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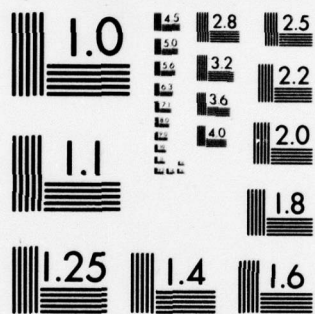
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AN INTEGRATION OF CONTEMPORARY THEORIES OF
WORK MOTIVATION: A PROPOSED MODEL AND
PARTIAL TEST WITH IMPLICATIONS FOR JOB DESIGN

THESIS

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AN INTEGRATION OF CONTEMPORARY THEORIES OF

WORK MOTIVATION: A PROPOSED MODEL AND

PARTIAL TEST WITH IMPLICATIONS FOR JOB DESIGN.

Master's THESIS,

Presented to the Faculty of the School of Engineering

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the

Requirements for the Degree of

Master of Science

222p.

by

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Graduate Systems Management

September 1978

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Preface

The purpose of this thesis is to satisfy part of the requirements for a Master of Science degree in Systems Management from the Air Force Institute of Technology. Additionally, it provided an opportunity for me to study the complex but intensely interesting area of work motivation. Not surprisingly, this research seemed to develop more questions than it was able to answer.

I express my sincere appreciation to those who contributed suggestions, interest, and encouragement for this study. Special thanks are due my advisor Major Edward J. Dunne, and also my second reader Major Saul Young. Valuable assistance was also received from Major Charles McNichols for the use and interpretation of his clustering algorithm.

Finally, a particular mention of gratitude is due my wife June, not only for expertly typing this thesis in countless drafts, but also for continuous support and encouragement throughout this experience.

Paul F. Daspit

ii

Table of Contents

v

List of Figures

List of Tables

Abstract

The primary objective of this research was a comprehensive model of work motivation, performance, and satisfaction based on contemporary theories of work motivation and models of job design. General motivation theories and specific theories of work motivation and job design were reviewed and compared in terms of their explanation of the process and content of work motivation. The Porter-Lawler expectancy model of work motivation was selected as a framework on which to develop a comprehensive model. The proposed model expanded the Porter-Lawler model by (1) replacing intrinsic and extrinsic work system outcomes with job property, interaction feature, and organization policy outcome clusters; (2) adding psychological states as mediators between work system outcomes and job facet satisfactions and between work system outcomes and effort-outcome expectancies; and (3) distinguishing between performance-related and membership-related job facet satisfaction. → Next Page

Empirical data were analyzed to investigate the work outcome cluster hypothesis. Self-reported work factor relative importance measures for 13 work factors from 76 civilian and 50 military employees of three accounting and finance work centers at four USAF bases were analyzed. Results of cluster and factor analyses indicated moderate support for the clustering hypothesis.

Additional correlation and regression analyses supported the hypothesis that job property work factor amounts were better predictors of overall job satisfaction than interaction features or organization policy variables. No support was found for the hypothesis that interaction features were better predictors of overall job satisfaction than organization policy

variables. Results of t-tests for hypothesized high and low satisfaction subgroups failed to support the general hypothesis that self-reported work factor relative importance was an effective moderator of the work factor amount – overall job satisfaction relationship.

It was concluded that the proposed model requires further testing and refinement before specific implications can be made. However, the proposed model is considered a necessary and significant first step toward understanding the complex and dynamic interrelationships present in the work system that impact motivation, performance, and satisfaction.

AN INTEGRATION OF CONTEMPORARY THEORIES

OF WORK MOTIVATION: A PROPOSED MODEL AND

PARTIAL TEST WITH IMPLICATIONS FOR JOB DESIGN

I. Introduction

Work, one's job, is a central element in the lives of most adults.
In many cases, it is a major contributor to one's identity, self-esteem,
desire to achieve, economic self-sufficiency, status, family stability,
and social interaction. In general, it is often a primary means of
personal evaluation.

Interaction between the employee (values, needs, perceptions, and
goals), the workplace (technical and social environments), and the organ-
ization (goals, structure, and standards) is complex, multi-dimensional,
and dynamic. This interaction has been studied and researched by hundreds
of management theorists, union and government leaders, industrial engineers,
psychologists, sociologists, and other behavioral scientists in scores of
ways and with increasing frequency.

Of particular interest in the immediate past has been the evolution
of the idea that human needs and values significantly impact job motiva-
tion, productivity, and satisfaction. Traditionally, jobs have been
designed or engineered for efficiency without taking into account the
effect of such designs on the worker. The job engineering approach to
job design, based on Taylor's (1911) scientific management, seeks to
make jobs more efficient by improving work methods, tools, and task
structure through time-and-motion studies, routinization, task division,
and production standards. When human needs and values are considered, it
is apparent that the job engineering approach to job design is wanting.

1

Another approach to job design - job enrichment/enlargement - attempts to correct the existing imbalance inherent in traditional job design. In contrast to simplified, standardized, and specialized jobs, an enriched/enlarged job is complex, challenging, and broad in scope, giving the worker duties that require a higher level of skill and responsibility.

Quality of Working Life

In order to have not only a definition of job enrichment, but also some perspective, it is necessary to examine the broader concept of the quality of working life. Because of the different groups interested in working life quality (workers, unions, management, industrial psychologists, and government representatives), there is no well-accepted or well-developed definition of the term quality of working life (QWL).

Herrick and Maccoby (1975) refer to QWL as the humanizing of work using the four principles of <u>security</u> (health, safety, income, and future employment), <u>equity</u> (compensation commensurate with contribution to the value of the product, profit sharing, and compensation on the basis of skills and knowledge developed), <u>individuation</u> (stimulating development of craftsmanship, autonomy, and learning), and <u>democracy</u> participatory management and worker control).

> These four principles - security, equity, individuation (craftsmanship, autonomy, and learning), and democracy - together describe a system that is constructed to optimize the worker's well-being and correspondingly, that of society. Such a system would develop in the worker a sense of hope, activeness, and productiveness, alleviating symptoms of discontent, mental illness, and despair. (Herrick and Maccoby, 1975:66)

Walton (1975) proposes eight conceptual categories relating to QWL, interrelated to each other and to productivity. Although not necessarily applicable to all workers/workgroups equally, they provide a framework of

2

the salient features that together make up the quality of working life. The eight categories are:

1. <u>Adequate and Fair Compensation</u> - does QWL meet the socially determined standards of sufficiency or the subjective standard of the recipient?

2. <u>Safe and Healthy Working Conditions</u>.

3. <u>Opportunity to Use and Develop Human Capacities</u> - worker autonomy, development and use of multiple skills, availability of information to enhance worker perspective, whole task involvement planning as well as implementing.

4. <u>Opportunity for Continued Growth and Security</u> - personal development, organizational and career advancement, employment and income security.

5. <u>Social Integration of the Work Organization</u> - freedom from prejudice, egalitarianism, mobility, supportive groups, and interpersonal openess.

6. <u>Constitutionalism in Work Organizations</u> - privacy, free speech, equity, and due process.

7. <u>Work and the Total Life Space</u> - balanced role of work with leisure time, family, and community.

8. <u>Social Relevance of Work Life</u> - community responsibility.

It is apparent that considerable overlap exists between the four principles of Herrick and Maccoby, and Walton's eight categories, but most importantly, it is obvious that the job enrichment approach to job design is a subset of the much broader QWL concept. Efforts to improve the quality of working life are seen as closely related to organizational development programs, whereas the focus of job enrichment is primarily on the content and structure of the worker-job relationship. Additional development of this focus will be dealt with in a later section.

3

Quality of Air Force Life

In March 1975, the Air Force Management Information Group (AFMIG) was created at the direction of the Air Force Chief of Staff. The charter given to AFMIG was:

> to make a good service better; by examining the organization and management of the Air Force as they relate to or impact on the human resource; and by developing initiatives which enhance both the quality of leadership in the Air Force and the well-being of Air Force people. (Ellis, 1975)

A primary tool used by AFMIG to carry out its charter was a 150+ question Quality of Air Force Life (QOAFL) survey. Two QOAFL surveys have been administered, one in 1975 and one also in 1977. The instruments include questions covering general and specific quality of life information, job satisfaction, and career intent. Quality of Air Force Life Indicators (QOAFLI) cover nine areas; economic standard, economic security, free time, work, leadership/supervision, equity, personal growth, personal standing, and health (Military Testing Conference, 1975:421).

It is difficult to say just what impact the QOAFL studies have or have not had on the decisions made by Air Force leaders over the past three years. From an optimistic viewpoint, it might be suggested that various personnel programs have been directly affected by the findings. Some of these programs include the restructuring of enlisted ranks into the "three-tier" formation to improve lines of authority and responsibility, the division of grade E4 into Senior Airman and Sergeant, expansion of race relations program into human relations program, reduction of the number of military moves, and giving members more say in future assignments (Callander, 1976). In addition, an Air Force civilian information crossfeed program has been initiated with the goal of improving the

military-civilian employee relationship (Informed Civilian Workforce, 1977).

The establishment of AFMIG and the use of surveys to gain insights into the quality of life and work in the Air Force reflects the importance of and concern for human resource management. One particularly pervasive human resource topic, in both the public and private sectors, is the topic of job design.

Job Design

The two approaches to job design (engineering and enrichment/enlargement) mentioned previously are congruent with the definition of job design proposed by Davis:

> The area of job design is complex and multidimensional involving organizational, technical, and personal dimensions. Job design may be conceived as the organization of the content of a job to satisfy the technical-organizational requirements of the person performing the work. (Davis, 1957:305)

The implication of the above definition is that a "total economic cost" concept must be used to include the multidimensional character of Job design. This concept should include both short and long term consideration of engineering, organizational, social, psychological, and physiological effects (costs).

Although the ultimate goal of most work improvement efforts are, for the most part, similar, there are various operational approaches which, taken as a whole, characterize the state of job design. Among them are job rotation, job enlargement, job enrichment, work simplification, and the "plan-do-control" concept of work (Rush, 1971).

Briefly, job rotation implements programmed movement from one task to another. Ideally, the different tasks would require diverse worker skills, thereby promoting skill learning as well as occupational flexibil-

5

ity. The desired results are increased interest in and knowledge of the job by the worker.

Job enlargement attempts to collect several related tasks (not necessarily requiring different skills) to expand the scope of the job. The intent here is to decrease boredom and increase job challenge by handling a larger part of the operation.

Job enrichment, in its narrowest definition, strives to increase the difficulty of the tasks by demanding more of the worker's capabilities. Specifically, more involvement in the "managing" and "controlling" of the job is given to the worker, appealing to his desire for more responsibility and accountability. This is also the approach taken by the "Plan-Do-Control" method of work as its name implies.

Finally, the work simplification approach removes unnecessary or duplicated tasks from the work process. Results hoped for are improved methods and logical and efficient sequences as well as a more visible and natural work unit promoting worker-job identity.

Although the above treatment of job rotation, enlargement, enrichment "Plan-Do-Control", and work simplification has been brief, it is apparent that the difference between them is not critical. In addition, these "labels" of job design reflect more of the implementation aspects than conceptual foundations.

From another viewpoint, four theoretical approaches to job design are suggested (Activation Theory, Motivation-Hygiene Theory, Socio-Technical Systems Theory, and Job Characteristics Theory), which to some extent overlap, but are also complementary (Hackman & Oldham, 1976). A brief explanation of each will suffice at this point as a more detailed treatment is contained in Chapter II.

Activation Theory focuses on how job design can minimize the neg-

6

ative consequence of work that is highly routine and repetitive. Motivator-Hygiene Theory examines ways that the content of the work can be changed to provide new or increased opportunities for positive and reinforcing motivation, satisfaction, and productivity. The socio-technical systems approach to job design deals with ways that the social and technical aspects of the workplace can be changed to simultaneously enrich both the content and context of the work. And, finally, the Job Characteristics Theory focuses on objective characteristics of jobs and ways in which worker differences affect the relationship between those objective characteristics and desired outcomes such as high productivity, satisfaction, and job involvement.

The issue of individual differences among workers is receiving an increased amount of attention in job design programs. Obviously, not all jobs are suited to all people. However, the conceptual coarseness reflected by that statement is inadequate when designing and implementing work redesign programs. What is required are vastly improved and articulate methods to fit people to jobs and jobs to people.

This job-worker congruence can be conceptualized as a two-way inter-action between resources and demands of both the worker and the job (see Figure I-1). The knowledge and skill of the worker (a resource) satisfies the job requirements (a demand), while the job provides opportunities for personal satisfaction (a resource) of the individual worker's needs and goals (a demand). Increasing this congruence should be the goal of job design programs.

Another way in which to visualize the impact that worker differences have on the job design process and/or program success is shown in Figure I-2. The individual desirability (ID) dimension represents those indi-vidual differences which affect job enrichment/job design programs.

	Resources	Demands
Worker	Personal knowledge and skills.	Individual values, needs, aspirations, and goals.
Job	Opportunities for personal satisfaction and valued rewards.	Job and Organizational Requirements.
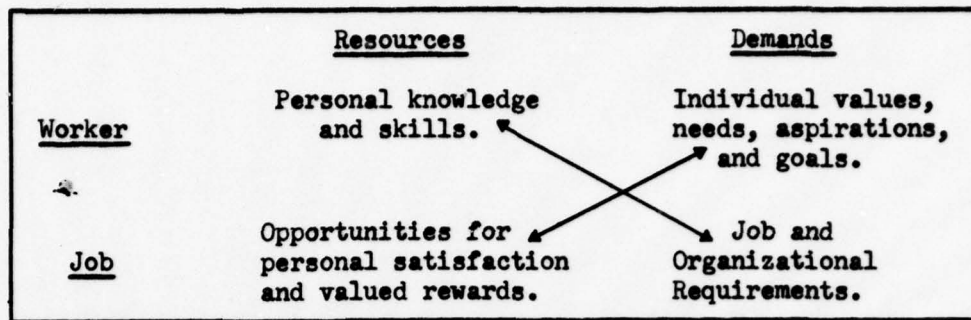
Figure I-1. Congruence Between Job and Worker.
(Hackman and Suttle, 1977: 115)

Structural opportunity (SO) dimension represents the strictly technical aspects surrounding a job or group of jobs such as the production process/sequence, plant layout, and finished product volume requirements. The economic feasibility (EF) dimension represents both long and short term economies resulting from job design efforts. The EF dimension should account for all resource development and utilization, including human resources.

Although the SO and EF dimensions may not be independent (on some issues they may be closely related), it is still useful to conceptualize these dimensions in this way. All three dimensions must be considered if job design efforts are to amount to anything more than a "shotgun" approach to organizational development. For example, both the SO and EF dimensions could be high in a given situation, but if the ID dimension is low, a job design program may likely be unsuccessful.

Job Design in the Air Force

To date, work redesign programs in the Air Force that follow the Motivation-Hygiene Theory are most prevalent. Specifically, they are known as Orthodox Job Enrichment (OJE) programs, a trademark of Herzberg and Associates (Herzberg and Rafalko, 1975). Because of a number of suc-

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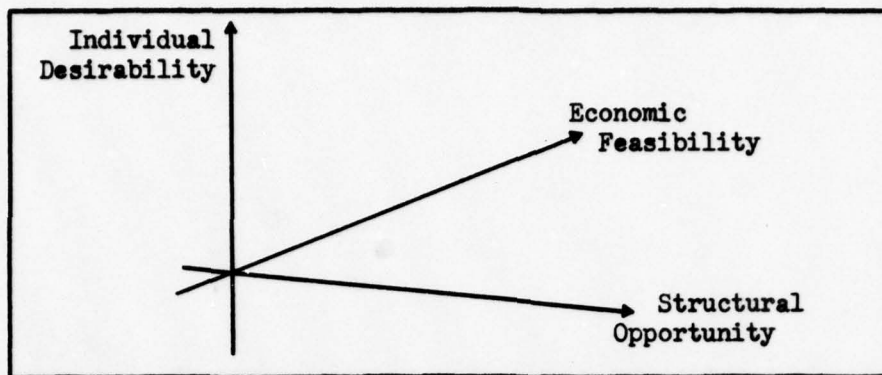
Figure I-2. Dimensions of Job Design Program Success.

cessful program implementations at one Air Logistics Center (ALC) from 1974 to 1976, the OJE effort has been extended throughout the entire Air Force Logistics Command (AFLC OJE Handbook, 1976). This is by far the largest single Air Force (and possibly any) behavioral science intervention. As of September, 1977, AFLC personnel strength was 9,000 military and 82,000 civilian employees (Air Force Magazine, 1978:133). By March, 1978, over 10,000 employees (nearly all civilian) were involved in job enrichment programs (Goldstein, 1978).

In addition to OJE, other job design programs are being initiated in the Air Force, though primarily of an experimental nature. Incomplete but encouraging results have been experienced from pilot projects with security policy, vehicle maintenance and operations, and personnel administration units (Umstot, 1978).

Early Results

Implementation successes (in both the Air Force and private sector) have confirmed the well-publicized potential of job enrichment. However, as more programs have emerged, an increased number of failures or "non-successes" have raised serious doubts about the universal application of job design (and specifically job enrichment) as a tool for change

9

(Hackman, 1975). One reason suggested for the lack of continued success is that some of the early theory ignored (or failed to explicitly consider) the effect of individual differences on the job design process (Hackman, Oldham, Janson, and Purdy, 1975). The implication is that not everyone is equally motivated by the work itself or by the challenge of or identity with a meaningful job. More specifically, complex, responsible, and fulfilling jobs might be a motivating incentive only for individuals who have some desire for higher-order need satisfaction (advancement, growth, achievement), and only if that need-satisfaction can be associated with the job (Nemiroff and Ford, 1976).

Problem Statement

Recent research in the area of job design centers around the proposition that success of a job design program is linked to the psychological make-up of the worker. However, a substantial theory explaining the relationship between human behavior and job enrichment efforts is still non-existent. One developing idea proposes that a concept of "growth need strength" is instrumental in understanding the way in which psychological needs affect worker response to enriched work (Hackman and Lawler, 1971). Another emphasized the social dimension of behavior as an additional constraint on the job design process (Alderfer, 1972; Sims and Szilagyi, 1976; Hackman and Suttle, 1977). The focus of this research is on the development of a comprehensive model of work motivation which addresses the interrelationships in the work environment relevant to job design efforts.

Research

The plan of this research is to examine and analyze job characteristics - work motivation - work outcome relationships of job design

theories. This analysis will include three major elements; 1) evaluation of conceptual models of work motivation, 2) synthesis of a job characteristics - motivation - satisfaction model, and 3) testing of the synthesized model with empirical data.

Model Evaluation. Six conceptual models that explicitly examine the way in which task design influences motivation, performance, and job satisfaction will be reviewed. Each model will be evaluated in terms of utility for understanding motivational processes and also in its ability to indicate action required for job redesign. The six models are:

1) Motivator - Hygiene Theory,

2) Achievement Motivation Theory,

3) Activation Theory,

4) Socio-Technical Systems Theory,

5) Requisite Task Attributes Model,

6) Job Characteristics Model.

Model Synthesis. Based on the review of the six models listed above, a comprehensive work motivation model will be proposed. Of particular interest will be the inclusion of variables to model the effects of individual and situational differences.

Model Testing. The data which will be used to test the proposed model were collected approximately three years before the writing of this thesis (see following section for a description of the data). As a result, there are some limitations to empirically testing the proposed model. These limitations will be identified subsequent to the presentation of the model.

Importance of Research

As previously stated, most of the job enrichment efforts in the USAF

11

are based on the Motivator-Hygiene Theory of job satisfaction. Although some successes have been documented, it is critical that knowledge of the job enrichment/job design process be expanded. This is especially true in those areas not addressed by OJE - individual differences and organizational impact on the job design process. This research is aimed at expanding that body of knowledge.

Population and Sample

With regard to empirical data analysis, these research findings will be directed specifically at the Accounting and Finance Career Field, and in general to the entire Air Force military and civilian work force. The sample was comprised of 76 civilian and 50 military employees of three accounting and finance work centers at four Mid-western USAF BASES (refer to Tables I-1 and I-2 for demographics). Participation in the sruvey was voluntary, and in most cases, all members of a work center were surveyed.

Data. The empirical data consists of job attitude responses collected in July, 1975, by a former AFIT graduate student. The purpose in gathering the data was to examine the relationships between reported job scope (perceived degree of enrichment or enlargement) and reported job satisfaction. No previous analysis of these data has been accomplished.

Work Center Description. A total of 11 work centers were surveyed, four Military Pay sections, four Travel sections, and three Accounts Control sections. A complete work center description has been included as Appendix B, so a general description is appropriate here.

The Military Pay section provides customer service for the military member in matters concerning pay. This service is primarily one of interface with the highly automated pay system (Joint Uniform Military Pay Sys-

12

TABLE I-1

Demographic Variables

Variable	Classification	Number in Sample
1. Base	1. 2. 3. 4.	35 23 32 36
2. Work Center	1. Military Pay 2. Travel Section 3. Accounts Control	58 29 39
3. Employee	1. Military 2. Civilian	50 76
4. Sex	1. Male 2. Female	65 61
5. Number of Levels Supervised	1. Zero 2. One 3. Two or more	94 18 14
6. Pay Grade	1. Military (E2 - E7) 2. Civilian (GS3 - GS13)	E4 * GS5 *
7. Age	1. Military (18 - 41) 2. Civilian (19 - 61)	26 ** 45 **
note: *median pay grade **average age		

tem - JUMPS), and source document processing and control.

The Travel section provides service for payment, collection, and fund accounting for permanent change of station (PCS) and temporary duty (TDY) travel. In addition, leave data is extracted from travel vouchers and is forwarded to Military Pay for JUMPS updating.

