	65	.40	.46	.38	.34	.33	.40	.56	.37	.49	.64	.55	.58	.39	.55
10	17	.24	.35	.18	.36	.24	.28	.43	.28	.39	.51	.38	.33	.32	.30
	18	.16	.25	.07	.25	.24	.24	.37	.23	.29	.35	.22	.24	.24	.35
	43	.25	.24	.12	.19	.21	.22	.23	.23	.22	.18	.32	.44	.30	.35
	44	.41	.48	.35	.30	.33	.39	.53	.41	.55	.68	.55	.51	.32	.44
	70	.36	.42	.36	.33	.35	.42	.61	.39	.52	.60	.59	.50	.38	.49
	71	.30	.36	.21	.21	.37	.39	.47	.31	.42	.54	.53	.43	.31	.43

TABLE VII (continued)

ITERATED ITEM CORRELATIONS

Cate- gory	Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14
6	8	.37	.36	.23	.12	.34	.65	.35	.58	.31	.38	.43	.51	.34	.43
	9	.43	.22	.07	.09	.23	.46	.25	.36	.13	.30	.32	.38	.22	.30
	10	.27	.26	.16	.15	.29	.60	.36	.51	.30	.38	.36	.34	.35	.42
	35	.30	.37	.31	.16	.34	.65	.41	.61	.32	.40	.38	.41	.35	.47
	36	.27	.44	.28	.18	.42	.69	.46	.68	.51	.49	.46	.41	.42	.51
	61	.29	.39	.21	.19	.38	.66	.42	.63	.42	.51	.41	.46	.41	.53
	62	.34	.29	.22	.12	.28	.50	.27	.40	.22	.36	.33	.43	.18	.33
	63	.39	.42	.31	.17	.38	.71	.49	.65	.46	.50	.48	.50	.40	.49
8	13	.32	.45	.21	.23	.35	.48	.39	.52	.44	.38	.43	.38	.35	.45
	14	.29	.53	.22	.20	.28	.43	.35	.53	.39	.36	.33	.37	.32	.33
	40	.35	.43	.28	.16	.33	.59	.37	.59	.37	.41	.42	.49	.31	.43
	41	.19	.37	.21	.17	.30	.50	.35	.55	.43	.38	.35	.33	.35	.43
	66	.35	.34	.12	.13	.30	.55	.26	.56	.27	.30	.34	.39	.23	.33
	67	.34	.48	.22	.21	.34	.67	.42	.75	.50	.46	.45	.43	.36	.45
5	7	.18	.25	.10	.10	.45	.26	.24	.28	.22	.30	.23	.21	.20	.25
	33	.32	.31	.22	.14	.58	.32	.30	.26	.24	.37	.36	.44	.28	.40
	34	.19	.32	.15	.13	.78	.34	.32	.36	.31	.34	.32	.31	.29	.33
	60	.26	.28	.12	.07	.39	.25	.31	.26	.25	.31	.28	.28	.30	.29
11	19	.45	.31	.20	.10	.25	.26	.20	.25	.19	.26	.32	.39	.19	.33
	20	.39	.42	.32	.26	.33	.37	.47	.34	.41	.52	.54	.56	.37	.47
	45	.30	.38	.37	.30	.22	.33	.49	.34	.47	.47	.49	.39	.45	.52
	46	.35	.26	.31	.18	.23	.28	.32	.24	.15	.40	.49	.50	.25	.35

TABLE VII (continued)
ITERATED ITEM CORRELATIONS

Category	Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14
11 (cont.)	47	.25	.35	.21	.26	.26	.27	.40	.31	.34	.40	.42	.39	.36	.42
	72	.33	.48	.38	.34	.34	.40	.56	.45	.59	.60	.64	.50	.43	.54
	73	.30	.38	.38	.33	.28	.30	.51	.31	.39	.51	.58	.45	.37	.47
12	21	.38	.41	.38	.22	.34	.45	.46	.41	.43	.51	.52	.68	.42	.52
	22	.41	.41	.34	.18	.36	.37	.38	.36	.38	.43	.48	.61	.42	.56
	48	.29	.32	.13	.16	.20	.34	.34	.27	.23	.41	.36	.37	.28	.44
	49	.45	.34	.18	.17	.37	.30	.32	.30	.24	.36	.40	.40	.31	.41
	74	.32	.32	.69	.23	.14	.23	.33	.27	.29	.30	.40	.41	.24	.32
	75	.30	.26	.15	.22	.20	.23	.29	.22	.26	.31	.34	.29	.44	.45
13	23	.36	.41	.30	.38	.31	.44	.54	.41	.49	.46	.51	.55	.68	.60
	24	.28	.28	.20	.29	.24	.23	.38	.23	.30	.29	.32	.40	.51	.47
	50	.39	.42	.24	.32	.42	.40	.56	.42	.49	.52	.53	.56	.75	.63
	76	.36	.42	.29	.33	.31	.33	.52	.35	.47	.40	.44	.49	.70	.54
14	25	.38	.34	.30	.18	.34	.36	.34	.34	.25	.44	.44	.59	.39	.47
	26	.22	.35	.24	.24	.44	.32	.45	.33	.40	.39	.44	.43	.47	.58
	51	.26	.38	.36	.19	.39	.45	.48	.44	.46	.46	.55	.46	.42	.50
	52	.32	.29	.14	.21	.22	.27	.29	.23	.24	.32	.35	.45	.44	.44
	77	.20	.20	.05	.22	.15	.13	.22	.20	.21	.20	.19	.22	.27	.17
	78	.20	.24	.16	.25	.15	.20	.35	.25	.35	.27	.30	.30	.37	.26

TABLE VII (continued)
ITERATED ITEM CORRELATIONS

Jobs	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	-.16	-.04	-.09	-.18	-.13	-.05	-.08	-.01	-.04	-.10	-.13	-.19	-.15	-.08
2	.17	.10	.01	.04	-.04	.05	-.03	.04	-.06	.01	.03	.12	.01	.04
3	.11	.08	.00	-.06	.01	-.02	-.06	.07	-.04	-.01	.00	.02	.00	-.05
4	-.15	.04	-.07	-.09	.11	.07	-.01	.06	.02	.12	.01	.06	-.06	.20
5	-.03	-.11	-.08	-.04	-.03	-.07	-.11	-.06	-.04	-.04	-.02	-.14	-.04	-.15
6	-.02	-.07	-.10	-.08	.04	.07	-.02	.02	-.04	.01	-.02	-.09	-.01	-.08
7	.06	-.07	-.14	.04	-.07	-.01	-.01	-.06	-.02	.02	-.10	-.16	-.07	-.12
8	.09	-.01	-.15	-.05	-.04	-.01	-.01	-.04	-.05	.03	-.03	-.01	.01	-.02
9	.02	-.02	.01	-.04	-.02	-.06	-.08	-.03	-.01	-.15	-.04	.02	-.02	-.02
10	.02	.13	.19	-.03	-.02	.09	.10	.13	.11	.05	.08	.08	.07	.00
11	.03	.00	-.10	-.03	-.01	.03	.01	-.03	.08	.03	-.06	-.07	.05	.03
12	-.09	-.02	.01	.07	-.17	-.04	.01	.06	.03	-.07	-.06	-.12	-.09	-.16
13	-.23	-.07	.04	-.06	-.11	-.19	-.15	-.11	-.04	-.22	-.05	-.01	-.04	-.08
14	.13	.21	.27	.13	.18	.15	.21	.16	.25	.24	.18	.16	.12	.16
15	-.08	-.13	.09	.01	.01	-.11	-.04	-.15	-.06	-.05	-.14	.01	.02	.04
16	.06	.03	.06	.02	.11	.10	.11	.01	-.02	.03	.18	.19	.11	.16
17	.01	.00	.03	.13	.13	-.03	.10	-.05	-.07	.07	.06	.08	.05	.07
A	.05	.03	.07	.11	.17	.05	.15	-.03	-.06	.07	.18	.20	.12	.18
O	.10	.07	-.07	.00	.02	.04	-.09	.06	.00	.00	-.01	.06	-.01	.10
P	-.13	-.08	-.01	-.09	-.15	-.07	-.04	-.03	.05	-.05	-.01	-.21	-.09	-.22

TABLE VII (continued)
ITERATED ITEM CORRELATIONS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	.09	.12	.10	.06	-.03	.16	.10	.12	.16	.09	.06	.06	.09	.03
2	-.08	-.11	.15	-.07	.05	-.07	-.06	-.05	-.23	-.03	-.06	-.10	-.16	-.10
3	-.03	-.01	-.09	-.06	-.13	.03	-.05	-.01	.00	.00	-.01	-.04	-.08	.00
4	.05	.03	.18	-.01	.14	.09	.07	.05	.10	.12	-.02	.08	.08	.14
5	-.03	.00	.05	.04	-.11	-.15	-.08	-.09	.04	-.16	-.03	.02	.06	-.03

orthogonal loading plus a general and group factors for the items. This T_3 is given in Table 8 on page 50.

Step 9: This step was devoted to getting orthogonal loadings plus a general and group factors for the iterated values of all the items. This had to be done because the iterated values of the items were still oblique loadings. This end was accomplished by multiplying the iterated values of the items with T_3 as given in Table 8. These final orthogonal plus a general and group factors loading of the iterated values of the items are given in Table 9 on page 51.

Step 10: This step is devoted to the analysis and interpretation of the final loadings of all the items. Hence the content and nature of the factors will be identified in Chapter IV.

Step 11: This step is taken and devoted to pointing out the theoretical implications of the results of the item analysis of the SRA Employee Inventory and also the job items and location items. These theoretical implications will be explained in terms of the dimensions of morale.