The Accounts Control section establishes and maintains the base-level General Accounting System. This section also provides technical support to other functions maintaining cost systems in addition to providing an internal audit and quality control function for Accounting and Finance.

TABLE I-2

Tabulation of Selected Demographics

	Mil	Civ*		
Male	43/26.7	22/45.0	65/32.9	(number/
Female*	7/24.1	49/45.2	56/42.6	average age)
	50/26.3	71/45.1	121/37.4	

		Mil	Civ		
Levels	0	28/7	14/45	42/52	(male/female)
Super-	1	8/0	4/6	12/6	
vised	2	7/0	4/3	11/3	
		43/7	22/54	65/61	

Mil	Pay Grade (GS or E)	Civ	
6/1	2		
3/1	3	1/4	
14/5	4	2/16	
9/0	5	6/15	
7/0	6	2/11	(male/female)
4/0	7	2/5	
	9	1/2	
	11	2/1	
	12	4/0	
	13	2/0	
43/7		22/54	

* missing cases = 5

14

Thesis Objectives

Two primary research objectives for this thesis are, (1) a synthesized model of work motivation, and (2) analysis of existing data to test the validity of the proposed model.

Specific Objectives. Three specific objectives were established for this study:

1. A synthesized model of motivation, performance, and satisfaction resulting from the integration of contemporary theories of work motivation and current models of job design, that improves the understanding of theoretical and practical implications of job design.

2. Analysis of an existing set of empirical data (previously discussed) based on the implications and hypotheses of the proposed model.

3. Evaluation of the results and findings related to objectives 1 and 2 in terms of their implication for job design programs in the Air Force.

Scope. This research did not constitute an attempt to support or refute any specific theory of work motivation. Rather, the research was based on a complementary synthesis of contemporary theory. Testing of the model was limited by the make-up of the sample, as well as by the survey instrument itself.

Limitations. The following aspects were limiting factors of this research;

1. This research was limited by the depth and interpretation of the literature reviewed.

2. This researcher was not involved in either the survey construction or the data collection efforts.

3. The survey instrument used was not validated.

4. Follow-up with survey respondents was not possible.

15

II. Review of General Motivation Theories
and Theories of Work Motivation/Job Design

In their recent text, Steers and Porter (1975:3) suggest several reasons why the topic of work motivation is receiving increased attention by managers and theorists alike. First, because of recent emphasis on the behavioral requirements of an organization, it is apparent that organizational effectiveness is contingent upon stimulating both the decision to participate and the decision to produce at work. Additionally, an understanding of the motivational issues in an organization is essential to comprehend more fully the effects of variations in other factors such as leadership style, job redesign, and salary systems as they relate to performance and satisfaction. Also, because of ever tightening economic constraints placed on the organization, all resources, including human resources, must be explored for full potential. Finally, because technology is a necessary but insufficient guarantor of effective and efficient operations, organizations must ensure that they have employees who are both capable and willing to use advance technology to achieve organizational objectives. These reasons, although not exhaustive, apply equally to all types of organizations; public, private, profit, and non-profit.

Before individual theories of work motivation can be discussed, it is necessary to examine the nature of motivation and motivated behavior. The term "motivation" has been used in many ways by psychologists. There is general agreement however, that the distinguishing characteristics of motivated behavior is that such behavior is under voluntary control - that it is goal directed (Lawler, 1973:2). Two definitions of motivation are presented which include most of the aspects

contained in other definitions:

> ...how behavior gets started, is energized, is
> sustained, is directed, is stopped, and what kind
> of subjective reaction is present in the organism
> while all this is going on. (Jones, 1955)

> ...the contemporary (immediate) influences on the
> direction, vigor, and persistence of action.
> (Atkinson, 1964)

Three elements thus may be said to characterize the phenonemon of
motivation: (1) What energizes human behavior, (2) What directs or
channels such behavior, and (3) How this behavior is sustained. Each
of these aspects represents an important factor necessary to understand
human behavior, and thus, each factor should be included in any theory
of motivation.

The basic elements of a general model of motivation are shown in
Figure II-1. This model shows that tension from needs and desires of
the individual initiate activity (behavior) toward a goal, the satis-
faction of which modifies the inner state of disequilibrium. Some
theories of motivation presented in this chapter have as their objective
to explain how behavior is initiated, directed, sustained, and stopped.
These theories have been classified as "process" theories. Other "con-
tent" theories, attempt to enumerate the things within individuals which
initiate, direct, sustain, and stop behavior (Campbell, et al., 1970).
A "complete" theory of motivation should contain both aspects.

Purpose and Plan

The purpose of this chapter is to provide a review and comparison
of selected theories of motivation, as well as a review and comparison
of theories of work motivation and job design. The chapter is organized
in two main sections. First, general theories of motivation are presented
in terms of both their content and process. Following this will be a dis-

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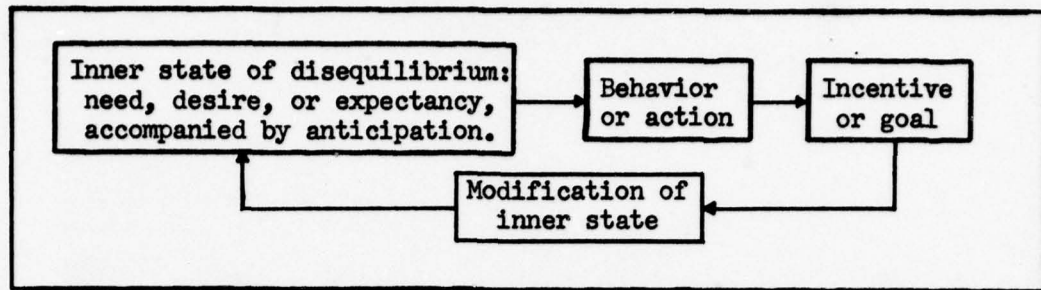
Figure II-1. General Model of the Motivation Process.
(Steers and Porter, 1975:7)

cussion of work motivation theories and a review of current approaches
to most job design efforts.

General Theories of Motivation

Four general theories of motivation have been identified in the
past: (1) Need Hierarchy Theories, (2) Expectancy Theory, (3) Behavior
Reinforcement Theory, and (4) Equity Theory.

Need Hierarchy Theories. At least two different but complementary
theories are grouped under need hierarchy: Maslow's Theory of Human
Motivation (1943), and Alderfer's Existence-Relatedness-Growth Theory
(1969,1972). In some discussions of work motivation theories, Herzberg's
Motivator-Hygiene Theory is considered a "need" theory (Landy and Trumbo,
1976), however, for the purpose of this discussion, it will be addressed
with models of work motivation/job design.

Both Maslow and Alderfer assume that all individuals have basic sets
of needs which they strive to fulfill. Maslow proposes five basic sets
of needs, physiological, security, love, esteem, and self-actualization,
which he argues are arranged in this predetermined (low to high) order,
and which influence behavior in a prepotent manner. That is, to some
degree (not specified by the model), lower needs must be satisfied before
the next higher need set will emerge as the primary "wanting" force. In

18

brief, a satisfied need does not motivate, while an unsatisfied need constitutes a motivating force to the degree the need is unsatisfied. Maslow is careful to avoid the implication that an emergent need is sufficient cause for behavior:

> Looking at behavior itself may give us the wrong impression...There is no necessary implication here that he will act upon his desires...(because) there are many determinants of behavior other than the needs and desires. (Maslow, 1943:388)

Figure II-2 shows the dynamic properties of Maslow's fulfillment-progression model. The fulfillment-progression process of increased satisfaction-decreased importance-increased importance of the next higher need set repeats itself until the highest level is reached. At the self actualization level, Maslow (1968, 1970) proposes that increased satisfaction leads to increased need strength.

Three, as opposed to five basic need sets, are theorized by Alderfer (1959); existence, relatedness, and growth (ERG). Like Maslow, Alderfer argues that the satisfaction of a need decreases its importance and increases the importance of higher-level needs. Also in agreement with Maslow's model is the belief held by Alderfer that growth need satisfaction will increase its importance. Unique to Alderfer's ERG model is his hypothesis that the lack of satisfaction of higher-level needs can lead to lower-level needs becoming more important. This alternative process is shown in Figure II-3 as a "frustration-regression" component. Alderfer also departs from Maslow's hypothesis of prepotency by assuming that needs on all three levels can be simultaneously and equally active. While retaining the basic form of classical need hierarchy theory, Alderfer injects considerable flexibility into his model.
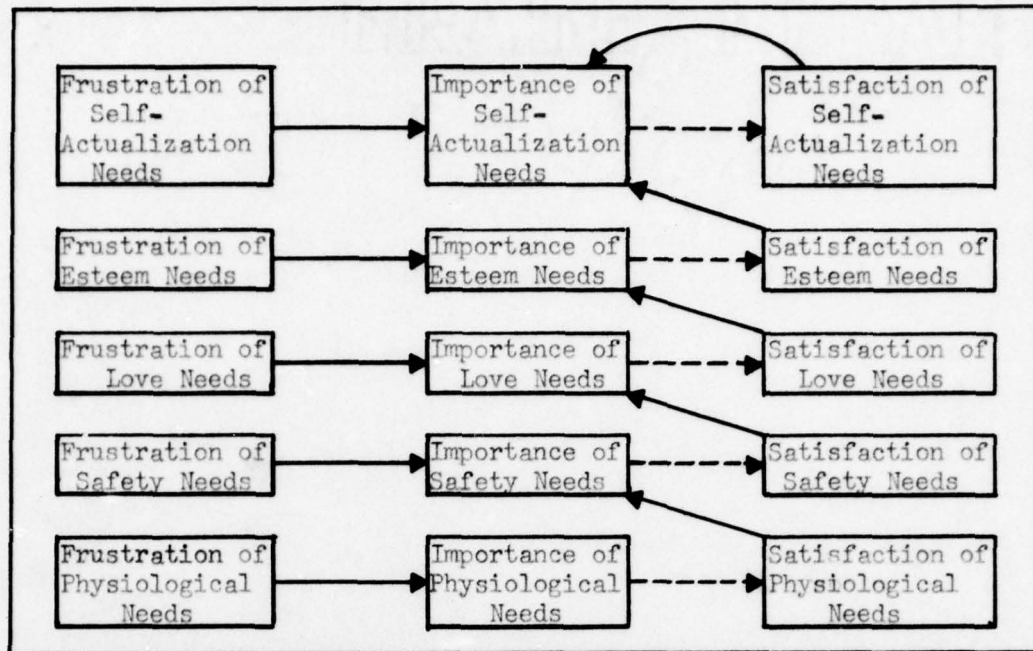
Figure II-2. Dynamic Properties of Maslow's Model of
Human Motivation: Fulfillment-Progression.
(Landy and Trumbo, 1976:301).

Expectancy Theory. This theory, which is also known as instrument-
ability theory, path-goal theory, and valence-instrumentability-expect-
ancy (VIE) theory, is primarily a process theory because it attempts to
identify relationships among variables in a dynamic situation as they
affect individual behavior. This model of motivation assumes that in-
dividuals are rational beings with beliefs and anticipations about future
events in their lives, and who can and do make preferential choices about
those events (Steers and Porter, 1975:180-1). The initial development
of expectancy theory as a model of work motivation was accomplished by
Vroom (1964), based on earlier works by Lewin (1938), Peak (1955),
Atkinson (1958), and Tolman (1959). In uncomplicated terms, Vroom pro-
posed that motivation is a product of the values one seeks and one's esti-
mation of the probability that a certain action (behavior) will lead to
those values. Expressed as a formula:
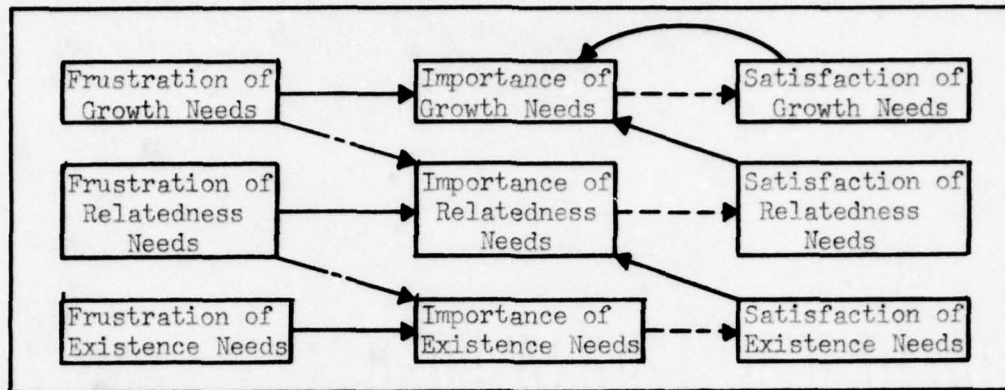
Figure II-3. Dynamic Properties of Alderfer's ERG Model:
Fulfillment-Progression; Frustration-Regression.
(Landy and Trumbo, 1976:301)

Motivation (M) = Valence (V) x Expectancy (E)

Valence refers to the strength of an individual's preference for one outcome over other outcomes, and is an individual, experience conditioned evaluation. Vroom emphasizes that there may be substantial discrepancy between the __anticipated__ satisfaction from an outcome-its valence, and the __actual__ satisfaction that it provides-its value (Vroom, 1964:15). Since people have positive and negative preferences for outcomes, valence may be positive or negative, taking values from -1 to +1.

Expectancy is the strength of belief of an action-outcome association. It represents employee judgment of the probability that a certain behavior will result in a certain outcome or outcomes. Since expectancy is conceptualized as a probability, it is allowed to take on values from zero to one.

Motivation in the expectancy model is defined as the strength or force on a person to perform an act (Vroom, 1964:18). The model (Figure II-4) and equation (M = V x E) show that a person's motivation to act at a particular point in time is determined by the anticipated satisfaction of all outcomes resulting from such action, multiplied by the perceived probability that such action will result in those outcomes.
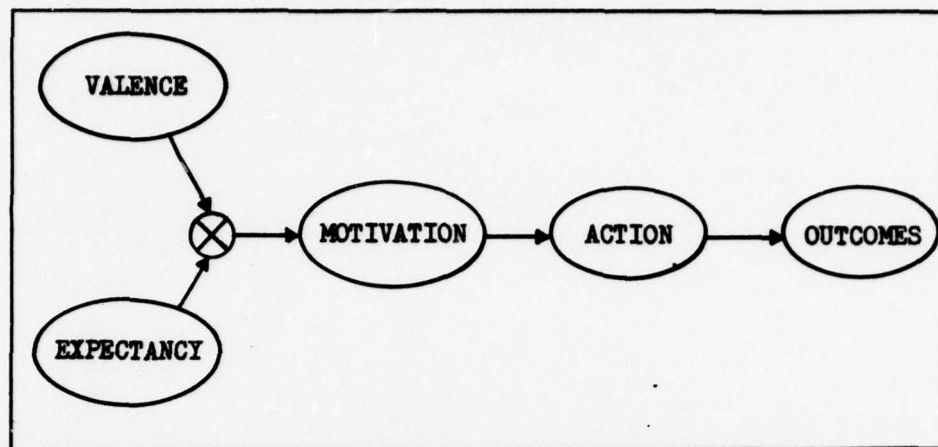
Figure II-4. A Diagram of the Expectancy Model of Motivation.

A further development of the expectancy model in the work setting
was promoted by Porter and Lawler (1968). They based their model on
expectancy theory rather than need or drive theory because the emphasis
of anticipated events in expectancy theory was more in keeping with their
view that individuals are capable of delaying gratification and dealing
with abstract concepts. They based their model on four points that their
previous research on human motivation suggested were valid. (Lawler, 1973:
49):

1. People have preferences among the various outcomes
   that are potentially available to them.

2. People have expectancies (instrumentalities) about
   the likelihood that an action (effort) on their part
   will lead to the intended behavior or performance.

3. People have expectancies (instrumentalities) about the
   likelihood that certain outcomes will follow their
   behavior.

4. In any situation, the actions a person chooses to take
   are determined by the expectancies and the preferences
   that a person has at the time.

In their model, Porter and Lawler describe two different expect-
ancies. Effort-Performance (E-P) expectancy is simply a person's est-
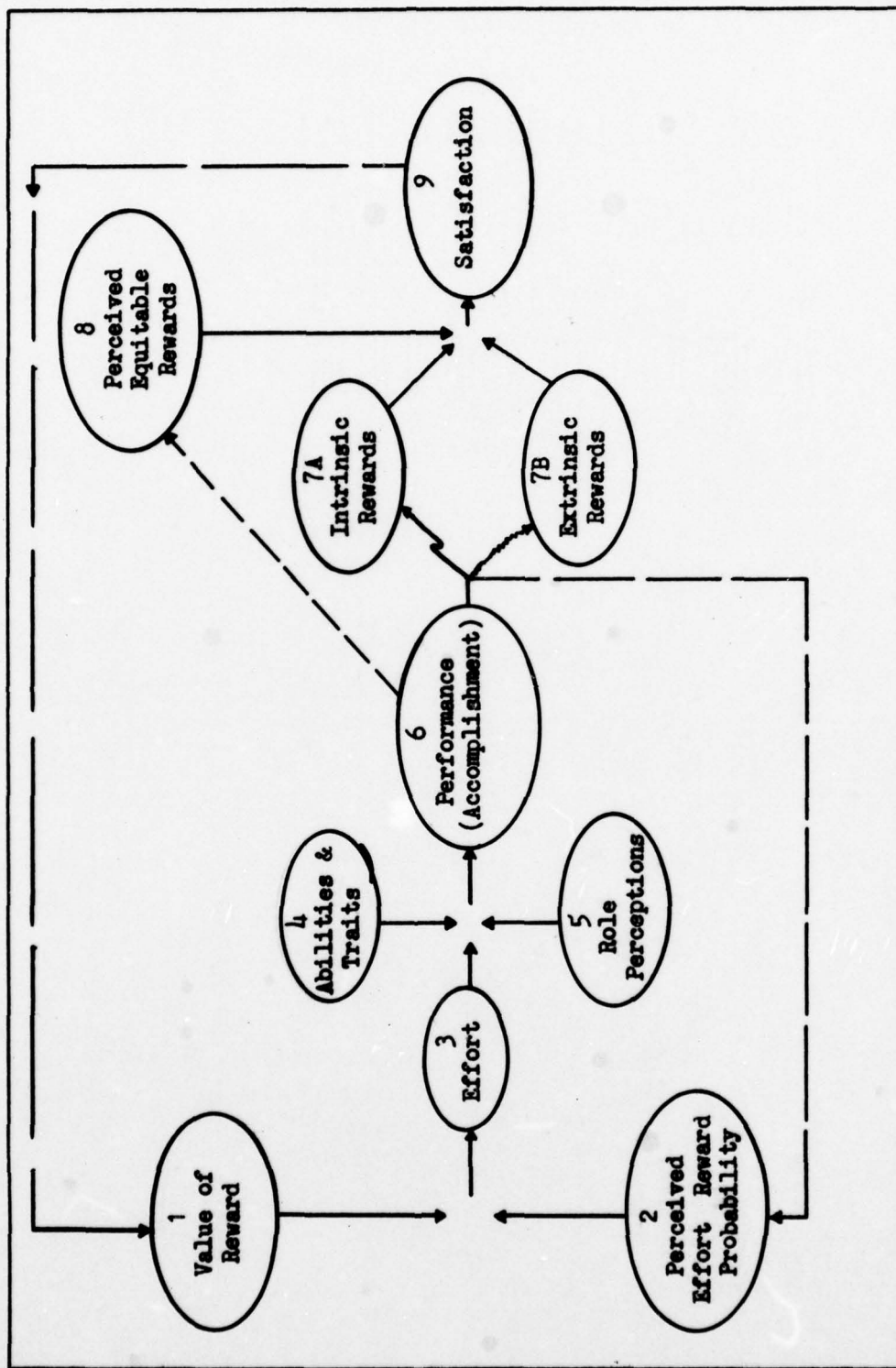
Figure II-5. The Porter-Lawler Model of Work Motivation.
(Porter and Lawler, 1968:165)

23

imate of the probability that he will accomplish his intended performance, given the situation he perceives. Performance-Outcome (P-O) expectancy is a subjective probability estimate that certain performance will lead to certain outcomes. Taken together, E-P and P-O expectancies are similar to the action-outcome expectancy of Vroom, and allows for the situation where action (effort) may lead to more than one performance level or accomplishment, which in turn could have different outcomes. The basic model proposed by Porter and Lawler is shown in Figure II-5, and the various components are described below.

1. <u>Value of Reward</u>. This component corresponds to the valence or attractiveness of various reward outcomes to the individual. The exact manner in which outcomes acquire a preferential value is not specific in the model. However, at least one way is implied by the feedback loop from "satisfaction" to "value of reward". This would be in agreement with need theories of motivation.

2. <u>Perceived Effort - Reward Probability</u>. This refers to the individual's subjective estimates that his/her efforts (actions) will lead to valued outcomes (rewards). These estimates are made up of E-P and P-O expectancies which are probabilities based in part on experiences of the individual in similar past situations. In a complementary manner and in situations unfamiliar to the individual, other sources of information such as communication with and observing other people in like circumstances could substitute for actual experience.

3. <u>Effort</u>. This component is directly analogous to motivation. It is intended to reflect how hard and in what direction an individual works, rather than how effectively he performs. It represents expended energy as a result of being motivated to act.

4. Abilities and Traits. This refers to characteristics of the individual such as intelligence, personality characteristics, and psycho-motor skills. They are considered independent and relatively stable sources of variation (over short periods of time) which set limits on performance.