TABLE VIII

 T_3

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	0	W	F	S	M
1	1.06	-.28	.07	-.07	-.01	-.11	.04	.09	.15	-.02	-.12	-.20	-.05	.08	.05	.39	-.20	-.07	-.01
2	-.28	.96	-.23	-.16	-.14	.07	-.06	-.36	-.24	-.08	-.11	-.09	.01	-.04	.17	.61	.51	-.23	-.28
3	-.01	-.09	1.04	-.20	.04	.00	-.07	-.04	-.05	.07	-.17	-.25	.07	-.01	.08	-.12	.33	.03	-.22
4	.06	-.11	-.06	1.03	-.04	.05	-.24	-.05	-.10	-.14	-.04	.04	-.10	.05	-.07	.03	.38	.09	.17
5	-.03	-.11	-.07	.04	1.08	-.16	-.14	-.08	.01	-.14	-.04	-.05	-.08	-.03	.05	-.02	.15	.05	-.17
6	.00	-.02	.01	.07	-.11	1.17	-.17	-.76	.08	-.18	.00	-.10	-.04	-.11	.09	.02	-.17	.63	-.10
7	.08	.02	.02	-.23	.13	.02	1.18	.04	-.68	-.43	-.23	-.01	-.32	-.06	.12	-.13	-.26	-.14	.76
8	-.04	-.04	-.04	.00	-.12	-.65	.05	1.30	-.27	.03	-.10	-.03	-.03	-.06	.01	.00	-.04	.52	-.07
9	-.02	-.07	-.04	-.24	-.01	.05	-.38	.01	1.26	-.27	.02	.04	-.15	-.02	-.01	-.05	.15	.01	.54
10	-.05	-.07	-.07	.00	-.02	-.04	-.02	.01	.01	1.46	-.33	-.17	.12	-.06	.06	-.05	.03	-.03	-.03
11	-.07	-.05	-.05	.04	-.06	-.08	-.06	-.01	-.04	-.02	1.46	-.23	-.09	-.25	.14	-.08	-.10	-.11	-.12
12	-.14	-.03	-.06	.06	-.10	-.10	-.10	-.03	.01	-.07	-.16	1.38	-.23	-.28	.20	-.11	-.15	-.17	-.12
13	-.10	-.10	-.08	.04	-.09	-.09	-.09	-.03	-.01	-.08	-.12	-.19	1.26	-.33	.19	-.11	-.09	-.14	-.14
14	-.14	-.09	-.10	.02	-.13	-.10	-.08	-.01	.02	-.11	-.15	-.23	-.23	1.28	.20	-.14	-.11	-.16	-.11

8

TABLE IX
ITEM FACTOR LOADINGS

Categories	Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	O	W	F	S	M
1	1	.05	.11	-.08	.08	.01	.02	.01	-.01	-.04	-.05	.04	-.01	.06	-.08	(.20)	(.16)	.10	.01	.02
	27	(.40)	-.03	.01	-.01	.02	-.12	-.03	.02	.02	.05	.03	.04	(.20)	-.05	(.38)	(.23)	-.01	-.11	-.10
	28	(.43)	.00	.07	-.03	.02	-.01	.01	.02	.01	.10	.03	.08	-.07	.05	(.51)	(.28)	.00	.02	-.07
	53	.03	-.01	-.02	.08	.04	-.02	-.05	-.04	-.02	.02	.03	(.19)	.05	(.19)	(.47)	.04	.00	-.05	-.08
	54	(.34)	.00	.04	.02	-.01	.04	.02	.01	.03	.07	.01	-.01	.01	-.01	(.39)	(.22)	.02	.04	.01
2	2	-.05	.13	-.04	-.03	.10	-.08	.04	.10	.11	-.02	.00	-.02	-.02	.07	(.39)	.09	(.15)	.01	.14
	3	.11	.10	-.02	.05	.01	.10	.09	-.04	.08	.03	-.01	-.06	-.01	.09	(.54)	(.16)	.12	.05	(.19)
	29	(.15)	(.23)	-.09	-.04	.01	-.10	-.04	.03	.01	.11	.02	.14	-.04	.06	(.55)	(.32)	.14	-.06	-.09
	30	(.16)	(.26)	-.03	.00	.01	-.03	.00	.05	.02	.05	-.06	-.01	-.02	.04	(.53)	(.33)	(.21)	.02	.00
	55	.13	.10	.04	-.04	.10	-.08	-.02	.07	.14	.12	.09	.06	-.05	-.01	(.53)	(.17)	.14	.00	.06
	56	.06	.12	-.01	-.02	.02	-.07	.00	(.17)	.02	-.01	.00	.07	-.01	.05	(.45)	(.16)	.10	.08	.01
3	4	.04	-.02	(.50)	-.05	-.02	.03	.00	-.05	.05	.01	.06	.06	-.07	-.04	(.33)	-.01	(.19)	-.01	.01
	5	.09	-.03	(.24)	-.04	.03	-.03	.04	-.02	.04	.00	.08	.07	-.03	.03	(.37)	.02	.08	-.05	.03
	31	-.02	-.04	(.39)	.02	-.01	-.03	.00	.00	.02	.03	.04	.09	-.05	.10	(.41)	-.05	(.16)	-.03	.01
	57	-.01	-.02	(.44)	.08	.04	-.03	.00	-.04	-.04	-.01	.00	.11	-.03	.07	(.45)	-.02	(.23)	-.04	-.01
4	6	.07	-.03	.01	(.31)	.00	-.03	.02	-.02	.00	.05	.02	-.02	.00	.07	(.26)	.04	(.15)	-.04	(.17)
	32	.08	-.02	.13	(.44)	-.09	-.04	.03	.00	-.01	.06	-.06	-.01	.04	.05	(.36)	.05	(.29)	-.06	(.25)
	58	.10	-.05	.08	(.58)	.01	-.06	.05	.05	-.04	.06	.02	.00	-.02	.02	(.46)	.05	(.32)	-.02	(.32)
	59	.09	-.05	.04	(.63)	-.01	-.08	.01	.01	-.01	.04	-.01	-.05	-.01	(.17)	(.45)	.05	(.33)	-.07	(.32)

TABLE IX (continued)
ITEM FACTOR LOADINGS

Categories Items																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	0	W	F	S	M	
9 15	-.10	.06	.00	.11	.07	-.07	(.18)	.02	-.09	.10	-.06	.07	.13	.03 (.52)	-.01	.11	-.07	(.20)		
16	-.06	.07	.01	-.04	.07	-.01	.06	.06	(.25)	.10	.02	-.06	.05	.03 (.51)	.03	.14	.03	(.28)		
42	.02	.05	.02	-.01	.00	-.05	.03 (.15)	.11	(.20)	-.03	.08	-.01	.01 (.48)	.07	.08	.09	.12			
68	-.02	.10	.03	-.03	.06	-.06	.00	.13	(.34)	.03	.03	-.02	-.05	.07 (.58)	.09	(.21)	.04	(.29)		
69	-.04	.07	-.02	-.02	.03	-.03	.03	.07	(.38)	.03	.03	-.04	-.01	.10 (.56)	.05	(.17)	.00	(.37)		
7 11	.01	.04	.06	.00	.13	-.01	(.16)	.02	.08	.06	-.02	-.03	.07	.06 (.64)	.05	.13	.00	(.25)	S ₂	
12	-.06	.00	.01	.04	(.18)	.06	.04	-.02	.02	(.19)	.02	.03	-.03	.10 (.51)	-.01	.06	.09	.06		
37	.02	-.01	.03	.08	.04	-.01	(.21)	.01	.10	.02	.01	.02	.08	.03 (.59)	-.01	.09	-.05	(.37)		
38	.05	.02	.02	.12	.01	-.02	(.21)	-.02	.05	.10	.06	.03	.07	.04 (.68)	.04	.12	-.09	(.34)		
39	-.02	-.01	.06	.06	.09	-.01	.05	-.02	.04	.10	.06	.03	.07	.08 (.49)	-.01	.07	-.02	.10		
64	.02	.00	(.27)	.12	.02	-.02	.12	.04	.11	.08	-.01	-.14	.08	.05 (.59)	.01	(.26)	.00	(.30)		
65	.05	.00	.06	.05	.06	.00	.08	-.02	.07	(.25)	.02	.11	-.07	.14 (.63)	.05	.09	-.03	.14		
10 17	.01	.03	-.06	(.15)	.05	.01	.06	.00	.05	(.22)	.01	.00	.02	-.01 (.42)	.05	.12	.01	(.19)		
18	-.02	.01	-.12	.11	.10	.02	.10	.01	.01	.07	-.09	.00	-.03	(.17)(.33)	.01	.04	.02	(.17)		
43	.03	-.02	-.06	.09	.02	-.05	-.05	.02	.03	-.10	.08	(.24)	.03	.09 (.38)	.03	-.02	-.03	-.02		
44	.08	.03	.04	-.01	.07	-.02	.05	.04	(.15)	(.33)	.05	.05	-.11	.04 (.59)	.09	.12	.02	(.17)		
70	.04	-.02	.06	.03	.11	.02	.14	.01	.07	(.17)	.12	.02	-.08	.08 (.61)	.02	.07	.02	(.22)		
71	.02	.00	-.06	.00	(.15)	.05	.07	-.05	.08	(.20)	(.16)	.03	-.08	.07 (.53)	.03	.01	.03	.12		