5. Role Perceptions. Porter and Lawler suggest that an individual's definition of successful performance is a critical factor in determining whether or not effort is converted into good performance as defined by the organization. With an inappropriate definition of success, much effort may result in performance that will go unrewarded, or worse, performance that is counter to that which is generally acceptable by the organization.

6. Performance. This refers to the level of accomplishment (both quantity and quality) which the individual achieves. Performance is the net effect of an individual's effort, modified by abilities, traits, and role perceptions.

7. Rewards. Intrinsic rewards (administered by the individual to himself) and extrinsic rewards (administered by the organization or other external agent to the individual) are distinguished from each other in the model. Direct relationships between performance and rewards do not always exist (as indicated by the wavy and broken lines). The performance – intrinsic reward relationship exists when tasks are perceived by the individual to offer such rewards as accomplishment of meaningful and challenging work. The performance – extrinsic reward line is shown as broken due to the erratic nature of this relationship. External rewards (pay, promotion, and recognition) are not always provided when a task is successfully completed, or because of time-lag, the individual may find it difficult to identify the performance with the reward.

8. Perceived Equitable Rewards. This component refers to the amount and type of reward that the individual feels is appropriate. The individ-

ual subjectively determines how well he fits the role requirements of the job and how well he performs on the job, and compares the rewards he actually receives to that which he feels he should receive.

9. <u>Satisfaction</u>. Porter and Lawler refer to satisfaction as a variable derived from the individual's comparison between what rewards are actually received and what is considered by the individual to be equitable. To the extent that the perceived equitable reward exceeds the actual reward, the individual is dissatisfied. If the reverse is true, the actual rewards equal or exceed perceived equitable rewards, the individual is satisfied.

Empirical testing of Porter and Lawler's model as a whole is far from complete. Schneider and Olsen (1970) examined the relationship between effort and rewards among 146 nurses in two hospitals with different reward systems. The results showed that effort expenditure was significantly lower in the hospital in which rewards were based mostly on service length as opposed to effort or performance. This finding supports the P-O prediction of the model. Schuster, Clark, and Rodgers (1971) tested parts of the model dealing with individual's perceptions of the relationship between performance - pay and effort - pay. Data from 575 professional employees in an industrial setting produced results that were generally supportive of the model. The performance - pay relationship was shown to be stronger than the effort-pay relationship for this sample. Where pay was the outcome considered, the P-O relationship was stronger than the E-O relationship.

More studies have examined Vroom's basic expectancy theory than Porter and Lawler's extended model. In general, both support and lack of support have been reported, and the research in support of the model has shown only weak or at best moderate association among the variables (Dachler

26

and Mobley, 1973; Sheridan, Slocum, and Min, 1975; Kesselman, Hagen and Wherry, 1974). Nevertheless, expectancy theory remains a widely accepted model of motivation with some evidence that the model has general applicability to employees in work situations.

Comparison of Need and Expectancy Theories. Need Hierarchy Theories and Expectancy Theory differ in both their process and content explanation of motivation. Need models are based on internal drives or needs which create tension or "wanting" in the individual. To fully understand why an individual behaves a certain way in a given situation, the person's history of responses and rewards must be known. The expectancy model of motivation is based on current estimates by the individual of anticipated values. It is not necessary to require knowledge of the individual's response-reward history, because it is sufficient to know the individual's present estimates.

With regard to the content of the models, Expectancy Theory is not clear on the nature of potential rewards. There is no certain indication about where they come from, how they develop, their interrelationships, or the effect of individual differences and personality characteristics on the potential of a reward to affect behavior. Need Theory is specific about the hierarchical and prepotent nature of needs, but is less certain about where the needs originate or how to satisfy them. In summary, need theories could be improved by development of the process portion of the theory, while expectancy theory suffers from the lack of content explanation of motivation.

Equity Theory. This motivation model is based on Festinger's (1957) theory of cognitive dissonance, and is also known as "balance" theory, and "exchange" theory. These theories hold that behavior is initiated, directed, and sustained by effort of the individual to maintain some in-

27

ternal balance of psycholgical tension. The general proposition of equity theory (Adams, 1965) states that individuals form a ratio of their inputs to outcomes in a given situation. Inputs in a situation are defined as anything which the individual feels he has personally contributed, including such things as intellectual and physical abilities, experience, personality traits, seniority, time, and effort. Outcomes from a given situation are conceptualized as an individual's receipts in exchange for his inputs. These outcomes include both intrinsic and extrinsic outcomes such as pay, recognition, job status, equitable supervision, sense of accomplishment, seniority benefits, fringe benefits, and prestige. The individual is theorized to create a mental ratio of inputs to outcomes and compares the value of that ratio to the value of the ratio perceived for "significant others". Hence the concept of equity. If the individual perceives the ratios to be equal, the situation is "equitable" and no tension is developed. If the compared ratios are perceived to be unequal, tension develops which motivates the individual to again seek a balance by increasing or decreasing inputs or outcomes. The intensity of the motivated behavior is thought to be proportional to the amount of perceived inequity (Steers and Porter, 1975:138-145).

The majority of research surrounding equity theory has been in laboratory settings as opposed to field simulations. The general findings have been that equity theory predictions hold up fairly well in underpayment conditions (individual's input/output ratio less than other worker's ratio), but not so well in overpayment conditions (individual's input/output ratio greater than other worker's ratio).

Prichard (1969) and others have raised important questions about equity theory regarding the way in which a "significant other" person is

28

chosen by an individual, as well as the way in which inequity tension is reduced and the role of individual differences in equity predictions. Weick and Nesset (1968) suggest there are at least six different ways that the comparison process can result in an inequitable outcome. The source of inequity is underlined in each case below:

Input/Output Ratio No.	Perceived Own Ratio	Perceived Other's Ratio
1	low/low	high/low
2	low/low	low/high
3	low/high	low/low
4	high/low	low/low
5	high/high	high/low
6	high/high	low/high

The problem is not only that there are a number of ways to reach a state of perceived inequity, but also that each comparison may be with a different "significant other" person. For example, this may depend on whether the relationship is personal or impersonal. Additionally, Prichard (1969) and Lane and Messe (1972) suggest that the source of comparison may not be only with another person, but may also be derived from an internal standard of self-esteem.

Another issue deals with the way different people tend to interpret their inputs and outcomes in a situation. Equity theory appears to be a simple and straightforward theory in part because inputs and outcomes seem to be separate and clearly distinguishable factors. However, Tornow (1971) has pointed out that such variables as making use of abilities, making many decisions, keeping abreast of a variety of subjects, bearing sole responsibility, learning a new system, and working on complex tasks, may be perceived by some individuals as inputs, while for others, they may be seen

as valued outcomes to be derived from a meaningful job. As with other theories of work motivation, individual differences must be accounted for as a separate or moderating variable within the equity model if it is to be more than just a generalized theory.

These theoretical questions surrounding equity theory present substantial obstacles for a manager attempting to use it as an operational framework for dealing with subordinates. The theory presents only a very general explanation of the process of motivated behavior, but does not indicate specific behavior that might result from perceived inequity. With regard to motivating content, equity theory is constructed around those things that individuals perceive as inputs and outcomes in a situation.

Equity Theory and the Porter-Lawler Model. In the Porter-Lawler expectancy model, a component of perceived equitable rewards is suggested as a factor which induces reward satisfaction or dissatisfaction. As previously explained, a comparison between the rewards actually received and the perceived equitable level of rewards determines the degree of satisfaction or dissatisfaction. Perceived equitable rewards are defined as "the amount of rewards that a person feels is fair, given his performance on the tasks he has been asked to undertake by the organization". (Porter and Lawler, 1968:30). The authors suggest that most individuals have an "explicit notion" about the amount of rewards that ought to be available for a certain type of work. They suggest that this explicit notion is based in part on the individual's perceived requirements for the job or position, the demands made on the individual, and the contributions made by the individual to the organization.

Although not explicitly stated, implicit in Porter and Lawler's explanation is a standard of some sort, internal to the individual, and

which determines the equitable reward level. It could easily be argued that this internal standard is based on much of the same cognitive exercise theorized by equity theory - a comparison of rewards received by other persons in similarly perceived circumstances. Additionally, past experiences of the individual's own performance-reward-satisfaction cycle would probably affect this internal equitable reward standard. The Porter and Lawler model does not specifically propose that a comparison process takes place between the individual and a "significant other", however, it is difficult to imagine how an individual's perceived reward equity would not be affected by perceptions of what reward level other people receive for similar performance. In the Porter-Lawler model then, the concept of equity moderates the performance-reward-satisfaction relationship, and while not a primary component in the motivational process, it directly influences satisfaction/dissatisfaction with rewarded performance.

Behavior Reinforcement Theory. The models of motivation that have been discussed to this point are based on feelings, thought processes, and perceptions internal to the individual, and thus known as cognitive theories of motivation. Such theories attempt to explain and predict behavior by understanding how a person views and reacts to his/her perceived environment. One difficulty with cognitive models of motivation is that the descriptive parameters of such models are not subject to precise measurement. It is not possible, for example, to scientifically measure the amount of a person's growth needs at any point in time.

A different approach to understanding and predicting behavior, known as behavior modification, is based primarily on the works of Skinner (1953, 1969, 1971). Behavior modification (known also as behaviorism, behavior reinforcement, and operant conditioning) is based on the idea that behavior is shaped and maintained by its consequences (Skinner, 1971:16).

The essential difference between cognitive theories and behavior modification is that while the former argues that internal needs or tensions lead to behavior, the latter states that external reinforcements determine behavior.

Operant conditioning is the process through which behavior modification is achieved. Operant behavior is that which can be changed by its consequences. According to reinforcement theory, if the consequences of a certain behavior are favorable to the person, the probability that such behavior will be repreated is increased. Conversely, if the consequences are unfavorable, the probability that such behavior will reoccur is decreased. Favorable consequences are also termed reinforcements (positive or negative), while unfavorable consequences are considered punishments.

Positive reinforcement provides a favorable consequence as a result of and to encourage repetition of a certain behavior. For example, a supervisor provides recognition for high quality work. On the other hand, negative reinforcement removes an unfavorable consequence which results from and encourages repetition of that behavior. For example, an employee avoids criticism by the supervisor if he is punctual. Negative reinforcement is also known as avoidance learning. While negative reinforcement can be used to condition desired behavior, operant conditioning is primarily based on the principles of positive reinforcement (Hammer, 1974).

Positive reinforcement and avoidance learning can be used by managers to strengthen desired behavior - both offer desirable consequences to the individual. In order to reduce the frequency of undesired behavior, the consequence of such behavior must be undesirable. Two methods purport to do this; extinction and punishment.

Extinction is the process of repeated non-reinforcement of undesired behavior by withholding a previously used reinforcement of the behavior. An example of this would be a parent who decides to ignore "attention getting" behavior of a child in hope that the lack of attention will eliminate the behavior. While extinction is the removal of a previously used favorable consequence in order to reduce the strength of the (now) undesired behavior, punishment contingency provides an unfavorable consequence as a result of the unwanted behavior. An example of punishment might be the withholding of pay as a result of coming late to work. Such a consequence is punishment rather than extinction because it is unlikely that the favorable consequence of receiving full pay would have been associated with the behavior of coming late to work. If this unfavorable consequence was established as a policy, and was known previously to the individual, it would be a negative reinforcement or avoidance learning contingency. Although punishment is sometimes required to discourage particularly undesirable behavior, it has two significant disadvantages. First, if the punisher is also one who offers reinforcement at other times, as is often the case, the two roles may become confused and reduce the effectiveness of both. Secondly, punishment only discourages undesired behavior; it does not indicate what behavior is desirable. This is also true for the extinction process.

Thus, behavior reinforcement theory suggests four ways available for a manager to arrange contingencies of reinforcement: positive reinforcement, avoidance learning, extinction and punishment. Contingencies of positive reinforcement are considered to be the primary means of operant conditioning, although all four methods can be effective.

The implications of behavior modification in work settings has led to two different research questions: 1) what does the individual consider as reinforcing? and 2) how often should behavior be (or not be) reinforced?

The first issue is simply one of rewards and individual differences - the same issue discussed in cognitive theories of motivation. The second question deals with schedules of reinforcement - whether reinforcement should be continuous (following each correct behavior), partial (following part of the desired behavior), fixed or variable interval, or fixed or variable amount.

Variable reinforcement schedules have been shown to be superior to other schedules in laboratory studies (Yukl, Wexley, and Seymour, 1972), and also to be successful in reducing absenteeism among hourly employees (Pedalino and Gamboa, 1974). However, other studies have concluded that continuous reinforcement schedules proved better, but are more difficult to administer (Yukl and Lathan, 1975).

Probably the best claimed example of behavior modification in an industrial setting is the experience at Emery Air Freight (Wexley and Yukl, 1975:560-568). Through a system of positive reinforcements, Emery claimed a savings of $650,000 per year resulting from increased use of container space. The program consisted of performance feedback to employees and supervisor recognition of workers. Effective results continued for the entire four year period covered by the study.

While behavior modification applications in work settings may appear to be appealing, universal acceptance of such methods is not evident. Whyte (1972) raises four issues with the application of operant conditioning principles to "real-life" as opposed to laboratory conditions. First, because Skinner's research has ignored the complex social processes that can moderate any reward system, the potential for conflicting contingencies of reinforcement that could have cancelling effects on each other has not been addressed. For example, group performance standards can have the effect of counteracting a positive reinforcement incentive system for in-

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creasing output quantity. Additionally, there is the problem of conflict-
ing stimuli. For example, a positive reinforcement incentive system may
stimulate employees' desires to increase output, and at the same time in-
crease their fears that an output increase will only lead to a reduction
in work force. Also, Whyte suggests that the behavior modification approach
is subject to accusations of employee manipulation and exploitation which
frequently results in poor management-employee relations. Finally, if
operant conditioning principles are to be effectively and efficiently imp-
lemented, all forms of contingencies (family, friends, co-workers) would
need to be controlled simultaneously to provide a unified system of rein-
forcement.

An article by Locke (1977) analyzing specific applications of four
behavioral techniques was particularly critical of the behavioral modifi-
cation claims. Locke suggested that not only are the techniques (programmed
instruction, modeling, performance standards with feedback, and monetary
incentives) not new, but also not behavioristic. Locke states that so-called
"behavioral" techniques have long been used in industry and other fields.
Additionally, Locke claims that "behavioral reinforcers" do not condition
behavior automatically, but affect action in a cognitive process. In general,
Locke's position is that behavior modification principles lack the capacity
to explain human action because they avoid the necessity of dealing with
phenomena not directly observable (Locke, 1977:550).

Summary. Of the four models of motivation previously discussed, no one
model is clearly superior in its treatment of why effort is expended. Need
and equity theories generally agree that internal tension is the antecedent
condition for directed behavior. However, equity theory is less specific
in the ordering and interrelationship of needs/tensions than are need
hierarchy theories. Behaviorists avoid any reference to cognitive pro-

cesses of the individual and emphasize the stimulating effect of environmental contingencies to explain behavior. Expectancy theory however, presents an explicit rationale for directed activity - the perceived likelihood that valued outcomes will be realized from the expended effort.

Another attribute of expectancy theory is that it is complemented by various aspects of the other models. Expectancy theory, and the Porter-Lawler model of work motivation in particular, does not reject the idea of needs or tensions as anticedents of goal oriented activity, and also integrates the concept of equity as influencing the performance-reward-satisfaction relationship. Comparing behavior reinforcement theory to expectancy theory, the environmental stimulus could be likened to the interactive effect of valence and E-P/P-O probabilities, both producing a response (effort) leading to consequences (rewards/outcomes). However, the two models are at opposite ends of the cognitive/voluntary - reactions/involuntary spectrum.

Although not an essential part of motivation theory, consideration of how expended effort is translated into performance is critical for use of motivation theory in organizations. With respect to this, need hierarchy theories are particularly general and vague. Just because an individual is relatively satisfied with one set of needs, this does not necessarily imply something about his level of performance, regardless of the type of need or its position in hierarchy. Although equity theory is somewhat more specific than need theories with regard to performance implications, it does not specify which strategy an individual will use to reduce the perceived inequity, or how that strategy is related to a level of performance. With behavior modification theory, expended effort is translated into performance only to the extent that all relevant performance-related behavioral events are correctly identified in conjunction

36

with their existing (or new) contingencies.

Of the models discussed, the Porter-Lawler model of work motivation provides the clearest description of the interaction of performance in motivated behavior. Performance is precipitated by effort expenditure in conjunction with abilities, traits, and role perceptions. Performance in turn has both affective and cognitive consequences. They are affective in their impact on satisfaction (through rewards), and cognitive in their proposed impact on perceived equitableness of outcomes and perceived effort-reward probabilities (Landy and Trumbo, 1976:328). Thus, it is concluded that all four theories are somewhat complementary, but that expectancy theory, and in particular the Porter-Lawler model, provides theory of motivation useful in work environments.

The second purpose of this chapter is to examine the models of work motivation underlying job design efforts.

Models of Work Motivation/Job Design

In this section, six models of work motivation/job design are examined in terms of their utility for understanding the motivational nature of the work place. The intent of this review is to provide the background and framework to develop a comprehensive model of work motivation. The models examined in this section are: (1) Motivator-Hygiene Theory, (2) Activation Theory, (3) Achievement Motivation Theory, (4) Socio-Technical Systems Theory, (5) Requisite Task Attributes Model, and (6) The Job Characteristics Model.

In a recent article examining the motivating properties of tasks, Steers and Mowday (1977) suggest that there are few (if any) comprehensive theoretical models which attempt to explain and predict the effects of task properties on employee reactions, in spite of the fact

37

that empirical research in this area is extensive. "Emphasis on correlation studies of perceived task characteristics at the expense of model development has impeded understanding of this important area of organizational behavior" (Steers and Mowday, 1977:646). As a result, researchers and managers alike find it difficult to understand how changes in the job affect employee motivation. Additionally, Steers and Mowday suggest that with the present level of model development, it is difficult to predict when improved worker satisfaction and/or performance would or would not be expected from changes in the job. A review of current models of task/work motivation will set the stage for development of a comprehensive model.

Motivator-Hygiene Theory. This theory of work motivation is known as Orthodox Job Enrichment (OJE), and is based on Herzberg's two-factor theory of job satisfaction and motivation. Herzberg (1966; Herzberg et al., 1959) propose that employee needs are divided into two groups. The first group of needs is thought to be satisfied by opportunities for personal growth in one's job such as recognition, advancement, achievement, challenge, and learning. These factors are known as job factors or "motivators". The other group of needs are thought to be satisfied by such things as monetary compensation, job security, company policy, working conditions, supervisory practices, and co-worker relations, and are known as "hygienes". Herzberg clearly identifies motivators with the content of the work (intrinsic aspects) and hygienes with the context of the job environment (extrinsic aspects). Both motivators and hygienes meet needs of employees, but Herzberg's theory specifies that motivator, not hygienes, lead to true work motivation. The distinction between the two is subtle but critical. A hygiene is something used to move an employee to do something he would not ordinarily do. On the

38

other hand, when a worker is motivated (as opposed to moved) to do a job, Herzberg believes he does so because of some intrinsic aspect of the job. Together with other management theorists, Herzberg believes that these intrinsic motivators have been systematically designed out of many jobs in the past, with the results that workers are neither motivated nor satisfied with their work.

Motivator-Hygiene Theory (M-H) proposes that the affective experience resulting from the satisfaction of personal growth needs is qualitatively different from the feeling derived from the satisfaction of hygiene needs. The different affective responses are thought to operate on independent continuum, personal growth needs on a fulfillment-emptiness spectrum, and hygiene needs on a discomfort-relief spectrum (see Figure II-6). The M-H Theory suggests that motivators are most likely to affect one type of job feelings (fulfillment-emptiness), and the hygienes most likely to affect the discomfort-relief feelings.

The two-factor nature of the M-H Theory stems from this idea of different affective responses operating on independent continuum. Herzberg proposes that if a person experiences these motivators in his work, this will lead to a feeling of "job satisfaction", while an adequate amount of hygiene will lead to a feeling of "no job dissatisfaction". A lack of motivators is supposed to induce a feeling of "no job satisfaction", while insufficient hygienes should lead to "job dissatisfaction". If the need structure is indeed independent, then it is conceptually possible to be both "dissatisfied" from the lack of hygienes and "satisfied" by the presence of motivators. In a job that lacks motivators but has adequate hygienes (the majority of jobs today according to Herzberg), a worker would neither be satisfied nor dissatisfied.

No Satis- faction	Fulfillment-Emptiness Spectrum	Satis- faction
	Needs Satisfied by "Motivators"	
Dissatis- faction	Discomfort-Relief Spectrum	No Dissatis- faction
	Needs Satisfied by "Hygienes"	
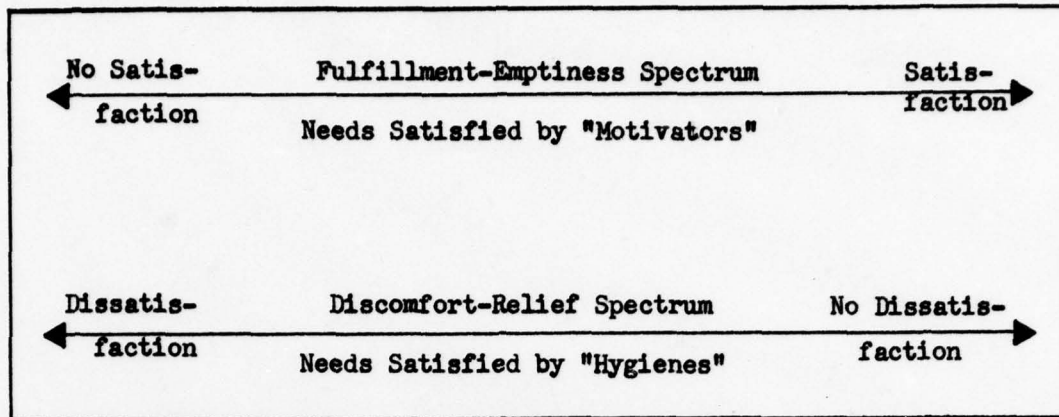
Figure II-6. Motivator-Hygiene Theory: Different Affective Responses.

One difficulty in understanding the M-H Theory lies in the somewhat unique use of the word motivation. As previously discussed, the generally accepted difference between motivated and unmotivated behavior is that the former is goal directed while the latter is reflexive. With respect to work behavior, the M-H Theory seems to make a further distinction of goal directed behavior; that which is motivated by the job factors to satisfy personal growth needs, from that which is moved by the hygienes to satisfy other needs. Herzberg's theory appears to reject the idea that monetary compensation, social interaction, or some other hygiene need could be the most important aspect of an individual's work experience. In a word, the M-H Theory assumes that a person views (or should view) his/her job as a meaningful end in itself, as opposed to being a means to non job-related ends.

Literally hundreds of research articles have been generated as a result of the so-called "Herzberg controversy", yet this research has failed to provide convincing evidence of support or non-support for the theory. Some researchers have concluded that the M-H Theory is method-bound as a result of certain defense mechanisms that are operative in the critical incident

40

technique used by Herzberg in his research (Vroom, 1964). Other criticisms of the M-H Theory are found in House and Wigdor (1967), while at least partial support has been provided by Whitset and Winslow (1967), and Bockman (1971). A review of M-H Theory research by King (1970) concluded that many of the empirical studies are "irrelevant", and that Herzberg's theory has not been adequately tested. This lack of theory validation, however, is not sufficient reason to reject his approach to job enrichment, although some theorists have concluded that his model is incomplete (Lawler, 1973:72).

Principles of OJE. Conceptually, job enrichment (Orthodox or other) is vertical job expansion which increases the autonomy and responsibility for what the worker does, while job enlargement is horizontal expansion which increases the number and type of tasks. Many theorists have argued that jobs should be both vertically and horizontally expanded if they are to be intrinsically motivating, satisfying, and truly enriched (Lawler, 1973:152). OJE is based on the vertical job loading concept summarized by three broad principles (Herzberg, 1966:59-61):

1. Create a meaningful slice of work for each worker. Avoid fragmentation of work by structuring jobs so that each worker is given a natural grouping of tasks that he will perceive as a whole function.

2. Remove some controls and increase the accountability of individuals for their own work. Recognize good work through timely performance and feedback and identify deficiencies directly to the responsible individual and make him accountable for corrective actions. Reward good performance with additional responsibility and more freedom.

3. Assign tasks commensurate with employee development and encourage professionalism in specific areas of interest and aptitude within a given job or profession.

These principles can be further quantified into eight vertical job loading aspects or ingredients of a "good" job that "seem to" enhance motivation and job satisfaction. They are (Herzberg, 1974:71):

1. <u>Direct Feedback</u> - The results of a person's performance should be given directly to him rather than through his supervisor, performance review, or other "indirect" method. In addition, this feedback should be non-evaluative and timely.

2. <u>Client-Worker Relationship</u> - All too often the "customer" of many jobs seems to be a regulation or a supervisor. A client-worker relationship that is highly visible to the worker will enhance the meaningfulness of and identity with his job.

3. <u>New Learning</u> - The opportunity for workers to feel that they are growing psychologically is important. This essential ingredient will provide opportunity for the worker to learn something purposeful and meaningful. (OJE emphasizes that this psychological growth results from vertical but not horizontal job expansion).

4. <u>Opportunity to Schedule One's Work</u> - Allowing the worker to schedule his day in the sequence that he feels most appropriate will tend to make him responsible for the work as opposed to being responsible to the schedule.

5. <u>Unique Expertise</u> - This ingredient recognizes a need for providing aspects of jobs that the worker can consider as "doing his own thing".

6. <u>Control Over Resources</u> - Employees should be given cost control opportunities to further increase the meaningfulness of and responsibility for a larger part of the work operation.

7. <u>Direct Communication Authority</u> - This promotes efficiency by removing unnecessary middle men and in addition promotes a feeling of job ownership. This ingredient is also viewed as the facilitating vehicle for all the other job ingredients previously mentioned.

8. <u>Personal Accountability</u> - Too many controls often causes excessive division of resulting in lost accountability. The potential of accountability can be instilled by identifying work performance directly with the individual. Personal accountability is seen as both an ingredient and an effect of an enriched job.

It is important to point out that the M-H Theory places emphasis on the hygienes as an issue in a broader "Quality of Working Life" concept, but not as a source of work motivation. While job factors are concerned with using people well, hygienes are concerned with treating people well (Herzberg, 1974:71).

Despite the intuitive appeal of the Motivation - Hygiene Theory and OJE model, Herzberg fails to explicitly consider an important aspect of work motivation - the degree of worker responsiveness to an enriched job.

OJE assumes that job factors can increase the work motivation of all employees, irrespective of individual differences. Herzberg does admit, however, that the exact ingredients of an enriched job that provides growth, achievement, advancement, responsibility, and challenge, will vary with individual characteristics, professions, and situations (Herzberg, 1974:72).

There are, then, two significant deficiencies with the M-H Theory as a comprehensive model for task motivation: (1) the failure to incorporate an explanation of how such factors as responsibility, challenge, and achievement result in higher motivation and/or satisfaction; and (2) the assumption that all workers are desirous of an "enriched" job. With regard to this second point, Herzberg recommends against allowing employees whose jobs are to be enriched to participate in the job enrichment process. He suggests that such participation "contaminates the process with human relations hygienes..." (Herzberg, 1968:62). On this point, OJE is at considerable variance with other models of job design.

Activation Theory. This model attempts to relate task/job design with performance and satisfaction through a physiological process known as activation or level of arousal. Reviewing the results of research on brain stimulation, Scott (1966) suggests that activation theory offers an explanation for the low performance and dissatisfaction that often accompanies boring and repetitious jobs. Activation is defined as "the degree of excitation of the brain stem reticular formation" (Scott, 1966), or as the degree to which stored energy is released (Duffy, 1962). Activation Theory holds that stimuli impinging on the human receptor serve two purposes: a cue or information function, and an arousal or activation function. Generalizing from this theory and the results of stimulation studies, Scott argues that the amount and variety of stimulation serve to motivate

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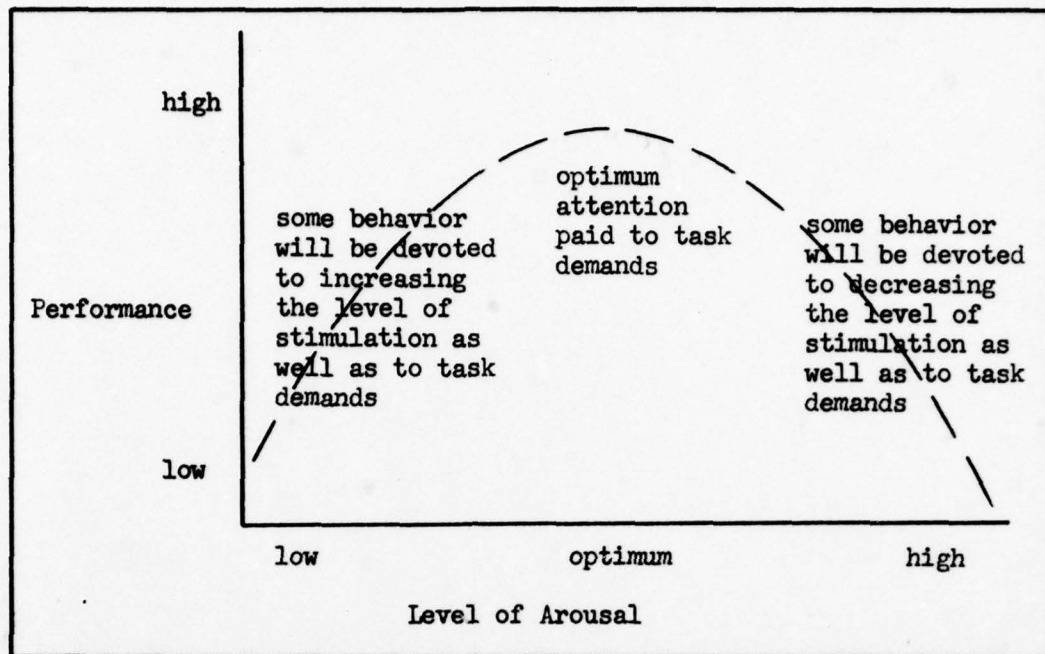
Figure II-7. Theoretical Relationship Between Level of Arousal
and Performance.   (Korman, 1977:195)

the worker; possibly to a higher level of performance. Research has shown

that performance may suffer at very low or very high levels of activation

as shown by the U-shaped curve in Figure II-7. It is thought that each

individual has a unique and optimal or "characteristic" level of arousal,

and that performance is most efficient when the amount of stimulation is

at this characteristic level.

Activation theory may offer a physiological explanation for why low

productivity often results from boring jobs. Also, the theory suggests

that there may be an optimal amount of stimulation for a given individual.

Both of these aspects are directly relevant to the theory and practice of

job design. However, because of inherent difficulties in measuring the

actual level of activation experienced, and without a way to determine

optimal levels for different individuals, Scott concludes that activation

44

theory does not allow precise statements concerning how or when to enrich a job. Landy and Trumbo (1976:324) suggest that the relationship of the individual's optimal arousal level to the arousing potential of the particular task might be thought of as intervening between the effort and performance components of the Porter-Lawler model (possibly as an individual trait). As a minimum, the implication of reduced efficiency for excessive stimulation should be heeded in job redesign programs.

Achievement Motivation Theory. This model is based on a general need theory of motivation developed in the 1930's by Murray (1938). The theory proposes that individuals can be grouped according to strengths of various personality-need variables which are believed to represent a central motivating force, in terms of the intensity and direction of behavior. Although Murray does not propose a hierarchy of needs like Maslow, his conceptualization of multiple and often conflicting needs bears a strong resemblance to Maslow's theory on two points: (1) both suggest that a set of goals exist which direct behavior, and (2) both are hypothetical constructs inferred from observed behavior, and designed to describe that behavior.

Murray's theory, based on clinical observations as opposed to empirical research, views an individual's personality as being composed of many divergent needs such as need for achievement, affiliation, power, autonomy, nurturance, and deference. According to the theory, needs may be manifest or latent (depending on whether or not they have found an overt form of expression), and either weak or strong.

Recent application of this theory to the issue of performance in organizational settings and job design has concentrated on the specific need for achievement (n Ach). Need for achievement represents an exper-

ienced need to accomplish something important or compete with a standard of excellence, and the stimuli for such behavior is believed to be the positive affect associated with successful performance (McClelland, 1961).

With regard to job design, Achievement Motivation Theory suggests that employees who have a high n Ach would be more likely to seek a challenging task, assume responsibility for tasks, prefer situations with some element of risk, and prefer situations that provide feedback on their performance. In contrast, the theory suggests that low n Ach employees prefer situations where responsibility is low or shared with others, and where risk levels are low. The obvious implication is that the strength of need for achievement of an employee may influence the positive outcomes of a job enriched with responsibility, challenge, and feedback. Research results by Steers (1975) and Steers and Spencer (1977) support this proposition for improved job performance as an outcome, but other research (Steers, 1976; Stone, Mowday, and Porter, 1977) failed to support this proposition for increased job satisfaction.

Steers and Mowday (1977) summarize three criticisms of n Ach as a model of task motivation. First, the model places too much emphasis on a single variable to explain individual differences. Steers and Mowday argue that more complex analyses are needed to take a more comprehensive approach to the problem. However, Steers and Spencer (1977) suggest that if one component (n Ach) out of a group of "higher-order" needs was shown to represent a significant variable in task-motivated behavior, the utility of the broader and less specific "group" of variables would be questionable unless it added something beyond the n Ach component. The issue will remain mostly argumentative until additional research is available. This is precisely the substance of the second criticism; that the applicability of the n Ach model is not established in the work situation because most

46

supporting studies have been confined to laboratory conditions. Finally, the model does not clearly specify recommendations for employees with low n Ach. In addition, the model does not suggest any implications for the emergence of other needs (e.g., affiliation, autonomy, power) on the job design process.

In spite of these shortcomings, Achievement Motivation Theory has gained considerable acceptance among management theorists and practitioners. Need for achievement seems to be an intuitively appealing variable with which to differentiate those individuals who will more likely be receptive to, and rewarded by, an enriched job.

Socio-Technical Systems Theory. The socio-technical systems (STS) approach to job design attemtps to integrate the technical aspects of the work itself with the broader social systems within which the work is done. In its broadest sense, STS Theory encompasses all of the Quality of Working Life concepts outlined in the first chapter, and thus is not a theory of task motivation per se, but a way of thinking about work systems. The fundamental objective of the STS approach is to design a layout and production process that both serves the needs of employees and meets production requirements. Indeed, other job design approaches have a similar objective, but the scope of the STS approach is so broad that the entire organization (or a major part of it) may be involved in the balancing and optimizing of social and technical systems.

Two essential premises of STS theory have been described as follows:

> The first is that in any purposive organization in
> which men are required to perform activities...the
> desired output is achieved through the actions of a
> social as well as a technical system. These systems
> are so interlocked that the achievement of the out-
> put becomes a function of their joint operation...it
> is impossible to optimize for overall performance
> without seeking to optimize jointly the correlative
> but independent social and technological systems.

The second premise is that every sociotechnical system is imbedded in an environment that is influenced by a culture, its values, and a set of generally accepted practices. This environment permits certain roles for organizations, groups, and the individuals in them. To understand a work system or an organization, one must understand the environmental forces that are operating on it. This emphasis suggests, correctly, that sociotechnical theory falls within the larger body of 'open system' theories. Simply stated, this means that there is a constant interchange between what goes on in a work system or organization and what goes on in the environment (Davis and Trist, 1974:247).

It is apparent that STS theory contrasts with the traditional engineering approach to work design which often ignores the personal and social needs of workers. The STS model also differs from psychological approaches to work design which often underemphasize technological and environmental factors. Psychological approaches start with the person and the job and then address the social and technical environment as intervening variables of the person - job relationship. The STS model takes the opposite view, starting with the work "system", and addressing the job and individual as part of that system.

A set of general sociotechnical principles of job design based on the "psychological requirements" of the job are suggested by Trist (1970) and summarized by Steers and Mowday (1977). The psychological requirements are described as the need for the job to provide: (1) reasonably demanding content; (2) an opportunity to learn; (3) some autonomy or discretion in decision making; (4) social support; (5) a relationship between what is produced and the employee's social life; and (6) the feeling that the job leads to a desirable future.

These general psychological requirements of the job translate into job design principles not unlike those of OJE:

1. An optimum variety of tasks within the job,

2. A meaningful pattern of tasks that relate to a single overall task,

3. An optimum length of work cycles,

4. Discretion in setting standards of performance and feedback on results,

5. Extending the boundary of the job to include "boundary tasks",

6. Tasks that require some degree of skill and are worthy of respect in the community,

7. Tasks that make a perceivable contribution to the overall product.

Other criteria and principles for change have been proposed (Davis, 1966; Davis and Trist, 1974; Engelstad, 1972; Trist, et al., 1963), but the various sets of prescriptions differ in numerous specifics and appear to be based more on project experiences than on any tenets of STS theory. In short, the theory is still being formulated.

The development of the idea of "autonomous work groups" is an important contribution of STS theory. In such a group (typically less than 20 members) the members of a work team share much of the decision-making relevant to the planning and execution of the work (Bucklow, 1966; Gulowsen, 1972). The task of an autonomous work group is designed so that it is a whole piece of work on which group members can perform a variety of different roles, but obtain feedback as a group. Other aspects of the workplace such as the layout, process, nature of management-group interface, and compensation plan, are changed so that the group, its task, and the organization are congruent with one another.

In spite of some successes of work system redesign (Walton, 1972, 1975; Gyllenhammer, 1977), further refinement of the STS theory appears necessary before it can serve as a useful guide for research and practice.

Hackman and Suttle (1977), and Steers and Mowday (1977) state four significant drawbacks of the STS theory. First, the STS approach provides few explicit explanations of how (and under what circumstances) the technical and social aspects affect one another. Also, the approach gives little specific guidance about how (and how not) to proceed in carrying out redesign activities. The theory does not specify how task or other work system characteristics influence employee reaction to the work. Finally, it is not clear whether the psychological requirements of the job are the same for all workers, and if not, how do individual differences affect reactions to Job design.

Requisite Task Attributes. Focus on the objective characteristics of jobs is rooted in the work of Turner and Lawrence (1965). This research was based on the idea that "every industrial job contained certain technologically determined task attributes (objective characteristics) which would influence worker's response" (Turner and Lawrence, 1965:vi). Measures of six "Requisite Task Attributes" (RTA) were developed which were predicted to be positively associated with employee work satisfaction and attendance. The six RTA were job variety, autonomy, required interaction, optional interaction, knowledge/skill, and responsibility. A summary measure (RTA Index) was derived from the six individual measures and used to test relationships between the nature of jobs and employee reactions to them.

Positive correlations between the RTA Index and employee satisfaction/attendance were found only for workers from factories located in small towns (N = 73, blue collar, male). For employees in urban work settings (N = 56), satisfaction was negatively related to RTA Index scores, and absenteeism was unrelated to the index (Turner and Lawrence, 1965:103). The researchers concluded that "technologically job-determined

50

attributes dominated worker response. This was true whether that response was positive or negative" (Turner and Lawrence, 1965:viii). In addition, they concluded that reactions to jobs high on the RTA Index were moderated by differences in the cultural backgrounds of employees, and other situational factors such as satisfaction with supervision and work groups.

Individual Differences. Subsequent research by Hulin and Blood (1968; Blood and Hulin, 1967) provides additional support for the moderation of worker responses to the design of their jobs by subcultural factors. They proposed this factor to be the alienation of workers from middle-class work-related values and norms, measured by community size, standard of living, extent of slums, and other cultural elements. For workers in the community with the highest "alienation", correlation between job size (RTA Index) and work satisfaction was -.50, while for those drawn from plants in low alienated communities, correlation was .40 (Hulin and Blood, 1968:49).

Further evidence of attribute impact on employee attitude and behavior is provided by Hackman and Lawler (1971). Four "core" job dimensions of variety, task identity, autonomy, and feedback were adapted from the previous Turner and Lawrence work. Hackman and Lawler suggested that if employees were desirous of higher order need satisfactions, there should be a positive association between the core dimensions and job motivation, satisfaction, performance and attendance (Hackman and Lawler, 1971:271). In general, results supported this proposition among 208 employees in 13 different jobs. In addition, jobs high on all four core dimensions were more intensely associated with favorable job outcomes than were jobs that were high on only some core dimensions. The moderating effects of a higher-order growth-need variable were also

51

supported using subgroup correlation analysis. Brief and Aldag (1975) replicated Hackman and Lawler's findings using similar analysis techniques. The hypothesis that workers with rural backgrounds have greater higher-order need strength than workers from urban backgrounds was also tested in both studies. Hackman and Lawler found some support for this, while Brief and Aldag did not.

Additional support for the Hackman/Lawler findings has been reported by Robey (1974), using "extrinsic" versus "intrinsic" work values as the individual difference measure, and by Sims and Szilagyi (1974) using a measure of individual growth need strength. Negative findings for moderation effects of individual differences were reported by Shepard (1970) using a measure of alienation from work, and by Stone (1976) using a measure of employee endorsement of the Protestant Work Ethic. Wanous (1974) compared the usefulness of three measures of individual differences as job outcome moderators for the same sample: 1) higher order need strength, 2) endorsement of the Protestant Work Ethic and 3) Urban versus rural subcultural background. All three were found to have some moderating value, with the need strength measure strongest and the subcultural background measure weakest.

In summary, much evidence exists to support the idea that measurable differences do moderate how employees respond to the complexity and challenge of their work. Studies using measures of individual higher-order needs seem to provide better support for such moderating effects, than do generalized measures of subcultural background or work values (Hackman and Oldham, 1976).

Job Characteristics Model. The Job Characteristics model proposed by Hackman and Oldham (1976) is built on the conceptual framework of the Hackman and Lawler (1971) study, discussed in the last section. Findings

in that study and subsequent research led to the refined Hackman-Oldham Model. The basic job characteristics model (Figure II-8) depicts five core job dimensions stimulating three psychological states which, in turn, lead to beneficial personal and work outcomes. The linking processes between job dimensions and psychological states, and between the psychological states and outcomes are shown to be moderated by individual growth need strength (Hackman and Oldham, 1976:255).

Psychological States. Three psychological states are claimed to be critical in affecting a person's work motivation, performance, satisfaction, and attendance:

1. Experienced Meaningfulness - the employee must experience the work as generally important, valuable, and worthwhile.

2. Experienced Responsibility - the employee must feel personally responsible and accountable for the results of the work.

3. Knowledge of Results - the employee must have an understanding of how he/she is performing his/her work (frequent but not on a scheduled basis).

Similar to Hackman and Lawler (1971), the Hackman-Oldham model claims that internal rewards are realized by an employee when he/she learns (knowledge of results) that he/she personally (experienced responsibility) has performed well on a task that he/she cares about (experienced meaningfulness). These internal rewards are reinforcing incentives for a self-perpetuating cycle of positive work motivation. As long as the worker values such rewards and the psychological states continue to exist, the cycle is predicted to continue.