TABLE IX (continued)
ITEM FACTOR LOADINGS

Categories Items																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	O	W	F	S	M
6 8	.07	-.02	-.02	-.03	.05	(.17)	-.04	.11	-.01	.02	.04	.13	-.02	.04	(.55)	.08	-.08	(.33)	-.08
9	(.24)	-.08	-.09	.02	.05	.13	.02	.04	-.07	.07	.04	.10	-.04	.04	(.38)	.11	(-.15)	(.20)	-.07
10	.03	-.06	-.06	.02	.04	(.19)	.01	.09	.00	.04	.01	-.03	.04	.10	.47	.01	-.09	.32	.01
35	.01	.00	.06	-.03	.06	(.16)	.02	.14	-.06	.02	-.05	-.02	.00	.12	(.54)	.05	-.02	(.36)	-.04
36	-.07	.03	-.03	-.05	.10	.08	-.03	(.17)	.11	.04	.00	-.07	.02	.10	(.60)	.04	.02	(.37)	.05
61	-.04	-.01	-.09	.01	.07	(.15)	-.03	.15	.05	.12	-.06	.02	.03	.14	(.58)	.03	-.03	(.34)	.01
62	.11	-.02	.03	-.01	.06	(.15)	-.03	.02	-.01	.11	.00	.13	-.12	.05	(.42)	.09	-.04	(.23)	-.08
63	.06	-.02	.02	-.06	.07	.18	.03	.13	.05	.06	.00	.02	-.02	.06	(.62)	.07	-.04	(.35)	.04
8 13	.02	.07	-.07	.02	.08	.04	-.03	.13	.09	-.02	.05	-.02	-.02	.11	(.52)	.11	.07	(.20)	.05
14	-.01	(.19)	-.05	-.02	.02	.02	-.02	(.15)	.03	.01	-.06	.02	.02	.00	(.47)	(.19)	.13	(.19)	.01
40	.04	.05	.01	-.04	.04	.11	-.04	.14	.02	.05	.00	.10	-.06	.06	(.54)	.11	.01	(.29)	-.05
41	-.09	.05	-.05	-.02	.04	.07	-.05	(.17)	.11	.02	-.02	-.04	.04	.11	(.47)	.03	.04	(.27)	.05
66	.10	.02	-.09	.01	.05	.11	-.06	(.17)	.01	.00	.03	.09	-.08	.03	(.43)	.14	-.05	(.33)	-.07
67	.01	.07	-.08	-.02	.01	.11	-.05	(.27)	.10	.03	.01	-.01	-.04	.05	(.57)	.11	.02	(.41)	.04
5 7	.00	.01	-.08	-.01	(.32)	-.03	-.01	.05	.02	.08	-.03	-.04	-.01	.05	(.32)	.05	.06	.10	-.02
33	.06	-.04	-.01	.01	(.40)	-.03	-.04	-.06	.01	.08	.01	.11	-.04	.11	(.46)	.05	.04	.02	-.10
34	-.06	.00	-.10	.00	(.63)	-.06	-.05	.03	.01	-.01	.00	-.01	-.01	-.04	(.42)	.04	.10	.14	-.05
60	.05	.01	-.07	-.07	(.24)	-.04	.05	.03	.04	.05	-.01	-.01	.06	.04	(.37)	.06	.00	.02	.02

52

TABLE IX (continued)
ITEM FACTOR LOADINGS

Categories Items																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	0	W	F	S	M
11 19	(.23)	.00	.03	-.03	.07	-.03	-.05	.01	.03	.05	.04	.10	-.05	.11 (.39)	(.16)	.00	.00	-.11	
20	.07	.00	.03	.02	.08	-.01	.04	-.02	.05	(.16)	.11	.14	-.04	.08 (.59)	.06	.05	-.02	.06	
45	.01	-.01	.10	.03	-.02	-.02	.06	.03	.10	.09	.07	-.07	.06	(.18)(.55)	.00	.09	-.02	(.15)	
46	.11	-.06	.12	.04	.04	-.03	.05	-.01	-.12	(.20)	(.19)	(.17)	-.05	.03 (.46)	.02	-.02	-.03	-.08	
47	-.01	.02	-.04	.07	.05	-.06	.05	.04	.02	.08	.07	.05	.04	.11 (.47)	.03	.06	-.02	.09	
72	-.03	.02	.05	.03	.06	-.04	.04	.07	(.15)	(.16)	(.18)	-.01	-.03	.11 (.64)	.03	.12	.02	(.18)	45
73	.01	-.01	.11	.08	.06	-.05	.10	.01	-.02	(.16)	(.18)	.00	-.02	.10 (.55)	.00	.09	-.05	.12	
12 21	.03	-.03	.08	-.02	.05	.02	.00	.01	.07	.12	.04	(.27)	-.01	.08 (.64)	.02	.01	.03	.01	
22	.06	-.02	.05	-.03	.09	-.05	-.05	.01	.08	.07	.04	(.20)	.02	(.18)(.61)	.05	.02	-.03	-.06	
48	.04	.02	-.09	.02	-.01	.06	.06	-.03	-.04	(.16)	.02	.04	-.02	(.19)(.44)	.06	-.04	.02	.01	
49	(.20)	-.03	-.04	.02	(.17)	-.06	.01	.02	-.01	.07	.06	.04	.00	.13 (.47)	.13	-.01	.00	-.05	
74	.09	-.02	(.51)	-.04	-.03	-.05	.06	.03	.00	.06	.04	.02	-.03	.04 (.44)	.04	(.19)	-.01	-.04	
75	.07	-.05	-.06	.09	.00	-.04	-.01	.00	.04	.04	.04	-.06	(.20)	(.20)(.42)	.03	-.01	-.06	.02	
13 23	.00	-.04	-.02	.03	.01	.00	.05	.02	.09	-.03	.02	.07	(.28)	.13 (.67)	-.01	-.02	-.01	.11	
24	.03	-.06	-.03	.13	.04	-.06	.04	-.01	.01	-.07	-.05	.07	(.22)	(.17)(.47)	-.01	.02	-.08	.08	
50	.01	-.07	-.11	.08	.11	-.08	.05	.05	.07	.02	.00	.05	(.34)	.14 (.70)	-.01	-.02	-.05	.11	
76	.02	-.02	-.02	.08	.04	-.07	.05	.02	.07	-.08	-.04	.04	(.34)	.11 (.62)	.02	.05	-.07	.13	

54

TABLE IX (continued)
ITEM FACTOR LOADINGS

Categories Items																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	0	W	F	S	M
14 25	.07	-.05	.05	.02	.09	-.04	-.02	.01	-.04	(.15)	.02	(.22)	.05	.10(.55)	.04	-.02	.00	-.10	
26	-.09	-.02	-.05	.04	(.21)	-.06	.03	.01	.05	-.03	.04	.02	.09	(.24)(.55)	-.04	.04	-.03	.07	
51	-.06	-.01	.07	-.05	.14	.00	.03	.05	.09	.05	(.15)	.00	.03	.09(.59)	-.02	.04	.10	.07	
52	.06	-.03	-.08	.09	.00	-.02	-.03	-.03	.02	.03	.02	(.15)	(.17)	.14(.46)	.04	-.03	-.06	-.03	
77	.06	.00	-.09	.12	.03	-.07	.01	.08	.03	.00	-.02	.05	.11	-.02(.25)	.06	.04	.00	.08	
78	.02	-.02	-.02	.08	-.01	-.05	.05	.07	.09	-.03	.03	.05	.13	-.02(.35)	.00	.04	-.01	(.17)	

TABLE IX (continued)
ITEM FACTOR LOADINGS

Job Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	0	W	F	S	M
1	-.12	.09	-.01	(.15)	-.08	.03	.04	.06	.01	-.01	-.03	-.11	-.06	.04	-.14	.00	-.02	.05	.02
2	.13	.04	-.01	.04	-.08	.01	-.04	-.01	-.06	.01	-.02	.10	-.02	.01	.06	.11	-.01	-.01	-.11
3	.09	.06	-.01	-.06	-.01	-.08	-.03	.09	-.03	.03	-.01	.01	.03	-.06	.01	.10	.01	.01	-.10
4	(-.22)	.06	-.12	-.06	.07	.01	-.05	-.01	.01	.13	-.04	.05	-.12	(.22)	.06	-.06	-.02	.04	-.06
5	.04	-.05	-.03	-.02	.02	-.01	-.05	.02	.06	.05	.10	-.10	.06	-.11	-.12	-.01	-.02	.02	.00
6	.02	-.04	-.08	-.04	.06	.07	.02	.00	-.01	.04	.03	-.08	.04	-.08	-.05	-.01	-.08	.10	.00
7	.14	-.04	-.09	.06	-.02	.07	.05	-.02	.03	.07	-.07	-.12	-.02	-.04	-.11	.05	-.03	.04	.11
8	.10	-.01	-.14	-.02	-.05	.01	.04	-.02	-.02	.07	-.03	.01	.03	-.01	-.02	.05	-.09	-.04	.01
9	.03	.00	.03	-.03	-.02	-.04	-.07	.01	.06	(-.16)	.02	.07	.00	.01	-.03	.02	.00	-.03	-.05
10	-.04	.08	(.15)	-.12	-.06	.01	.04	.05	.01	-.02	.00	-.01	.03	-.10	.10	.02	.06	.05	.01
11	.04	-.01	-.10	-.04	-.01	.06	-.01	-.05	.12	.01	-.08	-.09	.06	.05	-.01	.02	-.04	.00	.07
12	-.03	.05	.05	.04	-.14	.00	.05	.13	-.01	-.05	.00	-.05	-.05	-.12	-.11	.01	.07	.08	.12
13	(-.20)	.05	.08	-.02	-.07	-.10	-.09	.01	.05	(-.16)	.10	.13	.04	-.04	-.10	-.09	.07	-.10	-.06
14	.00	.03	(.15)	-.03	.10	.00	.00	.00	.08	.08	-.04	-.05	-.04	.02	(.23)	.03	.13	.03	.06
15	-.04	-.10	.13	.03	.06	-.03	-.02	-.08	.00	-.01	(-.17)	.06	.06	.08	-.04	-.10	.02	-.10	-.01
16	-.01	-.05	.01	.02	.06	.03	.04	-.09	-.10	-.08	.13	.11	.00	.05	(.16)	-.05	-.08	-.04	-.05
17	-.01	-.05	.00	.13	.13	-.05	.07	-.06	(-.16)	.03	.00	.05	-.01	.04	.06	-.04	.02	-.08	.00
A	-.02	-.06	.00	.11	.13	-.01	.08	-.11	(-.18)	-.04	.10	.12	-.01	.08	(.17)	-.06	-.04	-.10	-.04
O	.06	.03	-.10	.03	-.03	-.02	-.12	.03	.05	.00	-.03	.05	-.03	.12	.03	.08	-.01	.02	-.10
P	-.05	.02	.06	-.10	-.08	.02	.04	.06	.09	.03	.13	(-.16)	.02	(-.18)	-.14	-.03	.02	.04	.11

5

TABLE IX (continued)

ITEM FACTOR LOADINGS

Location Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	0	W	F	S	M
1	.04	.04	.04	-.03	-.10	.10	-.01	-.01	.09	-.01	-.04	-.04	.03	-.06	.10	.05	.04	.09	.06
2	-.01	-.04	(.22)	-.03	.13	-.03	.07	.02	(-.23)	.11	-.02	-.08	-.08	-.02	-.10	-.05	.03	.03	-.13
3	-.02	.04	-.07	-.04	-.14	.07	-.01	-.02	.05	.05	.04	-.01	-.07	.04	-.04	.01	-.05	.03	.01
4	.00	-.06	.14	-.05	.11	.04	-.04	-.03	.07	.06	(-.18)	-.02	.02	.11	.11	-.04	.04	.03	-.01
5	-.03	.02	.06	.03	-.10	-.09	-.09	-.01	.10	(-.17)	.03	.08	.10	-.02	-.04	.00	.07	-.13	.00

CHAPTER IV

RESULTS: IDENTIFICATION OF FACTORS

The "extended" orthogonal analysis of the SRA Employee Inventory items of this investigation demonstrated a large general factor, four sub-general factors and fourteen group factors. The content and nature of these factors are identified below. Parenthetically, the level of significance for these factor loadings of all the items was arbitrarily fixed at .15 on the assumption that the sample of this study was fairly large and representative.