The theory proposes that the psychological states are stimulated by the presence of five job characteristics. Three of these are shown in Figure II-8 as contributing to experienced meaningfulness, and one each contributing to experienced responsibility and knowledge of results. Skill variety, task identity, and task significance as seen as enhancing
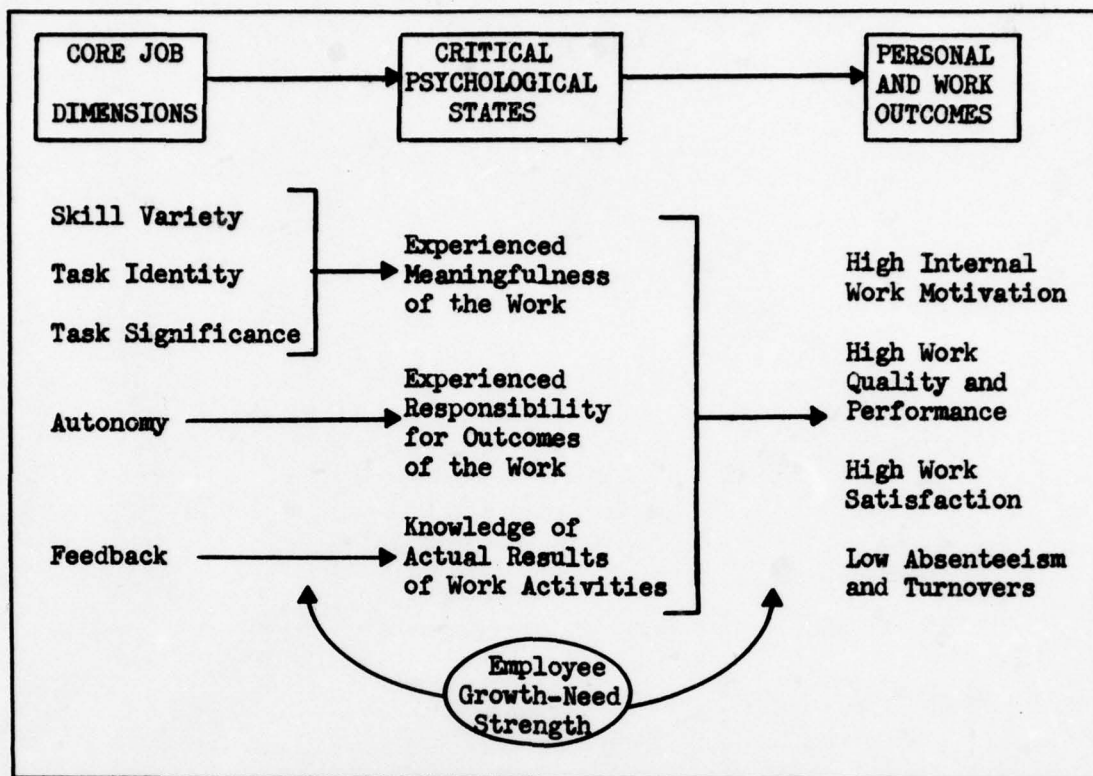
Figure II-8.   The Job Characteristics Model of Work Motivation.
(Hackman and Oldham, 1976:256)

the meaningfulness of the work. Autonomy is predicted to prompt employee

feelings of personal responsibility for work outcomes, and knowledge of

results is enhanced when a job is high on feedback (from supervisors,

co-workers, or the work itself; the latter considered most crucial).

According to the model, the overall potential of a job to stimulate

internal work motivation should be highest when all of the following are

true: 1) the job is high on at least one core dimension leading to exper-

ienced meaningfulness, 2) the job is high on autonomy, and 3) the job is

high on feedback. A measure of the degree to which these conditions are

met is given by the Motivating Potential Score (MPS) computed as follows:

$$MPS = \frac{\text{TASK VARIETY} + \text{TASK IDENTITY} + \text{TASK SIGNIF-ICANCE}}{3} \times \text{AUTONOMY} \times \text{FEEDBACK}$$

As seen from this formula, a low score on Autonomy or Feedback will reduce the MPS more than a similar low score for any of the other three core dimensions.

A key variable in the Job Characteristics Model is "Employee Growth-Need". The basic proposition is that employees who have high need for personal (job related) growth and development will respond more positively to a job high in motivating potential than individuals with low growth-need strength. This is virtually the same prediction that received significant support from the Hackman and Lawler (1971) study using four core job dimensions. The Hackman-Oldham model states that workers high in growth-need are more likely (or better able) to experience the psychological states when the core job dimensions are present, than are workers low in growth-need. In addition, the individual growth-need variable is believed to moderate the psychological states - work outcome relationships. Several outcome variables are predicted to be affected by the core dimensions and psychological states, but interactions between outcome variables are not addressed. Relationships between internal work motivation, core dimensions, and psychological states are considered crucial to the proposed theory. Other outcomes proposed are the quality of work performance, job facet and overall job satisfaction, absenteeism and turnovers.

A survey instrument was specially designed to measure each of the variables in the Hackman-Oldham model (absentee and turnover rate data excluded). The Job Diagnostics Survey (JDS) is a lengthy survey which uses multiple responses to generate scores for each variable in the model. Most variable scores are determined using the average of responses to at

55

least three different questions (Hackman and Oldham, 1975). For example, Individual Growth Need Strength is measured using the average of six questions for which individuals indicate the degree that they would like each characteristic in their jobs. The six questions/character- istics are (Hackman and Lawler, 1975):

1. Stimulating and challenging work
2. Chance to exercise independent thought and action in my job
3. Opportunity for personal growth and development on the job
4. Opportunity to be creative and imaginative in my work
5. A sense of worthwhile accomplishment in my work
6. Opportunities to learn new things from my work.

Validity of the Hackman-Oldham Model. Results of empirical tests of the Hackman-Oldham Job Characteristics Model are generally supportive of the theory, however, only a limited number of research efforts have been published to date. The initial test of the theory used data obtained from 658 employees working on 62 different jobs in seven organizations. The private sector organizations included both industrial and service types located in the East, Southeast, and Midwest, in both urban and rural settings (Hackman and Oldham, 1976:259). Another study was conducted using data from 201 employees who worked on 25 different clerical type jobs in a large metropolitan bank (Oldham, Hackman, and Pearce, 1976). The following points summarize conclusions from these reports (Hackman and Suttle, 1977:132):

1. Employees who perceived their jobs to be high on the
   core dimensions were more motivated, satisfied and
   productive than were employees who described their jobs
   as low on the core dimensions. Absenteeism was also
   lower for the initial test.

2. Responses to jobs high on the core dimensions were more positive for employees having high growth-need than for employees with low growth-needs. This moderating effect occurred at both links in the model core dimensions - psychological states, and psychological states - outcomes).

3. The core job dimensions appeared to operate through the psychological states as opposed to influencing outcomes directly. Using correlation and regression techiques, explained variance was greater between core dimensions and psychological states than between core dimensions and outcomes.

One relationship, Autonomy - Experienced Responsibility - Growth Satisfaction, showed less convincing results for this than the other relationships.

Proposed Diagnostic Use. Hackman (Hackman and Suttle, 1977) proposes five steps that might be considered an outline to be followed in examining and initiating a job design project based on the job character- istics model and using the JDS. These steps are represented diagrammatically in Figure II-9.

1. Determine if poor work motivation and satisfaction really exist. If this is not the case, a job enrichment project may not alleviate the symptomatic problems of low productivity, high absenteeism, high turnover, and the like. The primary question here is not could a job enrichment project be implemented, but would it successfully and efficiently address the real problem(s)?

2. Determine if the job is low in motivating potential. It is possible that employees could have low work motivation and satis-

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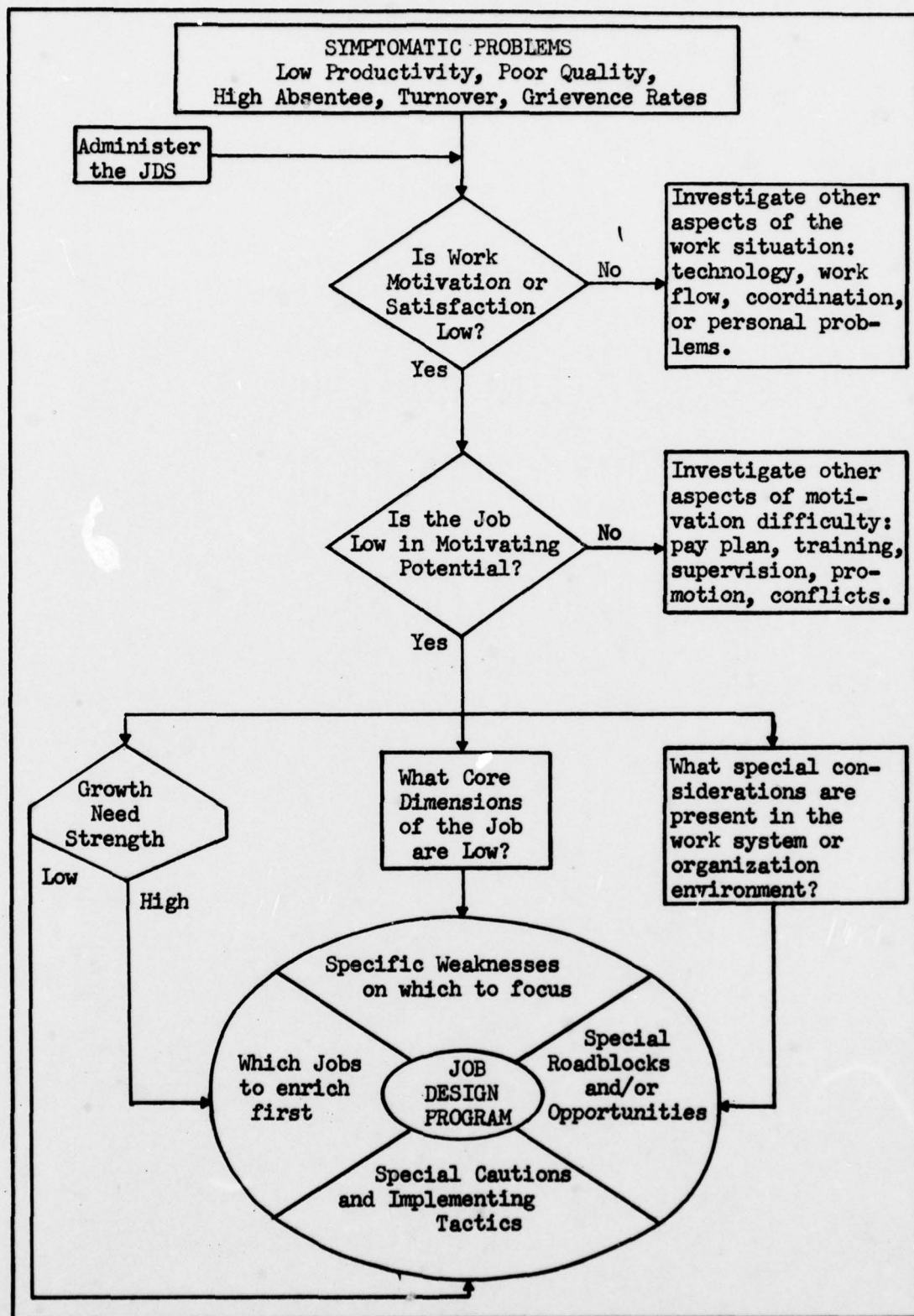
Figure II-9. General Job Diagnosis Plan Using the JDS.

faction and yet see their jobs meaningful and responsible (high MPS).
If this is so, then aspects external to the work itself, such as the
pay plan or promotion opportunity, should be examined for cause. A job
design project may only aggrevate the situation.

Objective measurements for each of the core job dimensions and
their summary Motivating Potential Score (MPS) can be compared between
groups within the organization in question, or evaluated using baseline
data. Two baseline data files which may be used for comparison are
Hackman and Oldham's compilation of means and standard deviations obtained
from a cross-section of jobs (Hackman and Oldham, 1975) or the Equal Employ-
ment Opportunity Commissions (EEOC) compilation of means and standard dev-
iations (Van Maanen and Katz, 1974).

3. <u>Determine the specific dimensions of the job low in motivating
potential.</u> A visual profile of the core dimensions and MPS is useful to
make comparisons and spot strengths and weaknesses of the job. Such a
profile for two EEOC job categories (professional and clerical) is shown
in Figure II-10. Although no baseline data exists for Air Force jobs,
one study of 561 civilian and military employees at a large industrial
facility in the central United States reported an overall sample MPS of
145 (Jones and Ridenour, 1977:49). Another study of 202 maintenance
personnel (95 Field Maintenance and 107 Organizational Maintenance) re-
ported MPS scores of 131-FMS and 100-OMS (Guthrie, 1977).

4. <u>Are workers receptive to enrichment of their jobs?</u> At this
point in the diagnosis of the job, it is important to consider the
impact employees will have on forthcoming changes as well as the impact
of the changes on the workers. Growth need strength can be used to help
identify which jobs should be addressed first, and which jobs/workers
should be further studied.
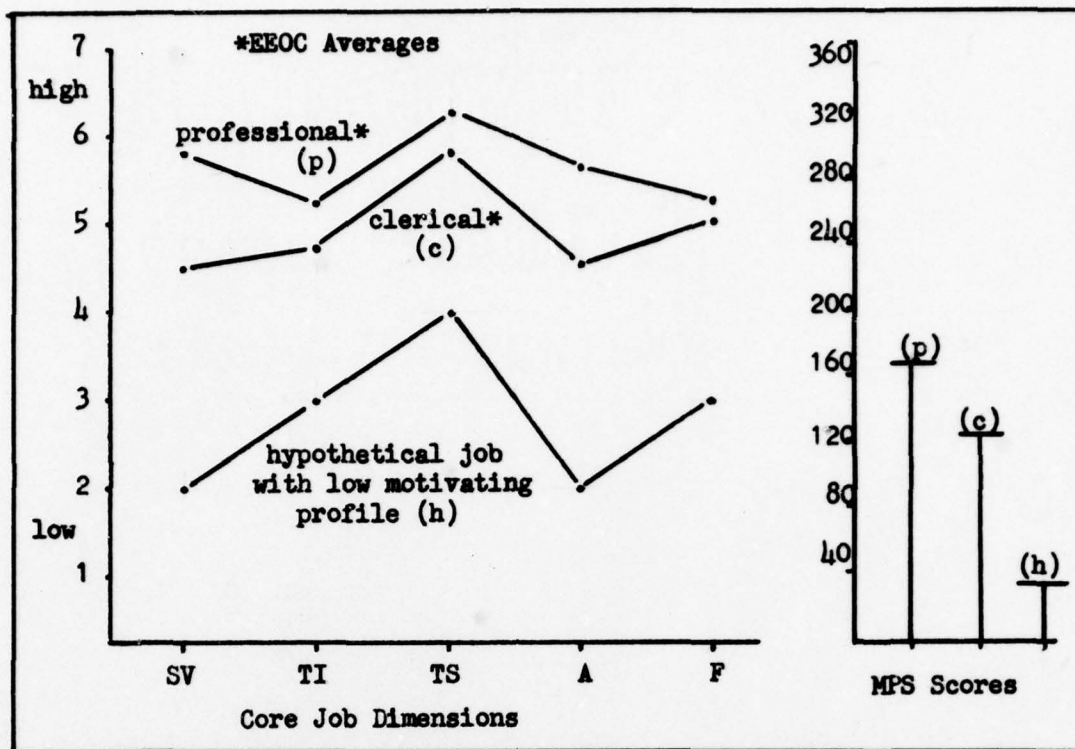
Figure II-10. Job Profiles Using the Job Diagnostic Survey.
(Hackman and Suttle, 1977:135)

5. <u>Determine if special problems or opportunities exist in the</u>
<u>work system</u>. These considerations can affect the job design project either

positively or negatively, and can often determine its success or failure.

Particularly high dissatisfaction by employees with one or more aspect of

their work life (external to the work itself) may retard or subvert job

design efforts. For example, it would be futile to initiate a job design

project in an area where workers and their supervisor were distrustful of

each other, especially since the supervisor is a necessary and critical

element for a successful program. Another example of what typically con-

stitutes an important consideration is the attitude of middle and top man-

agement toward the job design effort.

The five diagnostic steps previously discussed are aimed at a logical

and thorough analysis of the work situation leading up to actual job enriching action. Hackman proposes five action principles leading to changes which are most likely to improve the core dimensions (Hackman and Suttle, 1977:136-140). These principles are: 1. combining tasks; 2. forming natural work units; 3. establishing client relationships; 4. vertical job loading; and 5. opening feedback channels (Figure II-11).

The Hackman-Oldham job characteristics model is the basis for a systematic approach to job diagnosis and job design. The model attempts to take into account individual response to the job enrichment process, and suggests a process as well as content of a potentially motivating job. Especially useful to a practicing manager is the detailed procedure for conducting a diagnosis of the work place to determine whether or not job enrichment is a useful organizational change strategy.

However, at least three points detract from both the RTA and Job Characteristics Model. First, how task characteristics or attributes "cause" high internal motivation and satisfaction is not well integrated with general theories of work motivation for either model. Although the concept of psychological states is suggestive of a cognitive process with feedback from current experiences, the Job Characteristics Model does not develop this or any other motivating process explanation. Secondly, the task characteristics identified in the RTA model were based on a priori classification without establishing empirically their importance to the respondents. Although the Job Characteristics Model did compare employee descriptions of the objective characteristics of their jobs to similar descriptions made by research observers and management personnel (Hackman and Oldham,(1976:260), it is still not possible to conclude that the five core job dimensions are the most salient motivational properties of tasks. Finally, the variables proposed to

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CHANGE PRINCIPLES                    CORE JOB DIMENSIONS

Combine Tasks                          Skill Variety

Form Natural
Work Units                             Task Identity

Establish Client
Relationships                          Task Significance

Vertical Loading                       Autonomy

Open Feedback
Channels                               Feedback
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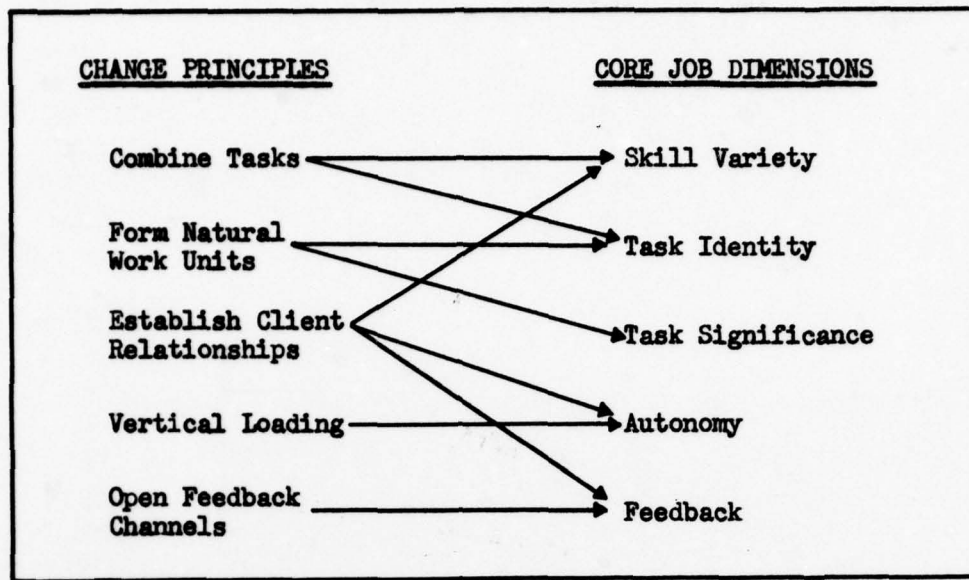
Figure II-11.   Principles for Changing Jobs With Low MPS.
(Hackman and Suttle, 1977:136)

capture the moderating effects of individual differences do not seem

to encompass all the important individual, social and organizational

aspects critical to motivation in the workplace. The RTA model included

moderating variables of urban versus rural background as a value orient-

ated differentiation, and the situational factors of supervision and work

group. The Job Characteristics Model deals only in terms of growth-need

strength moderating variable purported to include such diverse and often

unrelated needs as achievement, autonomy, self-esteem, feedback, and per-

sonal growth. No provision for contextual or "hygiene" aspects of the work

environment is included in the Job Characteristics Model, although a follow-

on study (Oldham, Hackman, and Pearce, 1976) found that satisfaction with

work context (pay, job security, supervisors and co-workers) influenced the

moderating effect of GNS. Neither the RTA model nor the Job Characteristics

Model included organizational climate and style (Lawler, 1973:165-168) as a

potential moderator, but subsequent research and development of this concept

62

by Porter, Lawler, and Hackman (1975) and Zierden (1975) indicate plausible interdependencies between job scope, organizational climate and style, and employee growth need strength.

Need For A Broader Scope. From this brief review of work motivation theories and models it is apparent that there is a need to develop more comprehensive approaches in modeling performance - motivation - satisfaction interactions. Contemporary theories that strive for model "compactness" typically emphasize the importance of intrinsic satisfaction at the expense of so-called "lower level" need satisfaction. Nord (1977) has summarized some deficiencies in the approaches taken by organizational psychologists in the study of job satisfaction. Briefly, he states that because of values and assumptions of researchers, prevailing social, political, and economic values influencing the nature of work life have not been examined. These assumptions, often unstated, lead to a number of crucial omissions and distortions in the way the work environment and job satisfaction are viewed. Nord suggests that the selection of frequently studied dependent variables - management goals, turnover, absenteeism, productivity, work involvement, and resistance to change - reflect assumptions about shared goals (employer-employee), acceptance of the current power structure, and agreement with prevailing choices among competing goals (economic growth versus quality of life for example).