Generalized Over-all Attitude Factor (GOA)

The loadings on the general factor were distributed as follows:

Loadings	Number of Items
.70-.79	1
.60-.69	11
.50-.59	26
.40-.49	24
.30-.39	13
.20-.29	<u>3</u>
	78

The three highest items were:

Loadings Items

.78	50	I really feel part of this organization
.68	38	Management here is really interested in the welfare of employees
.67	23	The longer you work for this company the more you feel you belong

while the three lowest items were:

Loadings Items

.26	6	I understand what the company benefit program provides for employees
.25	77	Filling in this Inventory is a good way to let management know what employees think
.20	1	The hours of work here are o.k.

If we try to differentiate these two groups of statements
we might cite the following characteristics:

High	Low
a. vague and general:	a. specific:
organization	benefit program
management	hours
	questionnaire
b. attitudinal:	b. factorial:
feel	understanding of
interested	what is provided

hours of work

We can conclude, therefore, that this general factor deals with a Generalized Over-all Diffused Attitude toward the company as a whole.

Over-all Opinion of Working Conditions (WC)

The items on this sub-general factor with significant loadings were:

Loadings Items

.33	30	For my kind of job, working conditions are o.k.
.32	29	Poor working conditions keep me from doing my best in my work
.28	28	They expect too much work from us around here
.23	27	I often feel worn out and tired on my job
.22	54	There is too much pressure on my job
.19	14	My boss sees that we have the things we need to do our jobs
.17	55	Some of the working conditions here are annoying
.16	1	The hours of work here are o.k.
.16	3	Management is doing its best to give us good working conditions
.16	56	I have the right equipment to do my work
.16	19	I am often bothered by sudden speed-ups

or unexpected slack periods in my work

The above statements emphasize the opinions of the employees about the adequacy of working conditions (items 30, 55), management's interest in the working conditions (item 3), adequacy of equipment (item 14, 56), effects of these working conditions on work efficiency (item 29), reasonable hours of work (item 1), and also absence of physical (items 27, 28) and mental (item 54) pressure. We can conclude, therefore, that this sub-general factor deals with the Over-all Opinion of Working Conditions.

General Satisfaction with Financial Reward
for Effort (FR)

The items in this sub-general factor with significant loadings were:

Loadings Items

.33	59	The company's employee benefit program is o.k.
.32	58	I am satisfied the way employee benefits are handled here.
.29	32	Compared with other companies, employee benefits here are good
.26	64	Management here has a very good personnel policy
.23	57	My pay is enough to live on comfortably
.21	30	For my kind of job, working conditions

are o.k.

- .21 68 This company operates efficiently and smoothly
- .19 4 In my opinion, the pay here is lower than in other companies
- .19 74 I am very much underpaid for the work that I do
- .17 69 Management really knows its job
- .16 31 I am paid fairly compared with other employees
- .15 2 Management does everything possible to prevent accidents in our work
- .15 6 I understand what the company benefit program provides for employees
- .15 9 My boss is always breathing down our necks: he watches us too closely

These statements cover topics of adequacy of benefit program (item 59), benefit administration (item 58), benefit program in comparison with other companies (item 32), understanding of the benefit program (item 6), over-all adequacy of pay (item 57), pay in comparison with other companies (item 4), management's interest in employees (items 30, 2) and effectiveness of personnel policies in terms of pay and benefits (items 64, 68, 74, 69, 31, 9).

We can, therefore, infer that this sub-general factor represents statements expressing General Satisfaction with Financial Reward for Effort.

Over-all General Opinion about
Immediate Supervisor (IS)

This sub-general factor had these following items with significant loadings:

Loadings Items

.41	67	My boss has the work well organized
.37	36	My boss gets employees to work together as a team
.36	35	My boss has always been fair in his dealings with me
.35	63	My boss lives up to his promises
.34	61	My boss really tries to get our ideas about things
.33	8	My boss is too interested in his own success to care about the needs of employees
.33	66	My boss knows very little about his job
.32	10	My boss gives us credit and praise for work well done
.29	40	My boss keeps putting things off; he just lets things ride

- .27 62 My boss ought to be friendlier toward
employees
- .23 9 My boss is always breathing down our
necks: he watches us too closely
- .20 13 My boss sees that employees are properly
trained for their jobs
- .20 14 My boss sees that we have the things we
need to do our jobs
- .19 41 My boss lets us know exactly what is
expected of us

These statements express how an effective supervisor structures the situation such as work well-organized (item 67), knowledge of job (item 66), things done in time (item 40), supply of adequate equipment (item 14), letting know what is expected (item 41), emphasizing proper training (item 13), and making employees work together (item 36), and also how a supervisor acquires efficiency from consideration of employees by being fair (item 35), friendly (item 62), praising the work well done (item 10), keeping his promises (item 63), giving encouragement (items 9, 61) interest in employee welfare (item 8). We can, however, label this sub-general factor as one dealing with the Over-all General Opinion about Immediate Supervisor.

Over-all Confidence in Management (CM)

The items with significant loadings on this sub-general factor were:

Loadings	Items	
.37	37	I have confidence in the fairness and honesty of management
.37	69	Management really knows its job
.34	38	Management here is really interested in the welfare of employees
.32	58	I am satisfied with the way employee benefits are handled here
.32	59	The company's employee benefit program is o.k.
.30	64	Management here has a very good personnel policy
.29	68	This company operates very efficiently and smoothly
.28	16	Management here sees to it that there is cooperation between departments
.25	32	Compared with other companies, the employee benefits here are good
.25	11	Management does here everything it can to see that the employees get a fair break on the job

.22	70	They have a poor way of handling employee complaints here
.20	15	Management here is really trying to build the organization and make it successful
.19	3	Management is doing its best to give us good working conditions
.19	17	Management tells employees about company plans and developments
.18	72	You always know where you stand with this company
.17	18	They encourage us to make suggestions for improvements here
.17	44	Management keeps us in the dark about things we ought to know
.17	78	I think some good may come out of filling in an Inventory like this one
.15	45	Long service really means something in this organization

This sub-general factor is characterized by the kind of statements which express competence, interest and fairness of management. The competence of management arises from its organizing ability (items 69, 68, 16, 64), its handling of employee benefit policies (items 58, 59, 32), adequacy of two-way communication (items 44, 70, 17, 72, 78). The interest of management is represented by items 38, 15, 11 and 3. The items 37, 18, and 45 indicate the fairness of

management. A summary of these characteristics enables us to describe this sub-general factor as the Over-all Confidence in Management.

1. Work Load (L)

The items on this group factor with significant loadings were:

Loadings Items

.43	28	They expect too much work from us around here
.40	27	I often feel worn out and tired on my job
.34	54	There is too much pressure on my job
.24	9	My boss is always breathing down our necks: he watches us too closely
.23	19	I am often bothered by sudden speed-ups or unexpected slack periods in my work
.20	49	Everybody in this organization tries to boss us around
.16	30	For my kind of job working conditions are o.k.
.15	29	Poor working conditions keep me from doing my best in my work

These items cover the employees' reactions to work pressure (items 28, 29, 54, 9, 19, 49), fatigue (item 27) and adequacy of working conditions (item 30). Of course, most of these items are characterized by demands or pressures

but these are not job demands. Job demands imply the utilization or requirement of special abilities and aptitudes which are neither represented nor are they emphasized by a single item in this group factor. Thus, the phrase "Job Demands" is very catching but not very expressive of the content and nature of this factor. The items, however, are concerned with mental and physical pressure for accomplishment and therefore, the category-name of Job Demands is not only misleading but also meaningless. The idea of work, physical and mental pressure is very succinctly conveyed by a single phrase, i.e., work load. Hence this group factor is identified as Work Load.

2. Environmental Setting (E)

This group factor was constituted of these following three items of significant loadings:

Loadings Items

.26	30	For my kind of job, working conditions are o.k.
.23	29	Poor working conditions keep me from doing my best in my work
.19	14	My boss sees that we have the things we need to do our job

These items express only the adequacy of working conditions (items 30, 29) and adequacy of equipment (item 14). There is no item which demonstrates the comparison of these

working conditions with other companies, indicates the effects of working conditions on work efficiency, emphasizes the management's concern with and interest in working conditions and also represents other related problems. We therefore conclude from the content and nature of these three items that this group factor deals with the employees' reactions about Environmental Setting.

3. Direct Pay (P)

This group factor had on it these following items with the significant loadings:

Loadings Items

.51	74	I am very much underpaid for the work that I do
.50	4	In my opinion, the pay here is lower than in other companies
.44	57	My pay is enough to live on comfortably
.39	31	I am paid fairly compared with other employees
.27	64	Management here has a very good personnel policy
.24	5	They should do a better job of handling pay matters here

These statements deal with pay matters such as over-all adequacy of pay (items 74, 57), pay in comparison with other companies (item 4), pay in comparison with other

employees (item 31), and finally, pay administration (items 5, 64). Now we can infer from the content of these items that this group factor deals with employees' satisfaction with Direct Pay.

4. Fringe Benefits (B)

The items with significant loadings on this group factor were:

Loadings Items

.63	59	The company's employee benefit program is o.k.
.58	58	I am satisfied the way employee benefits are handled here
.44	32	Compared with other companies the employee benefits here are good
.31	6	I understand what the company benefit program provides for the employees
.15	17	Management tells employees about company plans and developments

These statements demonstrate the adequacy of employee benefit program (item 59), its adequacy in comparison with other companies (item 32), its administration (item 58) and effective two-way communication about it (items 6, 17). These employee benefits are different from direct pay: they may not necessarily be financial in nature. These are, however, benefits not obtained directly for effort

but are rather enjoyed as a result of being an employee of a company. Hence, the content and nature of items on this factor enables us to suggest that this group factor is concerned with Fringe Benefits.