Without commenting on the validity of these claims, it is clear that only a work environment model that includes both direct and indirect interactions can possibly account for or clarify such influences. Such a model necessarily needs to be more macro in scope than are many contemporary models. A review of some current literature reflects a possible trend in this direction.

A post - Hulin and Blood literature review of task design (Pierce and

Dunham, 1976) outlined much of the research findings involving moderation by individual differences and organizational variables. In general, Pierce and Dunham suggest that task design research has not been guided by any accepted conceptually or empirically developed topology. But from a broader viewpoint, they stress that the study of task/job design must be framed within networks (systems) which include relevant individual, technological, and organizational factors (Pierce and Dunham, 1976: 94-5).

A study by Rousseau (1977) suggests that both job design research and sociotechnical systems theory converge in their emphasis of a common set of job characteristics important to employee satisfaction and motivation. Although significant differences were found between job characteristics, employee satisfaction, and motivation across different organizations, these differences could be attributed to technological constraints, social interaction, and organizational climate and structure. Consequently, the results of this study suggest that the relationship of the individual to the job should be examined with reference to the organization or work system of which the individual is a part.

Finally, a study by Katz and Van Maanen (1977) examined the relationships between components of job satisfaction and various conceptually objective design variables of the work environment (task characteristics, work assistance, pay, promotions, communication, and others). Starting with the premise that work satisfaction is a complex, cumbersome, and many-sided concept for which simple schemes do not exist, they discuss three points of view that represent the major operational theoretical models of work satisfaction popularized by past research. These viewpoints are labeled "human resources", "human relations", and "human rewards". The first (human resources) refers to the recent stage of job enrichment/job design

efforts to solve the reported widespread discontent with routinized and meaningless jobs. Human relations refers to an earlier stage when democratization and humanization of the work environment was the solution to what was regarded primarily as a worker morale problem. Finally, human rewards refers to solving a productivity-based satisfaction problem using financial rewards and work procedure standardization. Although this conceptualization is only meaningful in the most general terms, it does help to establish an overall perspective of the work sympton. Application of any one "approach", independent of the remaining two, indicates a lack of such perspective.

At a "Macro" level, according to Katz and Van Maanen, job design features that affect specific aspects of work satisfaction coincide with elements central to the models of human resources, relations, and rewards. Work satisfaction is depicted as a multi-dimensional concept best idealized not by a single "level", but by a characteristic shape. Different individuals may report the same level of work satisfaction, but may derive their satisfaction from entirely different concepts and sources - different characteristic shapes.

In research by Katz and Van Maanen, work satisfaction data from 3500 governmental employees were cluster analyzed using the magnitudes of their intercorrelations as their measure of similarity. Twenty-five specific aspects of work satisfaction were measured and subsequently were shown to cluster in a tripart locus of work satisfaction - job properties, interaction context, and organization policy variables. (See Figure II-12). Each of the loci is shown to be analytically distinct (although not independent) and related to conceptually objective design variables. The horizontal and vertical axis represent a two-dimensional solution of the scaling algorithm used in conjunction with the clustering. The contour lines drawn around various items portray the clustering solution.

65
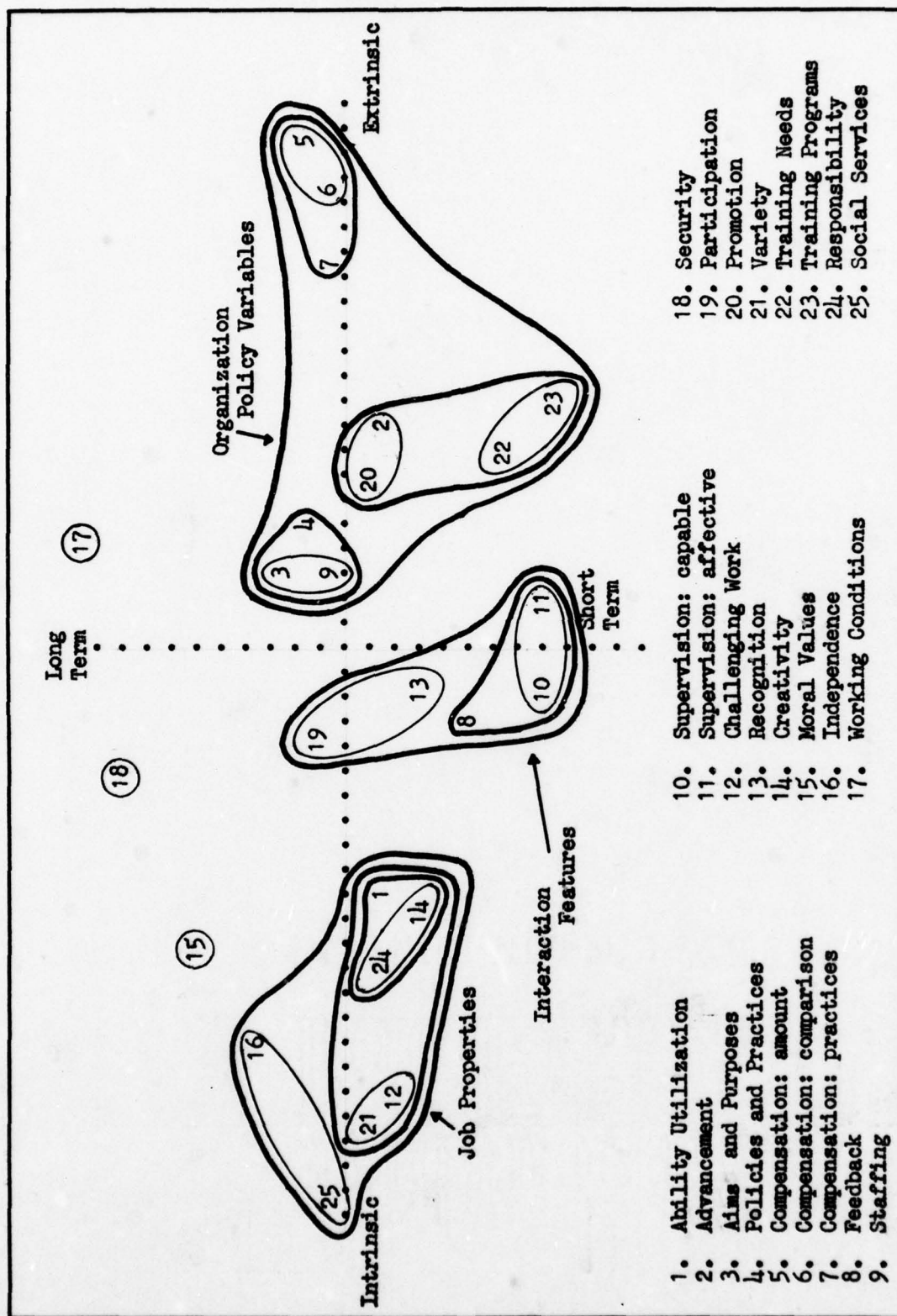
Figure II-12. Loci of Facet Satisfactions. (Katz and Van Maanen, 1977:477)

1. Ability Utilization
2. Advancement
3. Aims and Purposes
4. Policies and Practices
5. Compensation: amount
6. Compensation: comparison
7. Compensation: practices
8. Feedback
9. Staffing

10. Supervision: capable
11. Supervision: affective
12. Challenging Work
13. Recognition
14. Creativity
15. Moral Values
16. Independence
17. Working Conditions

18. Security
19. Participation
20. Promotion
21. Variety
22. Training Needs
23. Training Programs
24. Responsibility
25. Social Services

The horizontal dimension in Figure II-12 - ranges from items dealing with social service, independence, and challenging work to items covering pay, promotion, and training. According to Katz and Van Maanen, this approximates the often theorized intrinsic - extrinsic sources of job satisfaction. The items on the vertical axis range from working conditions and job security to supervision and feedback. Katz and Van Maanen suggest this dimension resembles a time based response, possibly a long term/short term satisfaction dimension.

Katz and Van Maanen point out that the items within each locus correspond to the variables of the human resources (job properties), human relations (interaction features), and human rewards (organization policies) models. In addition, they emphasize that the satisfaction mapping can not be used to classify individuals as either high or low on any dimension, and also that it does not imply that an individual desires his or her satisfaction from characteristics at one specific end of a dimension.

The results of this research imply that in the design of a change program aimed at influencing work satisfaction, explicit attention must be paid to all three explanatory paradigms - human resources, human relations, and human rewards. Additionally, each model requires a different course of action and strategy. Just as important, the conceptualization of work satisfaction resulting from this research presents a manageable and useful perspective - general enough to understand the potential interactions, but not at the expense of eliminating inherent complexity of the work system.

Summary. A collective view of the work motivation/job design models suggests that there are some differences but also many similarities among them. A comprehensive model of work motivation could be developed from the various compatible and reinforcing aspects of these models.

The sociotechnical systems model emphasizes the importance of approaching job design programs with a systems perspective. Rarely can one aspect of an interrelated work system be altered without affecting other components. The extent to which the net effects of work redesign are positive will probably depend on how extensive a systems perspective permeates the planning and implementation of such programs.

Achievement motivation theory presents a concise, efficient, and fairly well accepted measure of observable differences among people with which to differentiate those who will more likely desire a job high in responsibility, challenge, independence, and feedback. Additionally, activation theory and achievement motivation theory suggest that over stimulation should be a consideration in job changes, both from a physiological perspective (over aroused) and from a psychological perspective (over challenged or over tasked mentally). The Motivator-Hygiene theory implies that a satisfied worker is a motivated one, while expectancy and other theories state that a motivated worker, justly rewarded with valued outcomes for accomplishments, should lead to satisfaction. Indeed both notions may be partially correct, but each from a somewhat different perspective.

Some workers report preference for challenging and meaningful work that provides a sense of achievement and a learning experience. Others may express a strong desire for jobs that provide performance feedback, equitable compensation, and job security. As long as individuals indicate different degrees of preference for different job factors, the issue of individual differences will remain a critical one. An important consideration related to this issue is whether or not these self-reported preferences in job factors/outcomes are absolute or relative to specific alternatives. That is, are measures of individual differences valid re-

68

gardless of other considerations, or are they valid only in a relative

sense where specific trade-offs are considered? For example, an assembly

line worker may "prefer" interesting and varied work over boring and rep-

etitious assembly line operations, but he/she may also be willing to tol-

erate this uninteresting work in order to preserve a valued opportunity

for social interaction. If the worker perceives that such a trade-off

exists, then in spite of the fact that preference for interesting and

varied work was indicated, the individual may likely be unreceptive to

an "enriched" job that eliminates or reduces the desired social inter-

action. Although it is true that all job design changes may not create

an actual and significant trade-off situation, the view of the work place

as a set of interacting sub-systems suggests that many job design changes

do create trade-offs, or are perceived to create trade-offs. In either

case the effect would likely be the same. A comprehensive model of work

motivation should include the impact of these actual or perceived trade-

off situations.

Finally, recent trends toward a broader perspective in modeling work

motivation and satisfaction relationships has surfaced. It is apparent

that some researchers and organizational change agents are realizing the

need to do more than verbalize the belief that no one managerial strategy

to influence employee motivation and satisfaction works for all persons,

in all situations, and at all times. Recent theoretical model develop-

ments appear to be incorporating this tenet within general models of work

motivation. One such model is proposed in the following chapter.

III. A Proposed Comprehensive Model of
Work Motivation

In this chapter, a comprehensive model of work motivation is pro-
posed which represents an integration of various aspects of work moti-
vation and job design discussed in Chapter II. The Porter-Lawler model
of work motivation is used as a framework for this model development,
not because it is particularly the "best" or "correct" model of work
motivation, but because it does provide an explicit description of the
interaction between directed effort, performance, and satisfaction. In
addition, this proposed model attempts to integrate process and content
aspects of work motivation.

Premises

The following statements are premises which form the basis for
development of this comprehensive model:

1. The are two concepts or types of satisfaction; facet satis-
    faction and overall satisfaction.

2. Facet satisfactions result from performance-related and from
    membership-related situations.

3. For any given task or accomplishment, a number of outcomes
    may result (or be anticipated) that affect behavior.

4. The basic valence-expectancy-effort-performance relationships
    of the Porter-Lawler model apply.

5. A comprehensive model of work motivation should integrate the
    social, technical, and organizational components of the work
    system.

Job Satisfaction. The first premise attempts to clarify conceptual

differences related to the scope of satisfaction. Facet satisfaction

pertains to an individual's affective response to the favorableness or

unfavorableness with any facet of the job such as pay, supervisory re-

lations, working conditions, status, and job content. Implied in the concept of facet satisfaction is a time period (week, month, year) over which the individual's response is favorable or unfavorable, and which may differ from a previous time period evaluation. Overall job satisfaction is typically determined by some combination of facet satisfaction responses expressed as a weighted sum, average, or product. However, this is not meant to imply that the relationship between facet satisfaction and overall satisfaction is fully (or consistently) explained by such mathematical relationships. Conceptually, positive facet satisfactions contribute positively to the feeling of overall satisfaction, but all facet satisfactions are not necessarily weighted equally (Lawler, 1973:74-81).

Performance vs. Membership. The second premise states that satisfactions in a work situation may result (a) from accomplishments (b) from simply being a member of the organization, or (c) from varying degrees between these two extremes (Lawler and Porter, 1966; Lawler, 1964; Meyer, Kay, and French, 1965; Selznick and Vollmer, 1962). Examples of direct performance-outcome situations are piece-rate pay plans, a supervisor's timely recognition for good work, or an internal feeling of having accomplished a worthwhile task. Regular salary or hourly pay plans, promotions, and job security are examples of outcomes that are usually related indirectly to performance. The notion that satisfactions can result from non-performance (membership-related) situations was not suggested by Porter and Lawler's model. However, various degrees of direct and indirect performance-outcome relationships were suggested by their model. Most non-performance related outcomes result from simply being a member of the organization (Ferratt and Starke, 1977:78), and include such things as seniority pay, opportunity to develop social relationships, various fringe benefits, job security, and

71

status. It could be argued that some minimum level of performance is required for continued employment, and thus there is an indirect relation-ship between performance and these "membership" outcomes. Admittedly, this may be a valid arguement, even though the performance-outcome relationship suggested is quite remote. The "membership" outcome component is suggested to model what has been found to exist in actual studies of organizational reward systems.

Outcomes. The third premise refers to the fact that various outcomes, actual or anticipated, collectively influence the direction and intensity of effort expended towards accomplishment of a task. The Porter-Lawler model suggests two groups of outcomes, intrinsic (administered by the individual), and extrinsic (administered by the organization), because their original study showed a stronger performance-satisfaction relation-ship for intrinsic type outcomes (Porter and Lawler, 1968;162). A more descriptive and possibly more meaningful grouping of outcomes is proposed in this model: job property outcomes, outcomes related to interactional features, and organization policy outcomes (Katz and Van Maanen, 1977). A complete discussion of these outcome "clusters" is contained in the next section.

Expectancy Model. The fourth premise establishes the Porter-Lawler model of work motivation as the framework for this proposed model. The definition and discussion of the proposed model will focus particularly on those components and concepts that differ from the Porter-Lawler model.

System Perspective. The last premise suggests that a "system" approach is essential for a comprehensive model of work motivation. This comprehensive model emphasizes that each job or task situation must be considered in the context and framework of the work system. The work

72

system is seen as a complex whole in which the manager and worker seek overall job-worker congruity, and not just a narrowly focused optimum of a single subsystem or element. This viewpoint is very much a "holistic" one in which the work system suggests an irreducible whole which makes its decomposition into autonomous parts meaningless. Although the elements or subsystems of the work system can be described and analyzed independently, to do so would ignore the critical inter-dependencies and interactions which characterize the work system as a living, social system.

Model Description

A system perspective of the proposed model is diagrammed in Figure III-1 (foldout at end of chapter). The basic structure is that of the Porter-Lawler model with three primary differences: (1) addition of "psychological states"; (2) expansion of the intrinsic-extrinsic outcome notation into three "clusters" of outcomes/facet satisfactions; and (3) addition of determinants and results of overall job satisfaction. This model is considered a preliminary step in the development of an integrated systems model of work motivation. As such, it is neither exhaustive nor definitive.

Psychological States. The concept of psychological states is borrowed from the Job Characteristics Model of job design as well as from research by Katz and Van Maanen (1977). In both cases, the authors suggest the existence of such "states", but fail to provide a detailed definition for them. Hackman and Oldham identified three psychological states (see Chapter II) which are thought to be critical in determining internal motivation and job satisfaction. When these states are present in the individual, he/she is thought to display good feelings about their cause(s), which in turn encourages continued or improving levels of performance so that

more positive feelings are earned. In this sense, both the value
of the outcome and the probability of that outcome occuring are in-
volved. However, a psychological state is thought to exist independent
of its associated value; e.g., Knowledge of results could be "experienced"
with either a high or low value for the associated outcomes.

Both articles referenced above refer indirectly to Kurt Lewin's
writings for the initial conceptualization of psychological states.
Although Lewin did not use the terms "psychological" or "experienced"
states in the development of his psychological field theory (Lewin,
1951), it is suggested by this writer that a psychological "state" is
a static expression for an individual's psychological space - definition
of his "psychological field" at a given point in time.

A related thesis - the individual's psychological climate - is
described by James, Hartman, Stebbins, and Jones (1977):

> Psychological Climate refers to the individual's
> internalized representations of organizational
> conditions and interrelationships among organ-
> izational conditions, and reflects a cognitive
> structuring of perceived situational influences
> in the situation. (Jones, Hartman, Stebbens, and
> Jones, 1977:230).

The above definition is predicated on the assumptions that psycho-
logical climate (a) is primarily descriptive rather than evaluative;
(b) involves psychological processing, abstracting and structuring of
situational perceptions; (c) is multidimensional, where each dimension
describes situations in terms of their perceived influences on individuals
or groups; (d) is determined primarily by those characteristics of sit-
uations that have direct and immediate ties to individual experiences;
and (e) occupies an intervening role in a model of organizational func-
tioning, serving to mediate between situational stimuli and individual
attitudes and behavior (James, Hartman, Stebbins and Jones, 1977:231).

Outcome Clusters. The expansion of intrinsic and extrinsic outcomes into job property, interactional, and organizational policy outcomes is not a significant change. It is an attempt to better illustrate and emphasize the interactive impact of the three "clusters" of worker involvement on motivated behavior. Intrinsic outcomes (8A in Figure III-1 contingent upon job properties such as challenge, variety, responsibility, independence (autonomy), and ability utilization, are shown as influencing (for example) the psychological states of experienced responsibility, worth and meaningfulness of the particular job/tasks (Hackman and Oldham, 1976; Katz and Van Maanen, 1977). These psychological states (3A) relate directly to the perception of E-P and P-O probabilities (2A) based on the specific design of job properties. In addition, the psychological states represent a perceptual-cognitive process whereby the individual develops a "cognitive map" with which to interpret the situational (job property) stimuli, and leads to satisfaction/dissatisfaction with those job property outcomes (10A). The value of job property outcomes (1A), possibly determined by such individual variables as growth-need strength or n Ach, interacts with E-P and P-O probabilities to stimulate a certain amount of directed effort (4).

A similar pattern is suggested by the extrinsic (performance-related) outcomes. Interactional features (8B), such as supervision, peer, supervisor, and client feedback, participation, recognition, and co-worker relations, are shown to influence the psychological states (3B) of experienced belongingness, knowledge of results, and social identity (Katz and Van Maanen, 1977:483). The interactional psychological states are casual factors influencing the perceived E-P and P-O probabilities (2B) associated with performance-related extrinsic outcomes in the interactional cluster. In addition, the psychological states resulting from interaction

75

feature outcomes represent the individual's perceptual-cognitive process leading to affective responses (facet satisfactions) for those inter-action features (10B). The value of these interactional outcomes (1B), possibly determined in part by such individual variables as social need strength (Steers and Braunstein, 1976) or need for affiliation (n Aff) combines with perceived E-P and P-O probabilities (2B) to produce a certain level of effort (4).

The other cluster of extrinsic (performance-related) outcomes - organizational policy variables (8C) - represents such outcomes as pay, fringe benefits, working conditions, promotion and advancement, training programs, and administration practices. These policy variables are seen to lead to psychological states of experienced equitable treatment (by the organization) and integration of organizational and personal values (Argyris, 1957; Katz and Van Maanen, 1977). The psychological states (3C) directly influence the E-P and P-O perceived probabilities (2C), as well as facet satisfaction/dissatisfaction (10C) contingent on organization-al policies and practices. As before, the value of these performance-related organizational policy outcomes (1C) interacts with perceived effort-reward probabilities (2C) to produce a certain amount of directed effort (4).

Trade-offs Between Clusters. All three spheres of worker involvement - job properties, interactional features, and organizational policy var-iables - contribute to directed effort (motivation). The basic expectancy model requires the inclusion of all (relevant) outcomes (Vroom, 1964), and thus, this model states that all three spheres of involvement are relevant outcomes which necessitate consideration. But in addition, their interactive nature is critical to the overall understanding of work motivation. Not only does each sphere contribute to the total of expended

76

effort, but there are also interdependent reactions that must be considered. For example, if intrinsic outcomes are enriched by redesign of job properties, this model holds that a reactive effect will likely occur somewhere else in the work system (interactive features or organization policy variables), which may be positive or negative with respect to trade-offs between psycholgical states.