5. General Satisfaction with Fellow Workers (FW)

The items with significant loadings on this group factor were:

Loadings Items

.63	34	The people I work with get along well together
.40	33	A few of the people I work with think they run the place
.32	7	The people I work with help each other out when someone falls behind
.24	60	The people I work with are very friendly
.21	26	There are plenty of good jobs here for those who want to get ahead
.18	12	If I have a complaint to make, I feel free to talk to someone up-the-line
.17	49	Everybody in this organization tries to boss us around
.15	71	You can say what you think around here

These statements indicate congenial atmosphere (item 34), friendliness (item 60), freedom of expression (item 71), adequacy of communication (item 12), help given and gained

(item 7), absence of bossiness (items 33, 49) and opportunity to go ahead without pushing someone else aside or absence of friction (item 26). This content and nature of the above items does not justify the present category-identification, i.e., Friendliness and cooperation of fellow employees. In other words, the items convey a larger meaning than the one which is implied by friendliness and cooperation of employees. This also means that another category can be developed from these items. Thus it is a mixed category. But we can conclude from the content and nature of items on this factor that this group factor is characterized by General Satisfaction with Fellow Workers.

6. Supervisor's Consideration of Employees (C)

The items with significant loadings on this group factor were:

Loadings Items

.19	10	My boss gives us credit and praise for work well done
.18	63	My boss lives up to his promises
.17	8	My boss is too interested in his own success to care about the needs of employees
.16	35	My boss has always been fair in his dealings with me

- .15 61 My boss really tries to get our ideas
 about things
- .15 62 My boss ought to be friendlier toward
 employees

These statements indicate and emphasize that an effective supervisor praises the work well done (item 10), lives up to his promises (item 63), cares about the needs of the employees (item 8), is fair in his dealings (item 35), encourages employees (item 61), and finally is friendly toward employees (item 62). These statements, however, do not deal directly with "supervisor-employee interpersonal relations." On the contrary, they only represent the opinions of the employees about what their supervisor is like. The category name, thus,--"Supervisor-employee interpersonal relations"--does not express the content and nature of the above items: hence, it is very inadequate. All the items on this factor, however, can be summarized by this statement that this group factor deals with the Supervisors' Consideration of Employees.

7. Belief in Justice and Interest of Management (J)

These following items of significant loadings were on this factor:

Loadings Items

- .21 37 I have confidence in the fairness and
 honesty of management

.21	38	Management here is really interested in the welfare of employees
.18	15	Management here is really trying to build this organization and make it successful
.16	11	Management does everything it can to see that the employees get a fair break on the job

These items measure the attitude of employees toward certain aspects of the human relations skills of management such as its fairness or justice (items 11, 37) and its interest in the expansion and success of organization (item 15) and consequently, interest in the welfare of employees (item 38). These aspects of human relations skills of management, i.e., its fairness toward, and its interest in the welfare of, employees, however, contribute to confidence in management but they do not make the whole story. The content of the above items, therefore, neither supports nor does it justify this category-identification, i.e., Confidence in Management. We can conclude that this group factor deals with the Belief in Justice and Interest of Management.

8. Supervisor's Imposition of Structure (S)

The following were the items of significant loadings on this group factor:

Loadings Items

.27	67	My boss has the work well organized

- .17 66 My boss knows very little about his job
- .17 41 My boss lets us know exactly what is
 expected of us
- .17 36 My boss gets employees to work together
 as a team
- .17 56 I have the right equipment to do my work
- .15 42 Management fails to give clear-cut orders
 and instructions
- .15 61 My boss really tries to get our ideas
 about things
- .15 14 My boss sees that we have the things we
 need to do our jobs

These items measure the opinions of employees about how an effective supervisor imposes structure on things like work organization (item 67), knowing his job (item 66), giving clear-cut orders and instructions (items 41, 42), making people work together (item 36), providing adequate equipment and facilities (items 56, 14), and getting employees' ideas about things (item 61). It appears that the items 42, 14 and 61 have significant loadings according to criterion but do not add to the measurement of how the supervisor imposes structure because this function is already being fulfilled by items 41, 56, and 36. We can, however, infer from the content of the above items that

this group factor is concerned with the Supervisor's Imposition of Structure.

9. Belief in Organizing Ability (0)

The items of significant loadings on this group factor are:

Loadings	Items	
.38	69	Management really knows its job
.34	68	This company operates efficiently and smoothly
.25	16	Management here sees to it that there is cooperation between departments
.15	44	Management keeps us in the dark about things we ought to know
.15	72	You always know where you stand with this company

These items are concerned with the general efficiency of the company operation (items 69, 68), the cooperation that exists between departments (item 16), and the adequacy of two-way communication (items 44, 72). These three kinds of items covering general efficiency, departmental cooperation and two-way communication, however, contribute to effectiveness of administration but do not justify "effectiveness of administration" as the heading of the category. It just does not convey the meaning represented by items. The content of the items on this factor,

however, deals with and emphasizes the opinions of the employees about the organizing ability and hence this group factor is called Belief in Organizing Ability.

10. Adequacy of Two-way Communication (T)

The items of significant loadings on this group factor were:

Loadings Items

.33	44	Management keeps us in the dark about things we ought to know
.25	65	Management ignores our suggestions and complaints
.22	17	Management tells employees about company's plans and developments
.20	71	You can say what you think around here
.20	42	Management fails to give clear-cut orders and instructions
.20	46	You can get fired around here without much cause
.19	12	If I have a complaint to make, I feel free to talk to someone up-the-line
.17	70	They have a poor way of handling employee complaints here
.16	20	Changes are made here with little regard for the welfare of employees

- .16 72 You always know where you stand with this company
- .16 73 When lay-offs are necessary, they are handled fairly
- .16 48 I have plenty of freedom on the job to use my own judgment
- .15 25 I have little opportunity to use my abilities in this organization

These items can be summarized under three headings: (1) how effectively the management communicates about things employees ought to know, such as company plans and developments, etc. (items 44, 17, 42, 20, 25); (2) how efficiently and fairly the employees' complaints and suggestions, etc., are handled, i.e., personnel policy (items 72, 65, 70, 73); and (3) how much freedom is given to employees to express their ideas (items 71, 46, 12, 48). We can, therefore, infer from the content of items that this group factor deals not with "Adequacy of communication" as such but with Adequacy of Two-way Communication.

11. General Satisfaction With Personnel Actions (PA)

The items with significant loadings on this group factor are:

Loadings Items

- .19 46 You can get fired around here without much cause

- .18 72 You always know where you stand with this
 company
- .18 73 When layoffs are necessary, they are
 handled fairly
- .16 71 You can say what you think around here
- .15 51 The people who get promotions around here
 usually deserve them

These statements deal with fair discharge and layoffs (items 46, 73), knowledge of standing (item 72), freedom of expression (item 71) and fairness in promotions (item 51). This content of these items emphasizes the fairness of personnel actions in dealings with employees. This fairness in dealings with employees, however, does contribute to "the security of job and work relations" but does not justify this as the heading of the category. Thus, the Security of Job and Work Relations as the category title is misleading and inadequate. In order to do justice to the content and nature of the above items on this factor, we should conclude that this group factor measures employees' General Satisfaction with Personnel Actions. Now, it is desirable to point out that the item loadings on this group factor in spite of being significant are uniformly low. This category, therefore, demands further attention and development.

12. Over-all Satisfaction with Job Assignment (JA)

Items with significant loadings, in order of magnitude, on this group factor are:

Loadings Items

.27	21	Compared with other employees, we get very little attention from management
.24	43	I know how my job fits in with other work in this organization
.22	25	I have little opportunity to use my abilities in this organization
.20	22	Sometimes I feel that my job counts for very little in this organization.
.19	53	My job is often dull and monotonous
.17	46	You can get fired around here without much cause
.15	52	I can learn a great deal on my present job

The items on this factor deal with the role of the individual. They measure the attitudes of employees about job description (item 53), relative importance of job (item 43), equality of status with other employees (item 21), value and meaningfulness of job (item 22), opportunity for growth on the job (items 25, 52) and fairness of discharge (item 46). Even though some of these items express status and recognition, they are actually concerned with the job: they just indicate status and recognition in relation to

the job concerned. The items on this factor, therefore, emphasize job assignment and do not in any way justify "status and recognition" as the category-title. This group factor, then, is identified as Over-all Satisfaction with Job Assignment.

13. General Pride in Association with Company (PC)

The items on this group factor with significant loadings, in order of magnitude, are:

Loadings Items

.34	50	I really feel part of this organization
.34	76	I'm proud to work for this company
.28	23	The longer you work for this company, the more you feel you belong
.22	24	I have great deal of interest in this company and its future
.20	75	I'm really doing something worthwhile in my job
.20	27	I often feel worn out and tired on my job
.17	52	I can learn a great deal on my job

These statements represent employees' feelings of belonging (item 50), of participation (item 23), of pride and interest in the company (items 76, 24), of doing something worthwhile (item 75), of absence of fatigue (item 27), and of growth on the job (item 52). The content and nature of these items, however, indicates that none of the items on

this factor emphasizes "identification with the company" as such: they merely point out a vague and general pride in the company as a result of being associated with it. This group factor, therefore, is identified as General Pride in Association with the Company.

14. General Satisfaction with Personal Development (PD)

The items with significant loadings on this group factor, in order of magnitude, are:

Loadings Items

.24	26	There are plenty of good jobs here for those who want to get ahead
.20	75	I am really doing something worthwhile in my job
.19	48	I have plenty of freedom on the job to use my own judgment
.19	53	My job is often dull and monotonous
.18	45	Long service really means something in this organization
.18	22	Sometimes I feel that my job counts for very little in this organization
.17	24	I have a great deal of interest in this company and its future
.17	59	The company's employee benefit program is o.k.

- .17 18 They encourage us to make suggestions for
improvement here

These items cover such topics as chances for development (items 26, 75, 48, 18), suitability of job (item 53), relative importance of job (item 22), recognition of long service (item 45), interest in the company (item 24), and adequacy of benefit program (item 59). These items, however, do not directly emphasize "Opportunity for Growth and Advancement" as such: they rather stress the over-all satisfaction with the past and present personal accomplishments and also accentuate the hope of such future possibilities. This group factor, therefore, is identified as General Satisfaction with Personal Development.