A "negative" trade-off exists when, for example, an increase in experienced task meaningfulness (the initial and desired effect) is coupled with a decrease in experienced equitable treatment by the organization (the reactive and undesired effect). An example of this might be an individual whose job responsibilities are increased and is more satisfied with that facet of work, but now also feels underpaid or that insufficient prestige accompanies the added responsibility. A "positive" trade-off situation exists when, for example, an increase in experienced task meaningfulness (the initial and desired effect) is coupled with an increase in experienced integration of organizational and personal values (the reactive and desirable effect). This trade-off concept is a direct extension of the sociotechnical systems approach to job design (premise 5), and is an attempt to model the work situation as a three dimensional dynamic system.

Trade-offs between psychological states affect the total amount of effort expended because the states influence E-P and P-O expectancies which, together with the value placed on the outcomes, impact effort. In the first case (negative trade-off), an increase in experienced task meaningfulness would be expected to result in an increase in perceived intrinsic effort-reward probability. For a given value of this property outcome, the predicted effect would be an increase in expended effort. At the same time, however, the negative trade-off predicted a decrease in experienced equit-

77

able treatment by the organization which, according to this model, should reduce the perceived extrinsic effort-reward probability. For a given value of this organizational outcome, the effect would be a _decrease_ in expended effort. Total change in effort expended (motivated behavior) is proposed to be the aggregate of the two elemental changes. For the positive trade-off case, since both the initial and reactive effects are desirable (assuming a positive value for the outcomes in question), the total change in effort expended as a result of the initial effect would be positive. However, it is more positive than would be predicted from the initial effect by itself, as the reactive effect also contributes to the total change in motivated behavior. It should be mentioned that the "enhancing" or "degrading" effects of trade-offs described previously can be quantified only to the extent that expectancies and outcome values can be "measured". Inasmuch as there is considerable ambiguity concerning how to operationalize expectancy theory from a psychometrical standpoint (Steers and Mowday, 1977: 654), the precise effect of trade-offs among psychological states are probably not "measurable" in the mathematical sense. In any case, the model proposes conceptual, not analytical, relationships between the variables.

Summary. To summarize the first two expansions to the Porter-Lawler model, three "spheres" of the work system; job properties, interactional features, and organization policy variables, and their associated psychological states are substituted for intrinsic and extrinsic outcomes. The contribution and interdependent relationship of the three spheres are described, and the impact of trade-offs among the psychological states is conceptualized.

Overall Job Satisfaction: Determinants and Effects.

The third significant difference between this model of work moti-
vation and the Porter-Lawler model is the addition of the determinants
and effects of overall job satisfaction/dissatisfaction. As the first
premise stated, overall job satisfaction is considered to be conceptually
different from facet satisfactions. The former is theorized to be a
weighted summation, average, or product of the latter. In this model,
performance-dependent facet satisfactions (10A/B/C) are defined as the
individual's affective responses to the favorableness or unfavorableness
of outcomes directly or indirectly contingent upon performance. As in
the Porter-Lawler model, a dashed line from Performance (7) to extrinsic
outcomes (8B,C) indicates the often indirect nature of this relationship.
The wavy line from performance (7) to organization policy outcomes (8C)
represents a time-lag relationship. Also, perceived Equitable Rewards
(9) is seen to moderate satisfactions based on the reward that the indi-
vidual feels he should receive compared to the reward he actually receives,
as Porter and Lawler proposed. However, in their model, Porter and Lawler
did not clearly distinguish performance dependent satisfactions from non-
performance satisfactions. In this model, expectations of outcomes result-
ing from employment in an organization (11) and the realization of those
outcomes (11A), leads to non-performance related satisfactions (12). The
same two spheres of extrinsic outcomes previously discussed (i.e., inter-
actional features and organization policy variables) are seen as sources
for these satisfactions. This part of the model does not mean to imply
that organization membership is the only requirement for a non-performance
related outcome such as for example, opportunity for social interaction.
It does imply though, that organization membership is a necessary require-
ment, and that these outcomes are not perceived to be related to the indi-

79

vidual's near term level of performance. As with performance-related satisfactions, membership-related satisfactions are influenced by a cognitive process of perceived equity (9). Overall job satisfaction (13) is thus determined by facet satisfactions, some of which are performance related (direct and indirect), and some of which are not performance related.

Absenteeism and Organization Membership. Overall job satisfaction is considered to be a determinant of voluntary absenteeism (14), organizational involvement (18), and the decision to continue or discontinue employment (17). Voluntary absenteeism is the decision not to come to work based on reasons other than illness, accidents, or other "involuntary" reasons. Studies that have separated voluntary absences from total absences have found that voluntary absence rates are more closely related to overall satisfaction than are overall absence rates (Vroom, 1964; Lawler, 1973).

The decision to continue employment is shown as an effect of overall job satisfaction but moderated by two perceptions by the individual of his environment. The first moderating component suggested is the perceived degree of present and/or future job-career compatibility (15). It is reasonable to think that if an individual has formulated certain career goals, he has also a perception of how compatible his present job is with respect to those goals. This perceived degree of compatibility could result from an evaluation of the person's present job or position in the organization, or it could result from what the person believes are likely opportunities for jobs or positions in the future. In either case, once the person decides that present and/or future job opportunities with the organization are not compatible with his or her career goals, this fact alone may be more deterministic of a membership decision than overall

80

job satisfaction. On the other hand, even though overall job satisfaction may be low, if the individual perceives a high degree of job-career compatibility, he/she will likely be more willing to retain membership in the organization. The degree to which the individual perceived alternate opportunities (outside the present organization) to better attain work-related values (16) is suggested as a second moderating variable of the overall job satisfaction-organization membership relationship. These two perceptions of the individual's environment which are suggested to modify the manner in which overall satisfaction affects the decision to retain organizational membership, are simplications of the research on this topic (Rotter, 1973). However, it is felt that these are the more salient considerations.

Overall job satisfaction is also modeled as a necessary determinant of the individual's involvement in the organization and his/her support for organizational goals (18). Many other considerations also affect this relationship, but are not essential to this development.

Facet Satisfactions Versus Overall Job Satisfaction. It is important to understand the different effects that performance related satisfactions, membership-related satisfactions, and overall job satisfaction have on other parts of the model. As in the Porter-Lawler model, the performance-related satisfactions are shown to influence the value associated with outcomes (rewards). The actual impact may be to increase or decrease their value depending if the outcomes are intrinsic or extrinsic in nature (as hypothesized by Alderfer and others), or simply that past satisfactions may serve to increase the value of future outcomes. These effects remain unverified.

In the proposed model, the impact of membership-related satisfactions and overall job satisfaction is shown to primarily affect attendance,

81

involvement, and membership decisions. None of the conceptualized satisfaction components are seen to lead directly to performance, contrary to Herzberg's simplistic theme that worker satisfaction leads to worker motivation. In a remote sense however, if performance-related satisfaction for intrinsic outcomes acts to increase the value of such outcomes, then for all other things being equal, higher satisfaction with intrinsic outcomes would influence an increase in directed effort (motivation). In this special set of circumstances Herzberg's proposal is seen to apply, but not in the general sense of this model.

Impact on Job Design. Modeling the types of satisfactions in this way shows clearly the impact that non-performance related satisfactions and outcomes can have on work redesign. If the reward structure in an organization is such that the majority of overall job satisfaction is determined by non-performance related satisfactions, then significant "enrichment" may be necessary before employees "feel" a contributory effect from performance-related satisfactions. The results over a period of time could be considerable disenchantment with job enrichment as an approach to organizational development or worker motivation. Additionally, the model may indicate why past research on the performance - motivation - satisfaction issue has not been able to provide consistent results. According to this model, performance-related outcomes and satisfactions are more critical in determining employee motivation for task performance, whereas non-performance related satisfactions and overall job satisfaction lead to attendance and membership decisions. Overall job satisfaction, therefore, is not very useful in predicting job motivation and performance, unless a substantial part of overall job satisfaction results from performance-related facet satisfactions.

82

Model Summary

This proposed model of work motivation integrates elements of job design in an expectancy theory framework. Intrinsic and extrinsic outcomes are modeled in terms of three spheres or clusters of the objective features of the work system. Trade-offs between psychological states related to these objective features are an important element of the model which can have potentially significant effects on work redesign programs. Two types of job satisfaction are conceptualized which aid in understanding the inter-relationships between motivation, performance, and satisfaction.

The level of conceptualization in the proposed model is necessarily quite high. As a result, some refinement of the model may be necessary before it can aid in the understanding of more subtle relationships between components, or before it can aid in the planning and implementation of job design programs. Nevertheless, this model is seen as a required first step in understanding the motivational properties of tasks as they relate to more general theories of work motivation.

This proposed model employs a system perspective advocated by the socio-technical systems theory of job design. Additionally, it borrows the idea that psychological states are critical in affecting a person's work motivation and satisfaction from the Job Characteristics Model of job design. The concept of psychological states is entirely compatible with contemporary expectancy theory since the basis of the latter is found in the development of the former (Lewin, 1938). Achievement Motivation Theory as well as the Job Characteristics Model suggest variables with which to measure individual differences. Need for Achievement and Affiliation and Growth Need Strength appear to be concise and efficient indicators of the importance and desirability that individuals attach to job property and interaction features of the work system. Motivator-Hygiene Theory, Requsite Task Attributes Model,
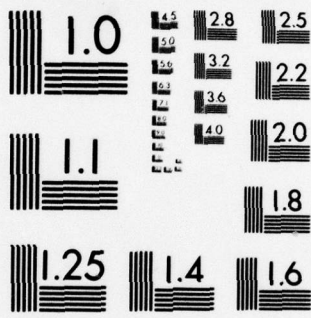
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Job Characteristics Model, and Socio-technical Systems Theory all describe in similar terms the specific factors, principles, or dimensions that constitute an "enriched" job. The model presented in this research makes clear that the usefulness of prescriptions for job design are situation and employee dependent; that is, dependent on the climate and structure of the organization as well as dependent on employee receptivity and preference for an enriched job.

Relationship of Model Components: Tentative Hypotheses

In the remaining part of this chapter, interrelationships between the model components will be discussed and hypotheses formed for possible empirical testing. The basic expectancy theory relationships of the Porter-Lawler model are assumed to be valid (premise 4), so only those relationships and components which have extended the basic model are addressed.

Clustering of Facet Satisfactions.

The first proposition concerns the conceptual independence of the objective characteristics of the work environment. Previous research on the classification of work system outcomes have focused on the intrinsic-extrinsic dichotomy, but consistent findings have not been realized (Dyer and Parker, 1975).

Based on research by Katz and Van Maanen (1977), this model proposes that facet satisfactions are interpreted by individuals to be grouped into three clusters of the work environment. The three clusters of outcomes leading to facet satisfactions are:

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Job Properties  -  Task Variety
                   Challenging Work
                   Responsibility
                   Creativity
                   Achievement of Internalized Goals
                   Independence (Autonomy)
                   Ability Utilization
                   Task Significance
                   Performance Feedback (from the work itself)
                   Closure or Completeness of the job
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84

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Interaction  -  Participation
Features         Performance Feedback (from clients, co-workers,
                    or supervisor)
                 Colleague Assistance
                 Supervision
                 Recognition (from clients, co-workers, or
                    supervisor)
                 Other workgroup relations


Organization -   Compensation (amount, equity, and practices)
                 Promotion (fairness and opportunity)
                 Advancement
                 Training
                 Fringe Benefits
                 Hiring and Staffing
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Referring to the preceding list, the first hypothesis is:

H1 : Work environment Facet Satisfactions are interpreted by employees to be grouped into three clusters of the work environment: job properties, interaction features, and organization policy variables.

Mediation by Psychological States. The second proposition concerns the extent to which the psychological states mediate between their corresponding outcomes and the appropriate effort-reward perceptions. With regard to job property outcomes, the Hackman-Oldham study (1976) found some association between certain job dimensions and psychological states (Table III-1). These relationships are moderate at best, and in the case of autonomy-experienced responsibility, the link is counter to that specified by the job characteristics model (experienced responsibility is more strongly associated with job dimensions not specified by the model).

The proposed model in this thesis specifies that each cluster of work system features leads to the psychological states shown in Table III-2. These states are drawn from the Job Characteristics Model as well as from research by Katz and Van Maanen (1978) and James, Coray, Bruni, and Jones (1977).

The proposed model states that a direct relationship should exist between the presence and intensity of certain psychological states and the perceived effort-reward probability associated with the corresponding

TABLE III-1

Multiple Regression Predicting Psychological States from All Job Dimensions Compared to Predictions from Model Specified Job Dimensions Only. (Hackman and Oldham, 1976:268)

	Skill Variety	Task Identity	Task Signif.	Autonomy	Feed-back	R^2_{ms}	R^2_a
Experienced Meaningfulness	(.30)	(.05)	(.27)	.17	.17	.38	.43
Experienced Responsibility	.21	.17	.19	(.14)	.16	.17	.33
Knowledge of Results	-.13	.04	.07	.11	(.51)	.29	.31

note:
1. Parentheses indicate the model specified job dimension-psychological state links.
2. N=658
3. R^2_{ms} = squared multiple correlation for model specified job dimensions only (weights in parentheses).
4. R^2_a = squared multiple correlation for all five dimensions.
5. Weights are standardized.

work system features. The presence of a more intense or more consistent psychological state should lead to a higher probability of perceived effort-reward for the associated work system cluster. This relationship is thought to be both necessary and sufficient. It is predicted that the relationships between the model specified states and performance-reward (P-O) probabilities are stronger than for effort-performance (E-P) probabilities. This is suggested by the fact that the psychological states are immediate consequences of work system outcomes, which are in turn often related to effort and performance indirectly. The following hypotheses are thus stated:

H2: The extent to which a psychological state is "experienced" by an individual in a work environment is directly influenced by the model specified outcome clusters.

H3: An increase in a certain psychological state will result in an increase in the model specified perceived E-P and P-O probabilities, with the effect

TABLE III-2

Proposed Association Between Work System Features and Psychological States.

OBJECTIVE WORK SYSTEM FEATURES	PSYCHOLOGICAL STATES
Job Properties	Experienced Task Meaningfulness. Experienced Task Responsibility. Experienced Job/Task Challenge and Variety.
Interaction Features	Experienced Belongingness. Knowledge of Results. Experienced Leadership Facilitation and Support. Social Identity.
Organization Policy Variables	Experienced Equitable Treatment by the Organization Experienced Integration of Personal and Organizational Values.

on P-O probabilities greater than that on E-P probabilities.

Trade-offs Between States. With respect to trade-offs between psychological states, the proposed model states that negative trade-off situations (desired effect coupled with an undesired effect) may result in either positive or negative changes in effort (motivation). The net effect on directed effort is a function of both the psychological states (influencing E-P and P-O perceptions), and the value associated with the model specified outcomes. Positive trade-off situations (initial and secondary effects both desired or undesired) are theorized to result in positive changes in effort for desired effects, and negative changes for undesired effects.

Table III-3 attempts to capture the essence of the trade-off issue. For modeling purposes, only two comparisons of psychological state in-

tensity are listed (strong/weak, and equal), as well as only two value
levels for the associated outcomes (high/low). Four possible effects
on motivation are: positive (+), negative (-), neutral (0), and ambiguous
(?). For the negative trade-off cases, it can be seen that the net effect
on motivation depends on both the initial and secondary psychological
effects as well as the values associated with the model specified out-
comes. In the positive trade-off cases, the net effect on motivation is
positive or negative regardless of the value levels of the associated
outcomes. Because Table III-3 includes only dichotomus values (strong/
weak, high/low), two combinations of state intensity and value level
result in ambiguous net motivational effects. Also, the "polarity" of
values associated with outcomes has been taken into account by the desir-
ability and undesirability of the effects on psychological states. A
desirable effect can have either high or low associated outcome values
that are both "positive", while an undesirable effect can have high or
low associated outcome values that are both "negative".

Discussion of trade-offs between psychological states has only been
for an initial desired effect coupled with a secondary undesired effect.
The conceptualization is also valid for an initial undesired effect with
a secondary desired effect. The impact on motivation under these con-
ditions is also indicated in Table III-3.

The trade-off concept does not facilitate testing. Indeed, attempts
to measure the effects of these conceptualized trade-offs would likely
result in obstacles not unlike those encountered for expectancy theory
validation. Nevertheless, the following hypotheses are stated:

H4: For positive trade-off situations, the net effect on
motivation is positive for desired effects on psycho-
logical states, and negative for undesired effects on
psychological states.

89

TABLE III-3.

Theorized Net Effect of Trade-offs Between Psychological States on Motivation.

Trade-off Situation	Intensity of Psychological States				Associated Value		Net Effect on Motivation
	Initial/ Desired	Secondary/ Undesired	Initial/ Undesired	Secondary/ Desired	Initial Outcome	Secondary Outcome	
Negative	Equal	Equal			high	high	0
					high	low	+
					low	high	−
					low	low	0
	Strong	Weak			high	high	+
					high	low	+
					low	high	?
					low	low	+
	Weak	Strong			high	high	−
					high	low	?
					low	high	−
					low	low	−
			Strong	Weak	high	high	−
					high	low	−
					low	high	?
					low	low	−
			Weak	Strong	high	high	+
					high	low	?
					low	high	+
					low	low	+
			Equal	Equal	high	high	0
					high	low	−
					low	high	+
					low	low	0
Positive	XX			XX	high or low	high or low	+
			Equal or Unequal		high or low	high or low	−

XX=equal or unequal.

H5: The net effect on motivation is positive under negative trade-off situations if;

    a) the initial and secondary effects on psychological states are of equal intensity, and the associated outcome value is higher for desired outcomes.

    b) the desired psychological state effect is more intense than the undesired psychological effect, and the associated desired outcome value is at least equal to the associated undesired outcome value.

H6: The net effect on motivation is negative under negative trade-off situations if;

    a) the initial and secondary psychological effects are of equal intensity and the associated outcome value is higher for undesired outcomes.

    b) the undesired psychological state effect is more intense than the desired psychological state effect, and the associated undesired outcome value is at least equal to the associated desired outcome value.

H7: The net effect on motivation is neutral under negative trade-off situations if the initial and secondary psychological effects are of equal intensity, and the associated initial and secondary outcome values are equal.

<u>Facet Satisfactions: Performance and Membership</u>. These hypotheses concern the effects of, and difference between performance-related and membership-related facet satisfactions. A positive association is predicted to exist between (1) performance-related facet satisfactions and overall job satisfaction, and (2) membership-related facet satisfactions and overall job satisfaction. The strength of these relationships is predicted to be dependent on the structure of the work system outcomes. If job property outcomes have been made possible through job design/enrichment, and if other valued outcomes are perceived to be linked with performance, the first relationship should be stronger. However, if performance and outcomes are not closely linked, facet satisfactions may be perceived to be primarily membership-related, and the second relation-

ship will likely be stronger. The issue here is not that performance-related satisfaction is "better" or "worse" than membership-related satisfactions. The issue is understanding the reward system in the organization, and the individual's perception of that system, in order to predict, measure, change, or influence motivation. The following hypotheses are thus stated:

H8: Facet Satisfactions; performance-related and membership-related, are conceptually independent, and are directly associated with overall job satisfaction.

H9: In work situations where performance and outcomes are not closely linked, membership-related facet satisfactions are more strongly associated with overall job satisfaction than are performance-related satisfactions.

Results of Overall Job Satisfaction. Organization membership, organization involvement, and voluntary absenteeism decisions are included in the model as three elements of the work system that are significantly influenced by overall job satisfaction. This part of the proposed model, however, lacks the comprehensive nature of other parts of the model. Indeed, the voluntary absenteeism and organization membership elements themselves could be addressed in terms of an expectancy model - a perceived comparison of future expected outcomes and equitable rewards. These elements are conceptualized to be near the "boundary" which separates the work system from other influencing systems (economic, social, cultural, and personal value systems). Because the links between overall job satisfaction and organization membership/organization involvement decisions are too complex to deal with here, only the voluntary absenteeism decision will be considered in terms of a formal hypothesis:

H10: Voluntary absenteeism is inversely related to overall job satisfaction.