Job Category Items

Job items with significant loadings on particular factors were:

Items	Factors							
	General	1	3	4	9	10	11	14
Jobs	GOA	L	P	B	O	T	PA	PD
1				-.15				
4		-.22						.22
9						-.16		
10			.15					
13		-.20				-.16		
14	.23		.15					
15							-.17	
16	.16							
17					-.16			

Job Item 1: This job category identifies food service engineers--people who work in the restaurants, kitchens and tea rooms of the department stores. This job item, however, has negative significant loadings ($-.15$) on group factor 4, i.e., "Fringe Benefits" (B). This negative relationship between food service engineers and Fringe Benefits indicates either one or two things: (1) that the food service engineers are not so much concerned with fringe benefits--adequate or inadequate or (2) that their benefit program is inadequate, poorly administered and inadequately communicated. We can, however, draw a plausible conclusion from the temporary nature of the job and the uncertainty of such benefits as tips, etc., that the people on this job are not so much concerned with fringe benefits.

Job Item 4: This job category identifies buyers in a department store. This item, however, has significant loadings of $-.22$ on the group factor of Work Load (L) and of $.22$ on the group factor of "Personal Development" (PD). This negative relationship with work load and positive relationship with personal development of this job is very well explained by the nature of this job. The buyers are not generally watched very closely and they also make good money with adequate sales. These buyers, therefore, are not under constant work, physical and mental pressure and

they are also generally satisfied with the past and present personal accomplishment.

Job Item 9: The people in this category were office employees, generally clerks. This item has significant but negative loadings (-.16) on the group factor of adequacy of "Two-Way Communication" (T). This negative relationship between office employees and this group factor implies that the management does not communicate with office employees about things they ought to know: there is no effective and efficient personnel policy and also the employees are not given freedom to express their ideas. These employees, however, belong to Oahu, territory of Hawaii, and it is quite probable that the adequacy of Two-Way Communication is not emphasized in Hawaii.

Job Item 10: This job category is composed of employees who stitch mattresses. This job item has significant loadings (.15) on the group factor "Direct Pay" (P). This positive relationship between the sewers and direct pay indicates that they are satisfied with the over-all adequacy of Direct Pay--its administration, its comparison with other employees in the same company and also with the employees of other companies, etc.

Job Item 13: This job category is composed of retail salesmen (milk truck drivers). This item, however, has significant loadings of $-.20$ on group factor "Work Load" (L) and of $-.16$ on group factor "Two-Way Communication." This negative relationship between this job and the above two group factors is explained by the fact that these milk truck drivers by virtue of their job are neither under work, physical and mental, pressure nor are they concerned with the necessity and adequacy of Two-Way Communication.

Job Item 14: This job category is made of mill workers in a salt mine. This item has significant loadings of $.23$ on the general attitude factor (GOA) and of $.15$ on the group factor of "Direct Pay" (P). These positive loadings on the above two factors can, however, be explained by way of this inference that these mill workers have a favorable generalized over-all attitude toward the company as a whole and are also satisfied with the over-all adequacy of direct pay.

Job Item 15: This category is composed of service engineers (treaters and shooters) in engineering wells of Texas. These service engineers do not seem to be natural scientists; hence, they are not job or profession oriented. This job item, however, has significant loadings ($-.17$) on the group factor of "General Satisfaction with Personnel Actions" (PA). This negative relationship between service

engineers and the personnel actions clearly indicates that the employees are not satisfied with such personnel actions as arbitrary discharge and lay-offs, unfair promotions and lack of freedom, etc.

Job Item 16: This job category identifies top level supervisors. As this item has significant loadings (.16) on the General Factor (GOA), it can, therefore, be concluded that these top level supervisors have a favorable generalized over-all attitude toward the company as a whole.

Job Item 17: This job category was formed of lower level plant supervisors. This job item has significant loadings (-.16) on group factor, "Belief in Organizing Ability" (O). This negative relationship between lower level plant supervisors and belief in the organizing ability of management arises from the fact that these supervisors do not have opportunity to demonstrate their organizing ability and most probably are in conflict with management.

3 Job Classification Items

It was mentioned in the previous chapter how the 17 job categories were classified under three broad headings of (1) administrators (A); (2) office workers (O); and (3) production workers (P). Classification (O) did not have any significant loadings on any of the nineteen factors.

The loadings of classification items A and P on the following factors were:

Factors				
Items	General	9	12	14
Jobs	GOA	0	JA	PD
A	.17	-.18		
P			-.16	-.18

Job "A" Item: This job classification item has positive significant loadings of .17 on the General factor (GOA) and negative significant loadings of -.18 on group factor of "Belief in Organizing Ability" (0). This positive relationship between these top-lower level supervisors and the General factor is explained by this fact that these supervisors are generally company oriented and therefore indicates a favorable general attitude toward the company. This explanation agrees with the positive significant loadings (.16) of job category 16 (top level supervisors) on the General factor (GOA). And this negative relationship between these top-lower level supervisors and the group factor of "Belief in Organizing Ability" (0) agrees with and has the same explanation as the job category 17 (lower level supervisors) with negative significant loadings of -.16 on this very group factor (0). In other

words, these top-lower level supervisors do not get opportunity to demonstrate their organizing ability and, therefore, are not concerned with organization problems and are probably in conflict with the management. This classification item, however, does not produce different results from the one indicated by job categories items 16 and 17.

Job "P" Item: This job classification item identifies production workers. This item, however, has negative significant loadings of $-.16$ on the group factor of "Over-all Satisfaction with Job Assignment" (JA) and of $-.18$ on the group factor of "General Satisfaction with Personal Development" (PD). These negative loadings of item "P" on group factor "JA" imply that these product workers are not satisfied with such aspects of job assignment as the job itself, its relative importance, its status value relative to other employees and opportunity for growth on it, etc. These negative loadings of this very item "P" on the group factor "PD" indicate that these product workers are not satisfied with such aspects of past and present personal development or accomplishment as the suitability of job, its relative importance, recognition of long service and adequacy of benefit program, etc. This job classification item (P), however, produced different results from those of job categories items--1, 5, 6, 7, 8, 10, 12, 13, 14, 15--dealing with product workers separately in the sense that

this item did not have any positive or negative significant loadings on any of the factors of the above job categories items and vice versa. But the product workers in this sample, either taken as a whole (P) or taken separately on different jobs (job categories above), have this in common: they gripe against different factors but do not complain about direct pay. We can specifically conclude, therefore, from the above job categories items and also from the job classification item (P) that the production workers in general are more concerned with the job assignment and personal development on the job--including personnel actions, two-way communication, work load and fringe benefits--than with the direct pay.

Location Items

It was mentioned in the previous chapter how the sample was drawn from different parts of the country and also from abroad. The items which had the significant loadings on the following factors were:

Items	Factors			
	3	9	10	11
Location	P	O	T	PA
2	22	-.23		
4				-.18
5			-.17	

Location Item 2: This item identifies the employees from the East. This item, however, has significant loadings of .22 on the group factor of "Direct Pay"(P) and also of -.23 on the group factor of "Belief in the Organizing Ability"(O). Thus it appears that the employees in the East are satisfied with direct pay but do not believe in the organizing ability of the management.

Location Item 4: This item is concerned with the employees in the South. This item, however, has negative significant loadings (-.18) on the group factor of "General Satisfaction Personnel Actions" (PA). What this negative relationship between location and personnel actions implies is that the employees in the South are generally dissatisfied with such aspects of personnel actions as arbitrary discharge and layoffs, no knowledge of one's standing, absence of freedom of expression and unfairness in promotions, etc.

Location Item 5: This item deals with the employees from abroad, i.e. Oahu in Hawaii. This item has negative significant loadings (-.17) on the group factor of "Two-Way Communication" (T). This negative relationship between this location and the Two-Way Communication clearly indicates that in Oahu the management does not communicate

with employees' complaints and suggestions are not handled fairly and, finally, that the employees are not given enough freedom to express their ideas. It is plausible that the principles of industrial efficiency are not as yet being applied in this developing territory.

CHAPTER V

DISCUSSION AND INTERPRETATION

The nineteen factors resulting from the item factorization appear to be much more numerous than those found in most previous studies. The single exception is the study by Wherry (44) on the same SRA Inventory. The only other study even approaching these number of factors was the Wherry (45) study on the General Motor "My Job Contest" items where 17 factors were found. This gain is more apparent than real, however. The factor studies of Baehr (4), Ash (2), Schooler (38) and Fleishman (11) and others were carried out using sub-tests instead of items as the basic unit. Another cause was the much smaller sample used in all studies except this one and the Wherry "My Job Contest" study. These two contributing causes will be discussed in turn.

The factorial studies using sub-tests and items respectively will use the terms specific, group, sub-general and general in different senses, viz.,

Factors including	Basic Variable	
	Item	Sub-tests
All tests; all items	general*	general*
Some tests; many items	sub-general*	group*
One test; a few items	group*	specific
One item	specific	--

Only the names starred are the legitimate goals of each type of analyses, since specific factors are undetermined and, therefore, not capable of identification.

Even when the reliabilities of the sub-tests are introduced into the analyses as was done by Baehr (4) and Wherry (44) in the previous analyses of the SRA Inventory, the factors are unnameable. Even the group factors in such a sub-test analysis are apt to be named incorrectly. A sub-test may be loaded on a given factor due to only one or two items having relationship. Even when such a sub-test gets a higher loading on a factor, this may be due to some rather than all the items having projection on a given factor axis. Thomson (40) indicates how Thurstone pointed out the difficulty of identifying factors in second order factor analysis. In one very real sense, the factorization of sub-test scores rather than item scores is already a second order analysis if one uses items as the base. When we discuss the finding of our factors by prior

investigators, this difficulty will account for the frequently erroneous names assigned to a given factor and the comparison between our group and sub-general factors which arose in the Baehr (4) study.

The small samples used by many investigators have also been a deterrent to finding many factors. In the Baehr (4) study, for example, when Baehr inserted the reliabilities in the diagonals of the matrix, her small sample precluded her extraction of all the factors. When Wherry (44) refactored the same data using communalities in the matrix, he was able to extract only four factors and to rotate in a general. He found the 14 specific factors only by subtracting the factorial communalities from the reliabilities. Thus, caution engendered by mathematical rules for the stopping of factorization, coupled with actual unreliability of the correlations, causes most such studies to be fairly non-productive of the dimensions of morale. These unreliable correlations are also apt to cause spuriously high or low loadings on group or general factors on occasion. Hence, for the two reasons discussed we will not expect too great verification of the dimensions found in this study by previous investigators. We turn now, however, to a discussion of such verification for each factor.

FIGURE 1

RELATIONSHIP OF THE FACTORS TO EACH OTHER

The general factor (Generalized Over-all General Attitude--GOA) deals with a general diffused attitude toward the company as a whole. Theoretically, it represents the third order abstraction. Methodologically, it is useful because it accounts to a large extent for the correlation matrix, i.e., it represents a large variance because it loads all the items: this should, however, not be taken to mean that it alone accounts sufficiently for the correlation matrix. Practically, this general factor is almost always implied in the interpretation of results. At times, it is found but is denied (38); at other times it is extracted but is explained in terms of such lingo as needs (15); still at other times, it is avoided and consequently, is not extracted (2 and 4). Wherry's (44) study and this investigation are the only studies where this general factor is found, claimed and also justified. However, this general factor is identified as "over-all satisfaction with need fulfillment" by Gordon (15), "satisfaction with

company in general" or "halo" phenomenon, by Schooler (38) and "General Bias or Attitude factor" by Wherry (44).

The sub-general factor, "Over-all Opinion of Working Conditions (WC)," has been named "General Working Conditions" by Baehr (4) and "Working Conditions and Requirements" by Wherry (44). The group factor, "Work Load (L)," has been identified as "Job Satisfaction" by Baehr (4) and as "Job Demands" by Wherry (44). The group factor, "Environmental Setting (E)," is called "Working Conditions" by Wherry (44 and 45).

The sub-general factor, "General Satisfaction with Financial Reward for Effort (FR)," is identified as "Job Rewards" by Ash (2); as "Personal Rewards" in group I and "Material Rewards" in group II by Baehr (4); as "Financial Rewards" by Wherry (44) and as "Financial Rewards for Labor" by Wherry (45). The group factor, "Direct Pay" (P) is called "Personal Recognition" by Baehr (4) and "Pay" by Wherry (44). The group factor, "Fringe Benefits," (B) is identified as "Well Rounded Employee Services Program" by Wherry (45) and also as "Employee Benefits" by Wherry (44).

The sub-general factor, "Over-all Confidence in Management (CM)," has been identified as "Management Effectiveness" by Ash (2); as "Company Operations" by Baehr (4) and as "Effective Management and Administration" by Wherry (44). The group factor "Belief in Justice and Interest of

Management (J)," is named "Confidence in Management" by Wherry (44) and also "Fair Management Bargaining Practices" by Wherry (45). The group factor, "Belief in Organizing Ability (O)," is identified as "Job Operations" by Baehr (4) and as "Effectiveness of Administration" by Wherry (44). Another group factor, "Adequacy of Two-Way Communication (T)" is described as "Self Expression" by Gordon (15) and as "Adequacy of Communication" by Wherry (44).

The sub-general factor, "Over-all Opinion about Immediate Supervision (IS)," has been identified as "Immediate Supervision" by all the persons who investigated (2, 4, 8 and 44). The group factor, "Supervisor's Consideration of Employees (C)," has been called, "Consideration of Employees," by Fleishman (11); "Satisfaction with the Supervision," by Katz (22) and Schooler (38); "Supervisor-Employee Relations" by Wherry (44) and "Sensitivity to the Rights and Needs of Human Beings" by Comrey (8). The other group factor, "Supervisor's Imposition of Structure (S)," has been identified as "Personal Qualities of Technical Competence" by Comrey (8); as "Imposition of Structure" by Fleishman (11) and "Technical Competence of Supervision" by Wherry (44).

The group factor, "General Satisfaction with Fellow Workers (FW)," has been identified as "Regard for People" by Ash (2); as "Friendliness and Cooperation of Fellow

Employees," by Baehr (4) and as "Fellow Employees" by Wherry (44).

The group factor, "General Satisfaction with Personnel Actions (PA)," has been identified as "Personal Development" by Baehr (4); as "Fair Supervision of Wage and Promotion Policies," by Wherry (45) and also as "Security" by Wherry (44).

The group factor, "Over-all Satisfaction with Job Assignment (JA)," has been identified as "Need for Self Respect," by Gordon (15); as "Job Satisfaction" by Katz (22) and Schooler (38); as "Status and Recognition" by Wherry (44) and also as "Job Assignment," by Wherry (45).

The group factor, "General Pride in Association with Company (PC)," has been identified as "Integration in the Organization," by Baehr (4); as "Sound Company Product," by Wherry (45) and also as "Identification with the Company" by Wherry (44).

The group factor, "General Satisfaction with Personal Development (PD)," has been identified as "Job Satisfaction" by Ash (2); as "Need for Social Recognition of Status," by Gordon (15); as "Mobility or Progress," by Katz (22) and Schooler (38); as "Opportunity for Growth and Advancement" by Wherry (44) and also as "Personal Accomplishment" by Wherry (45).

The next section of the discussion deals with the

interpretation of morale test results in general. Suppose, for example, that we were to simply score the items with significant loadings in each of our 14 group factors, and then attempted to treat these scores as actual measures of the factors and interpreted them as such. In order to show how misleading this would be we have summed the significant loadings for the items in each group for the group, sub-general, and general factor and multiplied by $100/N$ to indicate the per cent of variance of the sub-test accounted for by each of three causes. Variance not thus accounted for consists of two types of error: (1) loading of some of the items on other irrelevant group or sub-general factors and (2) random error of measurement. The results appear in the table below:

TABLE X
PER CENT MEASURE OF VARIANCE BY FACTORS

Factor	Per Cent Variance Accounted for by			
	Group	Sub-General	General	Error: random or irrelevant
L	8	5	21	66
E	5	8	27	60
P	16	4	19	61
B	21	6	16	51
J	4	9	37	50
O	7	7	33	53
T	4	2	29	65
C	3	9	26	62
S	3	8	26	63
FW	11		21	68
PA	3		31	66
JA	4		27	69
PC	7		30	63
PD	4		23	73

It should be immediately apparent that to try to interpret the response to such a set of items as being predominantly a measure of the group factor would be very foolish and misleading. In most cases the variance due to the group factor is less than 10% (in 11 of 14 sub-tests), whereas almost universally the general factor contributes over 20% of the variance (12 of 14 sub-tests). In addition, for the 9 sub-tests belonging to sub-general factors in 5 cases the sub-general contributes as much variance as the group factor.

In a similar fashion, any attempt to score the sub-general tests would lead to scores much more influenced by the general factor than by the sub-general factor. In addition, the actual group contributions would not tend to cancel out due to their small number.

Only in the case of a general factor score does there seem to be any real possibility of determination by simple adding of item responses. The general factor is almost always the dominant contributor and the group and sub-general scores being independent of one another and numerous others might be expected to cancel out leaving a really interpretable score.

It would appear that only a very elaborate statistical method involving the partialing out of higher order factors could possibly permit the interpretation of group factor

scores. Considering the present impurity and unreliability of items, this is probably not feasible at present.

Turning to the present scoring procedures for the SRA Inventory it would appear that the practice of reporting 14 area scores is not justifiable. This is partly due to the fact that the items are (1) not all properly placed in the right groups, (2) tend to appear in more than one group factor, and (3) tend to measure the sub-general factor better than the group factors. While (1) above could be overcome by use of the present analysis if it were not for (2), the third fault seems insurmountable at present. It is recommended, however, that only an over-all score be employed, or that a much more complex scoring system be attempted.

CHAPTER VI
SUMMARY OF CONCLUSIONS

An orthogonal item factorization of the SRA Employee Inventory demonstrated one general factor, four sub-general factors and fourteen group factors. These factors were:

GOA: Generalized Over-all General Attitude Factor

WC: Over-all Opinion of Working Conditions

L: Work Load

E: Environmental Setting

FR: General Satisfaction with Financial Reward for
Effort

P: Direct Pay

B: Fringe Benefits

CM: Over-all Confidence in Management

J: Belief in Justice and Interest of Management

O: Belief in Organizing Ability

T: Adequacy of Two-Way Communication

IS: Over-all General Opinion about Immediate Supervi-
sion

C: Supervisor's Consideration of Employees

S: Supervisor's Imposition of Structure

FW: General Satisfaction with Fellow Workers

PA: General Satisfaction with Personnel Actions

JA: Over-all Satisfaction with Job Assignment

PC: General Pride in Association with Company

PD: General Satisfaction with Personal Development

With respect to interpretation of morale surveys we can conclude that the General Factor (such as GOA) is the best measure and perhaps the only one for which a score obtained by direct addition of the responses is justified.

Attempts to measure group factors (such as L, E, P, etc.) directly will fail because the group score will almost certainly reflect as much sub-general (WC, IS, etc.) and more general (GOA) opinion than that directly connected with the factor per se.

Obviously any attempt to interpret a single item at face value as is done frequently by those stressing interviewing techniques, is even more certain to be misleading than is the attempt to interpret a group score.

Items appearing in present unfactored inventories are frequently loaded on several group as well as higher order factors and are consequently of little use as specific measuring devices.

The present practice of scoring 14 sub-area scores on the SRA Inventory is not justified both because the present groupings of items are not factorially pure or proper and also because of the difficulty in interpreting any group factors discussed above.

As to future research the writer would suggest a

program along the following lines:

(1) Following the present interpretation of the group factors, new items should be developed to avoid the ambiguity, with respect to group score, now shown for far too many items and to build up the reliability of the group scores.

(2) If any attempt is made to measure these group scores, even with such an improved set of items, that it be based upon factoring out any general and sub-general factor influence.

(3) All attempts to verify the relationship of these specific morale measures to more objective measures should be delayed until the basic measurements are greatly improved.

Thomson (40) pointed out that Thurstone did not calculate the loadings of the original tests with the other orthogonal second order factor, the factor specifics. Thomson, however, worked out the above by the same method in case of "A g plus an orthogonal simple structure." This method has been further extended in this study to include the sub-generals as well. Thus, the method suggested by Thomson has been further extended and has also been demonstrated working effectively and smoothly with one general, 4 sub-generals and 14 group factors. We can, therefore, conclude that this study is methodologically an extension

and validation of the method suggested by Thomson. This may, however, be regarded as a distinct step toward reconciliation of Thurstone's and Spearman's schools.

The job items either separately or in combination do not demonstrate a definite and clear-cut relationship between the dimensions of morale and jobs; but point to the following tentative conclusions:

- (a) The higher up one goes in the organizational hierarchy, the more favorable one's attitude towards the company as a whole becomes. For example, the supervisors and administrators demonstrate a more favorable attitude toward the company than do the office and production employees.
- (b) All kinds of employees gripe against some other things but are satisfied with the pay they earn for their effort.
- (c) Supervisors and administrators (top and lower levels combined) do not believe in the organizing ability of the management as such: possibly they are in conflict with the management.
- (d) There is a very strong evidence that the production workers in general are very much concerned with such aspects of job assignment, and also of the personal development on the job, as personnel

actions, two-way communication, work load and fringe benefits.

- (e) The office employees as a whole are different from the production workers on the one hand and the supervisors and administrators on the other hand in the sense that they neither indicate gripes against anything nor demonstrate enthusiasm for the company as such. They seem to be fairly satisfied with the circumstances and hence show an intermediate position in relation to all the dimensions of morale.

The employees of this sample demonstrate the following in relation to location:

- (a) The employees in the East are better paid than anywhere else. But these employees do not believe in the organizing ability of the management.
- (b) The employees in the South are generally dissatisfied with the personnel actions.
- (c) The employees in Hawaii territories do not think that the two-way communication system of the company as such is adequate.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Ash, P. The Interrelationships Among Measures of Morale, Temperament and Other Factors in an Industrial Situation. American Psychologist, 1953, 8, 313.
2. Ash, P. The SRA Employee Inventory - A Statistical Analysis. Personnel Psychology, 1954, 7, 337-364.
3. Baehr, Melany E. A Simplified Procedure for the Measurement of Employee Attitudes. Journal of Applied Psychology, 1953, 37, 163-67.
4. Baehr, Melany E. A Factorial Study of the SRA Employee Inventory. Personnel Psychology, 1954, 7, 319-336.
5. Bare, Roderick H. "Simultaneous Rotation for Meaningfulness and Transformation to Orthogonality of Oblique Factors in the First Order Domain through the Factor Analysis and Orthogonal Rotation of the Intercorrelations of the 'Primaries' in the Second Order Domain." Unpublished Manuscript.
6. Bellows, Roger M. Psychology in Business and Industry. 2nd. Edition. New York: Prentice Hall, Inc., 1954.
7. Burns, R. K. Employee Morale--Its Meaning and Measurement. Industrial Relations Center Research Reprint Series. Chicago: University of Chicago, 1952.
8. Comrey, A. L., Wallace and Wilson. Factors Affecting Organizational Effectiveness VI: A Survey of Aircraft Workers. Personnel Psychology, 1955, 8, No. 1
9. Evans, C. E. and Laseau, L. V. My Job Contest. Personnel Psychology. Monograph No. 1, Washington, D. C., 1950.
10. Fleishman, Edwin A. Leadership Climate, Human Relations Training and Supervisory Behavior. Personnel Psychology, 1953, 6, 205-222.

11. Fleishman, Edwin A., Harris, Edwin F. and Burt, Harold E. Leadership and Supervision in Industry--An Evaluation of a Supervisory Training Program. Bureau of Educational Research. Monograph No. 33. Columbus, Ohio: The Ohio State University Press, 1955.
12. Gadel, M. S. and Kriedt, P. H. Relationships of Aptitude, Interest, Performance and Job Satisfaction of IBM Operators. Personnel Psychology, 1952, 5, 207-212.
13. General Manual for the Employee Inventory. Third Edition. Chicago: Science Research Associates, 1952.
14. Giese, W. S. An Objective Analysis of Morale. Journal of Applied Psychology, 1949, 33, 421-27.
15. Gordon, Oakley J. A Factor Analysis of Human Needs and Industrial Morale. Personnel Psychology, 1955, 8, No. 1.
16. Harrell, T. W. Industrial Psychology. New York: Rinehart and Co., Inc., 1949.
17. Hersey, R. B. Psychology of Workers. Personnel Journal, 1936, 14, 291-296.
18. Hoppock, Robert. Job Satisfaction. New York: Harper and Brothers, 1935, 47.
19. Johnson, George H. An Instrument for the Measurement of Job Satisfaction. Personnel Psychology, 1955, 8, No. 1.
20. Jurgenson, C. E. Selected Factors Which Influence Job Preference. Journal of Applied Psychology, 1947, 31, 553-64.
21. Kahn, R. L. An Analysis of Supervisory Practices and Components of Morale. In H. Guetzkow (Ed.), Groups, Leadership and Men. Pittsburgh: Carnegie Press, 1951.
22. Katz, D. and Kahn, R. L. Some Recent Findings in Human Relations Program. In H. Guetzkow (Ed.), Groups, Leadership and Men. Pittsburgh: Carnegie Press, 1951.

23. Katz, D. Survey Research Center: An Overview of the Human Relations Program. In H. Guetzkow (Ed.), Groups, Leadership and Men. Pittsburgh: Carnegie Press, 1951.
24. Katz, D. and Hyman, H. Morale in War Industry. In T. Newcomb and E. Hartley (Eds.), Readings in Social Psychology. New York: Henry Holt and Co., 1947.
25. Katz, D. and Maccoby, N., Gurin, G. and Floor, L. G. Productivity, Supervision and Morale Among Railroad Workers. Ann Arbor: Institute for Social Research, University of Michigan, 1951.
26. Katz, D., Maccoby, N. and Morse, N. C. Productivity, Supervision and Morale in an Office Situation. Ann Arbor: Institute of Social Research, University of Michigan, 1950.
27. Kerr, W. A. Summary of Validity Studies of the Tear Ballot. Personnel Psychology, 1952, 5, 105-113.
28. Kretch, D. and Crutchfield, R. S. Theory and Problems of Social Psychology. New York: McGraw-Hill, 1948.
29. Maier, N. R. F. Psychology in Industry. New York: Houghton-Mifflin Co., 1946.
30. McNemar, O. Opinion-Attitude Methodology. Psychological Bulletin, 1946, 43, 289-374.
31. Miller, Delbert, C. and Form, W. H. Industrial Sociology. New York: Harper and Brothers, 1951.
32. Moore, David G. and Renck, Richard. The Professional Employee in the Industry: Industrial Relations Center Research Reprint Series No. 58. Chicago: University of Chicago, 1955.
33. Morse, N. C. Satisfactions in the White-Collar Jobs-Survey Research Center. Ann Arbor: Institute for Social Research, University of Michigan, 1953.
34. National Industrial Conference Board: "Factors Affecting Employee Morale." Studies in Personnel Policy, 1947, No. 85.

35. Roethlisberger, F. Management and Morale. Harvard University Press, 1941.
36. Roethlisberger, F. and Dickson, W. Management and the Worker. Cambridge: Harvard University Press, 1939.
37. Smith, R. G. and Weston, R. Studies of Morale Methodology and Criteria. Research Bulletin. San Antonio: Human Resources Research Center, 1951, 51-29.
38. Schooler, K. Methodology for Studying the Dimensions of Morale. University of Michigan Report: Survey Research Center, 1952.
39. Stagner, R., Flebbe, D. R. and Wood, E. V. Working on the Railroad: A Study of Job Satisfaction. Personnel Psychology, 1952, 5, 293-306.
40. Thomson, Godfrey H. The Factorial Analysis of Human Ability. Third Edition. New York: Houghton-Mifflin Co., 1948, p. 301.
41. Viteles, M. Motivation and Morale in Industry. New York: Norton and Co., 1953.
42. Watson, Goodwin (Ed.). Civilian Morale, Chapter XVII, "Morale on the Job" by Hull and Kolstad. New York: Reynal and Hitchcock, Inc., 1942, 350.
43. Weschler, I. R., Kahane, M. and Tannenbaum, R. Job Satisfaction, Productivity and Morale: A Case Study. Occupational Psychology, 1952, 26, 1-14.
44. Wherry, Robert J. An Orthogonal Re-rotation of the Bachr and Ash Studies of the SRA Employee Inventory. Personnel Psychology, 1954, 7, 365-384.
45. Wherry, Robert J. A Factorial Analysis of 37 Classifications of Elements from the G. M. My Job Contest for a Sample of 5000 Hourly Workers.
46. Wherry, Robert J. A New Iterative Method for Correcting Erroneous Communalities Estimates in Factor Analysis. Psychometrika, 1949, 14, 231-241.

47. Wherry, Robert J., Campbell, G. T. and Perloff, R.
An Empirical Verification of the Wherry-Gaylord
Iterative Factor Analysis Procedure. Psycho-
metrika, 1951, 16, 67-74.
48. Wherry, Robert J. and Winer, B. J. A Method for
Factoring Large Numbers of Items. Psycho-
metrika, 1953, 18, 161-179.
49. Wyatt, S., Langdon, J. N. and Stock, F. G. L. Fatigue
and Boredom in Repetitive Work. Industrial
Health Research Board. Report No. 77. London:
H. M. Stationary Office, 1937, 43-46.
50. Yoder, D., Heneman, H. G., Jr. and Cheit, E. F.
Triple Audit of Industrial Relations. Industrial
Relations Center, Bulletin No. 11. Minneapolis:
University of Minnesota, 1951.

AUTOBIOGRAPHY

I, Zile Singh Dabas, was born in Delhi State, India, April 13, 1922. I received my secondary education in the public schools of Delhi. My undergraduate training was obtained at the Delhi University, from which I received the Honours degree Bachelor of Arts in 1946. From the same university I also received the degrees Master of Arts in 1948 and Bachelor of Education in 1949. From the University of Leeds, England, I received another degree, Master of Arts, in 1951. I entered the Ohio State University in the Fall of 1952 and worked as Graduate Assistant, Assistant and Assistant Instructor for the Department of Psychology and also as Research Assistant for the Research Foundation at the Ohio State University. I held these positions for three years and a quarter while completing the requirements for the degree Doctor of Philosophy.