91
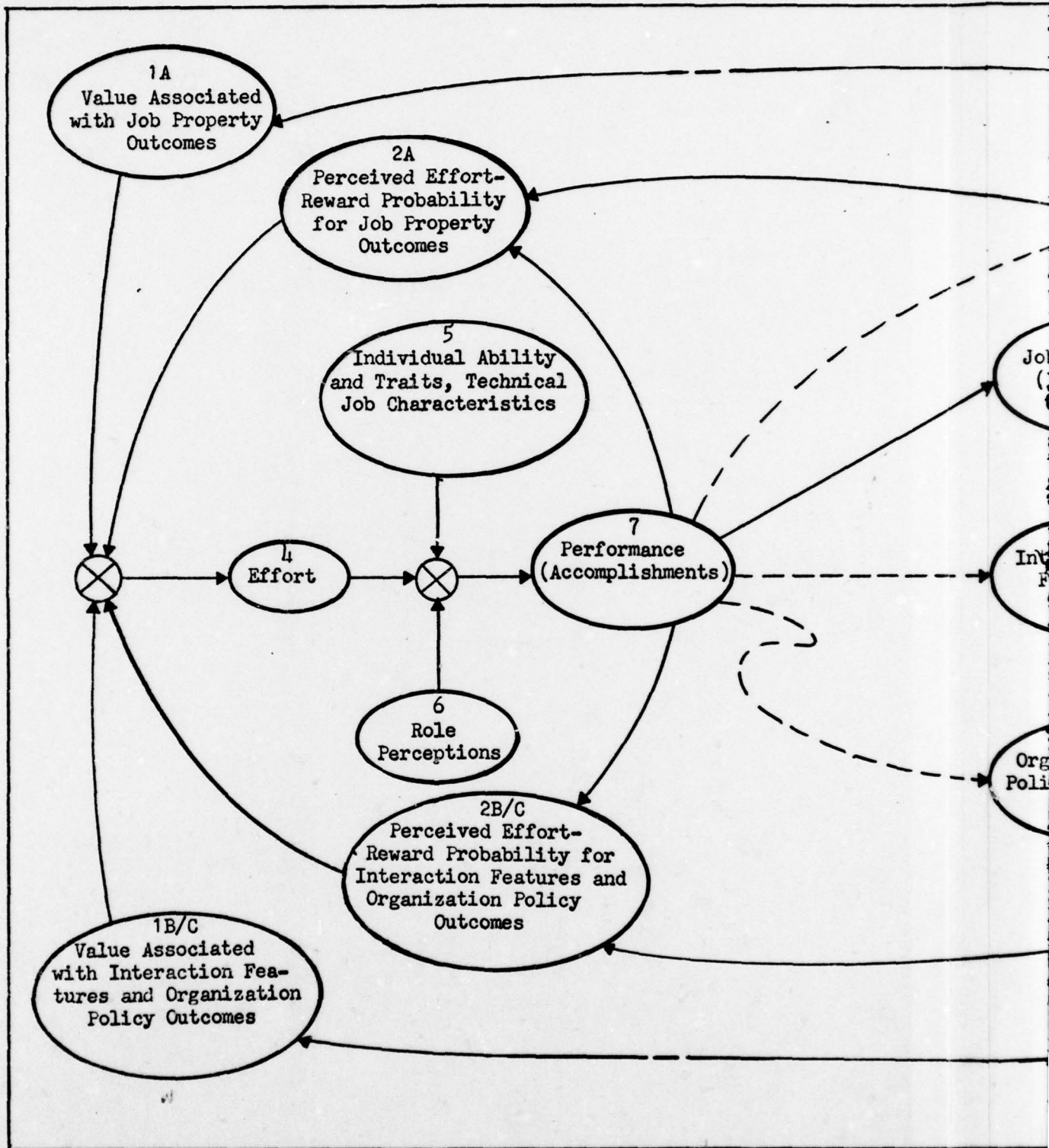
Figure III-1. A Proposed Comprehensive Model of Work Motivation.

9
Perceived
Equitableness of
Rewards

Expec
Resultin
ization Mem
action Fe
Organiza
Vari

8A
Job Property
(Intrinsic)
Outcomes

3A
Experienced Task
Responsibility, Task
Meaningfulness, Job
Challenge and
Variety

10A
Job Property
Facet
Satisfactions

M
Rel
Sa

8B
Interaction
Feature
Outcomes

3B
Experienced Belong-
ingness, Knowledge of
Results and Social
Identity

10B
Interaction
Feature Facet
Satisfactions

8C
Organization
Policy Variable
Outcomes

3C
Experienced Equit-
able Treatment by the
Organization, Integrat-
ion of Personal and
Organizational
Values

10C
Organization
Policy Facet
Satisfactions

Perce
of Pres
ure
Comp

k Motivation.

2

9 Perceived Equitableness of Rewards

11 Expectations Resulting from Organization Membership (Interaction Features and Organization Policy Variables)

11A Realization of Membership-Related Outcomes

10A Job Property Facet Satisfactions

12 Membership-Related Facet Satisfactions

14 Voluntary Absenteeism

...ed Task ...ty, Task ...ss, Job ...e and ...ty

...Belong- ...ledge of ...Social ...y

10B Interaction Feature Facet Satisfactions

13 Overall Job Satisfaction

18 Organization Involvement and Support for Organization Goals

...d Equit- ...t by the ...Integrat- ...al and ...ional ...s

10C Organization Policy Facet Satisfactions

17 Organization Membership

15 Perceived Degree of Present and Future Job-Career Compatibility

16 Perceived Alternate Opportunities for Attainment of Work-Related Values

3

IV. Methodology For Empirical
Data Analysis

The purpose of this chapter is to describe the hypotheses and statistical tests used in an attempt to partially validate the proposed model. Three main sections form this chapter. First, the survey instrument variables are described and related to the components of the proposed model. General as well as specific limitations of the survey data are also presented. Second, testable hypotheses were proposed which address three general areas; (1) grouping of work factor importance; (2) strength of the work factor amount (WFA) - overall job satisfaction (OJS) association; and (3) moderation of the WFA-OJS association by work factor importance. The final section described the statistical methods used to perform test of these hypotheses.

Survey Instrument

Five groups of questions (37 total) were responded to in a structured interview (refer to Appendix A for the actual survey instrument and basic distributional characteristics of the responses). The five groups were:

1. General Information (Demographics).

2. Relative Personal Importance of 13 Work Factors.

3. Self-reported amount of 13 Work Factors in the individual's job.

4. Overall Job Satisfaction (four-question Hoppock Blank).

5. Job-Individual Compatibility Aspects.

Demographics. Data for seven demographic variables were collected. Although the actual survey instrument identified other variables, these apparently were not recorded in the interview process, and are not available for analysis. The seven variables, previously discussed in Chapter I, are:

93

Q1.	Base	Q2.	Work Center	Q3.	Employee
Q4.	Sex	Q5.	Number of levels supervised	Q6.	Pay Grade
Q7.	Age				

The first four variables above are nominal level data, while the last three are ordinal level data.

Relative Importance of Work Factors. The second group of questions consist of individually reported relative importance (rank order) of 13 work environment factors. The possible response range was 0 - 100, with the most important factor assigned 100. Thus, in addition to rank order data, responses reflect the relative preference of one factor to another. The 13 relative importance variables are interval level data, and are listed in Table IV-1. Work Factor Relative Importance responses were used as a measure of the value associated with work outcomes, both performance and membership-related.

Work Factor Amount. The same 13 work factors were also used to report the individual's perception of his work environment. The response scale for the work factor amount variables was 0 - 10. The individuals responded with an integer value to reflect their perception of the characteristics of their present job. For example, Q21-Work Itself (intrinsic meaning, importance, challenge, interest, or appeal of job tasks) was anchored at the following points:

10. job tasks are perceived to be absolutely stimulating, meaningful, challenging, appealing, and/or significant.

5. neutral.

0. job tasks are perceived to be totally disinteresting, meaningless, monotonous, unappealing, and/or insignificant.

Other work factors follow a similar pattern (see Appendix A). The 13 work factor amount variables are ordinal level data, and are also listed

TABLE IV-1

Work Factor Variables: Relative Importance and Amount.

Work Factor Stem	"Relative Importance" Variable	"Amount" Variable
Work Itself (meaning, importance, challenge, interest, appeal)	Q8	Q21
Responsibility/Accountability/Control	Q9	Q22
Achievement/Recognition/Feedback	Q10	Q23
Personal Growth/Learning	Q11	Q24
Advancement/Promotion	Q12	Q25
Monetary Compensation/Fringe Benefits/ Economic Security	Q13	Q26
Policy and Administration/General Management	Q14	Q27
Job Supervision (competence, fairness, effectiveness)	Q15	Q28
Interpersonal Relations (other than supervisor)	Q16	Q29
Job Security/Tenure	Q17	Q30
Personal Life (non-task aspects of location, community, and free time)	Q18	Q31
Status/Prestige (resulting from a position or affiliation with the organization)	Q19	Q32
Working Conditions (hours and volume of work, facilities, and equipment)	Q20	Q33

in Table IV-1. Work Factor Amount variables were used as a measure of work outcomes.

   Overall Job Satisfaction. The four-question Hoppock Job Satisfaction Blank (Hoppock, 1935) was used to measure overall job satisfaction. However, only the sum of the four questions was available for analysis. This fact precluded any comparative analysis with past validation of the Hoppock

measure. The response scale for each question was 1 - 7, and the range for the overall measure was 4 - 28 (low to high). Two of the individual questions (Q34a and Q34d) were reverse coded to accomplish this addition of the four questions (see Appendix A).

Job-Individual Compatibility Aspects. This final group of three questions concerns the individual's perceived compatibility with (1) his/ her present job and (2) his/her preferred job and supervisor type. These three variables are considered ordinal level data:

Q35. Job-Education Compatibility.

Q36. Job-Career Compatibility.

Q37. Individual Preference of Job Scope and Supervision Style. Possible responses to the first two compatibility questions were:

(1) Moderately to extremely incompatible.

(2) Neutral.

(3) Moderately to extremely compatible.

The last variable, Q37, attempted to measure the individual's preference for either a broadly defined (enriched/enlarged) job or one narrow in scope, as well as preference for a supervisory style (general as opposed to close control). Examination of the responses made to Q37 suggest that this was not accomplished. Of the 126 usable cases, 96 (76%) indicated preference for a job broad in scope and with general as opposed to close controlling supervision. Only 3 (2%) responded with preference for a job with limited scope together with close supervision. The stem for this question contained at least two relatively distinct concepts which probably should have been treated separately.

Limitations. Probably the most constraining feature in any research using survey data is the ambiguous nature of the survey instrument itself. This questionnaire, like most, was highly structured and therefore may have

captured only a limited amount of relevant information. Functional re-lationships and interactions not measured by the instrument are lost to the research effort, and are thus ignored. Although the list of work factors included in this survey is representative of previous research, it is possible that there are some "unmeasured" work factors that may "predict" overall job satisfaction better. However, a complete list of work factors, if one exists, would likely be unmanageable.

Other points address the issue of survey ambiguity more directly. First, just exactly how does an individual interpret a word, phrase, stem, or definition that purports to "measure" that person's attitude, feeling, preference, or other intangible aspect? To what degree does the researcher and the group being researched share a common set of these definitions? The assumptions required to overcome these issues are gross, and limit the extent to which generalizations can be made from the data.

And secondly, what does an individual "mean" by his/her response, and how is that response interpreted by the researcher? Is the response related to a set of unstated and unmeasured values which, if incorporated with the measured response, would change its complexion dramatically? Both points above indicate that implications and conclusions based on survey data, especially self-reported data, must necessarily be cautious and conservative.

Specific limitations of the survey instrument used in this research include the fact that it is an "unvalidated" instrument constructed by a relatively inexperienced researcher. Also, rank ordering the importance of 13 work factors would seem to require an exceptional grasp of one's priorities in order to accomplish this with any accuracy. Another limita-tion exists in the degree to which work factor importance and amount scores are related to the same time frame. If work factor importance reflects a

long-term reference, and work factor amount reflects a near-term reference, their theoretical relationship may be in doubt. Finally, it is apparent that some work factors, as described by this survey instrument, overlap into more than one work system cluster. Consequently, interpretation of an underlying structure, if one exists, may be difficult.

Discussion of Testable Hypotheses

The hypotheses which will be formulated in this section follow from the previous discussions in Chapter III. Since these data were collected prior to development of the proposed model, only some of the propositions of the proposed model can be partially tested. A complete validation would require a survey instrument developed specifically for that purpose.

Clustering of Work Factors. The first hypothesis concerns one of the essential points of the proposed model - the clustering of work factors. Although the proposed model specifies that facet satisfactions will tend to cluster into three loci (H1), it is believed that similar clustering will also result with work factor relative importance measures. Research by James, Hartman, Stebbins, and Jones (1977) showed that valences tended to group into four clusters: (1) those valences associated with outcomes intrinsic to the job; (2) those valences related to extrinsic outcomes that were primarily a function of organizational decisions; (3) valences related to outcomes mediated by the work-group or leader; and (4) valences associated with certain "neutral" outcomes (related to work standards, work fatigue, and opportunity to make friends). The first three groups relate strongly to job properties, organization policy variables, and interaction features of the proposed model. Based on the work factor definitions used in the survey instrument, the following hypothesis is stated (refer also to Table IV-2):

TABLE IV-2

Hypothesized Manner of Clustering for Relative Importance Measures
of Work Factor Variables.

Work Factor Stem	Job Property	Interaction Feature	Organization Policy Var.	Other*
Q8-Work Itself	XXX			
Q9-Responsibility	XXX			
Q10-Achievement	XXX	X		
Q11-Growth	XXX			
Q12-Advancement			XXX	
Q13-Monetary Comp.			XXX	
Q14-Policy & Admin.		X	XXX	
Q15-Job Supervision		XXX		
Q16-Interpers. Rel.		XXX		
Q19-Status/Prestige	X	XXX	X	
Q17-Job Security				XXX*
Q20-Working Cond.				XXX*

note: 1. XXX=primary cluster mode; X=secondary cluster mode.

    2. Personal Life (Q18) was not included as a work factor.

  *3. Job Security (Q17) and Working Conditions (Q20) did not cluster in previous research.

HH1. Relative importance measures of work factors will tend
to group into clusters identifiable as job properties
interaction features, and organization policy variables.

Three factors in Table IV-2 are listed under more than one cluster
heading. Achievement/Recognition/Feedback (Q10) includes elements from
both the job property and interaction feature clusters. It is hypothesized
that Q10 will cluster primarily as a job property, but also somewhat less
strongly as an interaction feature. Policy and Administration/General
Management (Q14) includes elements closely related to supervision, and
thus it is listed under both Organization Policy Variables and Interaction

Features. It is hypothesized that Q14 will cluster more strongly as an organization policy variable than as an Interaction Feature.

Status/Prestige (Q19) was not one of the work factor variables investigated by Katz and Van Maanen (1977). Thus, the suggestion that this work factor will tend to cluster with all three categories is proposed by this writer, based on the pervasive nature of, and sources for status and prestige. Status or prestige resulting from a position or affiliation with an organization could be contingent upon relationships identifiable under any (or all) of the three work factor clusters. For example, status or prestige occurs "between" individuals or groups (interaction feature), but it may be derived from a position or tenure (organization policy variable), or the responsibility attached to a task or job (job property). James et al showed that valences related to Respect from Superiors and other Employees factored with the intrinsic group (job property) and with leader/work-group outcomes (interaction features). It is hypothesized that Status/Prestige (Q19) will cluster primarily as an Interaction Feature and secondarily as a job property and/or organization policy variable.

Work Factor Amount - Job Satisfaction. The second hypothesis to be stated concerns the strength of association between different work factors and overall job satisfaction. Intrinsic work factors (job properties) are modeled as being better predictors of job satisfaction than extrinsic work factors. This stems primarily from the issue that the individual does not require mediation between job property outcomes and their related satisfactions. Additionally, there may be less "confusion" concerning reward (outcome) equitableness for intrinsic outcomes. In the proposed model, extrinsic work factors are subdivided into interaction features and organization policy variables. As a result, this hypothesis deals with

the strength of association between three types of work factors and overall job satisfaction. In general, interaction features are thought to be stronger predictors of overall satisfaction than organization policy variables. This follows directly from the concept of a different time-lag between extrinsic work factor outcomes and their associated satisfactions. Less of a time-lag is thought to exist between interaction feature outcomes and their associated satisfactions, compared with organization policy outcomes and associated satisfactions. Although this effect should be measured between the outcomes and facet satisfactions, it is thought that some evidence of the different strengths of association will surface by examining overall job satisfaction as well.

HH2. The strongest association between measures of work factor amount and overall job satisfaction is exhibited by Job Property work factors. The weakest association is exhibited by Organization Policy Variables, with Interaction Features moderately associated.

Moderation of Work Factor Amount-Satisfaction Relationship.

The final set of hypotheses examine the effect of work factor relative importance on the relationship between the perceived amount of that work factor (WFA) and overall job satisfaction (OJS). The nature of these hypotheses suggest a two-by-two matrix for each work factor (see Figure IV-1). Depending on how "high" and "low" are defined, each work factor (for each individual) could be assigned to one quadrant.

It is generally accepted that facet satisfactions weighted by facet importance does not improve (moderate) the relationship between facet satisfactions and overall job satisfaction (Wanous and Lawler, 1972). However, these hypotheses propose a moderation of the Work Factor Amount-Overall Job Satisfaction relationship. According to the proposed model,
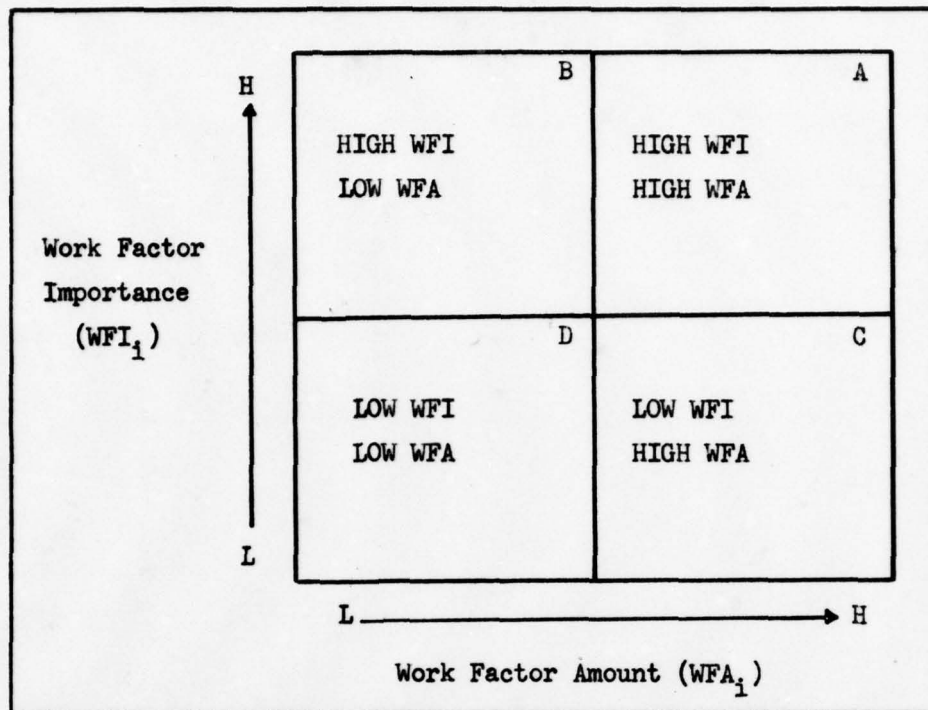
101

Figure IV-1. Work Factor Importance/Amount Matrix.

facet satisfactions generally depend on three antecedents; (1) the work factor outcome amount, (2) the perceived value (importance and desirability) of the outcome, and (3) the perceived equitableness of the outcome (based on the performance, past experiences in similar circumstances, and significant others). Thus, using an aggregation of individual work factors, and assuming a constant perceived equitableness, the following hypotheses are stated (refer also to Figure IV-1):

HH3:   Individuals reporting high relative importance and high amount of a majority of work factors (A) have higher overall job satisfaction compared to individuals who report low relative importance and high amount of work factors (C).

HH4:   Individuals reporting high relative importance and low amount of a majority of work factors (B) have lower overall job satisfaction compared to individuals who report low importance and low amount of work factors (D).

102

HH5: Individuals reporting more HIGH WFI and HIGH WFA (A) than LOW WFI and HIGH WFA (C) and more LOW WFI and LOW WFA (D) than HIGH WFI and LOW WFA (B) have higher overall job satisfaction compared to individuals reporting more LOW WFI and HIGH WFA (C) than HIGH WFI and HIGH WFA (A) and more HIGH WFI and LOW WFA (B) than LOW WFI and LOW WFA (D).

Whereas HH3/HH4/HH5 provide the primary test of moderation of the WFA-OJS relationship by WFI, HH6 provides an additional test. It is proposed that if relative importance is a meaningful moderator of the WFA-OJS relationship, then a greater difference in reported OJS should result between high and low WFA with high WFI compared to high and low WFA with low WFI. Referring to Figure IV-1, the OJS difference between A and B should be greater than the OJS difference between groups C and D. Again, since we are dealing with overall (as opposed to facet) satisfaction, an aggregation of individual work factors is necessary.

HH6: A greater difference in reported OJS will exist between the HIGH WFI/HIGH WFA group (A) and the HIGH WFI/LOW WFA group (B) compared to the difference in reported OJS between the LOW WFI/HIGH WFA group (C) and the LOW WFI/LOW WFA group (D).

For the four hypotheses above (HH3 - HH6), no differentiation was made between the types of work factors (Job Property, Interaction Feature, Organization Policy Variable). The last hypothesis repeats HH5 using only Job Property Variables identified through cluster and factor analyses (HH1).

HH7: HH5 is valid using Job Property Variables only.

Statistical Procedures

Data analyses were performed on the Control Data Corporation 6600 computer system. The Statistical Package for the Social Sciences (SPSS version 7.00, March, 1978) was utilized for all analyses with the exception of cluster analysis. A special hierarchical clustering algorithm -

ACLUS, designed by Major McNichols (AFIT/ENS), was used to perform the cluster analysis.

Preliminary Analysis. Prior to performing any statistical analyses, a review of all response data was made in order to eliminate incomplete cases, and to identify "unrealistic" data (all "10" work factor amount or all "100" work factor importance responses for example). Based on the above criteria, two cases out of 128 were rejected (1.6%). The SPSS FREQUENCES routine was then used to compile basic distributional statistics for the remaining 126 cases (see Appendix A). Also contained in Appendix A are analysis of variance tests examining differences in reported overall job satisfaction using selected demographics.

Cluster and Factor Analyses for HH1. Two methods were used to examine the first hypothesis: cluster analysis using the ACLUS routine (McNichols, 1978), and factor analysis using the SPSS FACTOR routine (Nie, et al., 1975).

Zero-order correlation coefficients between the work factor relative importance variables were used as the measure of similarity for the ACLUS routine. Each variable was considered to be in its own "cluster" at the start of the routine (see Figure IV-2). On each iteration, two clusters were combined to form a new cluster. The criterion for combining two clusters was the largest average of all pair-wise correlations between objects in the two candidate clusters. If similarity measures for n variables are input to the algorithm, n-1 iterations will be performed merging all the variables into one cluster. The clustering action performed at each iteration was indicated in an output listing together with the average within-cluster and between-cluster similarities. The output also provided a dendrogram or tree-like diagram of the clustering steps.
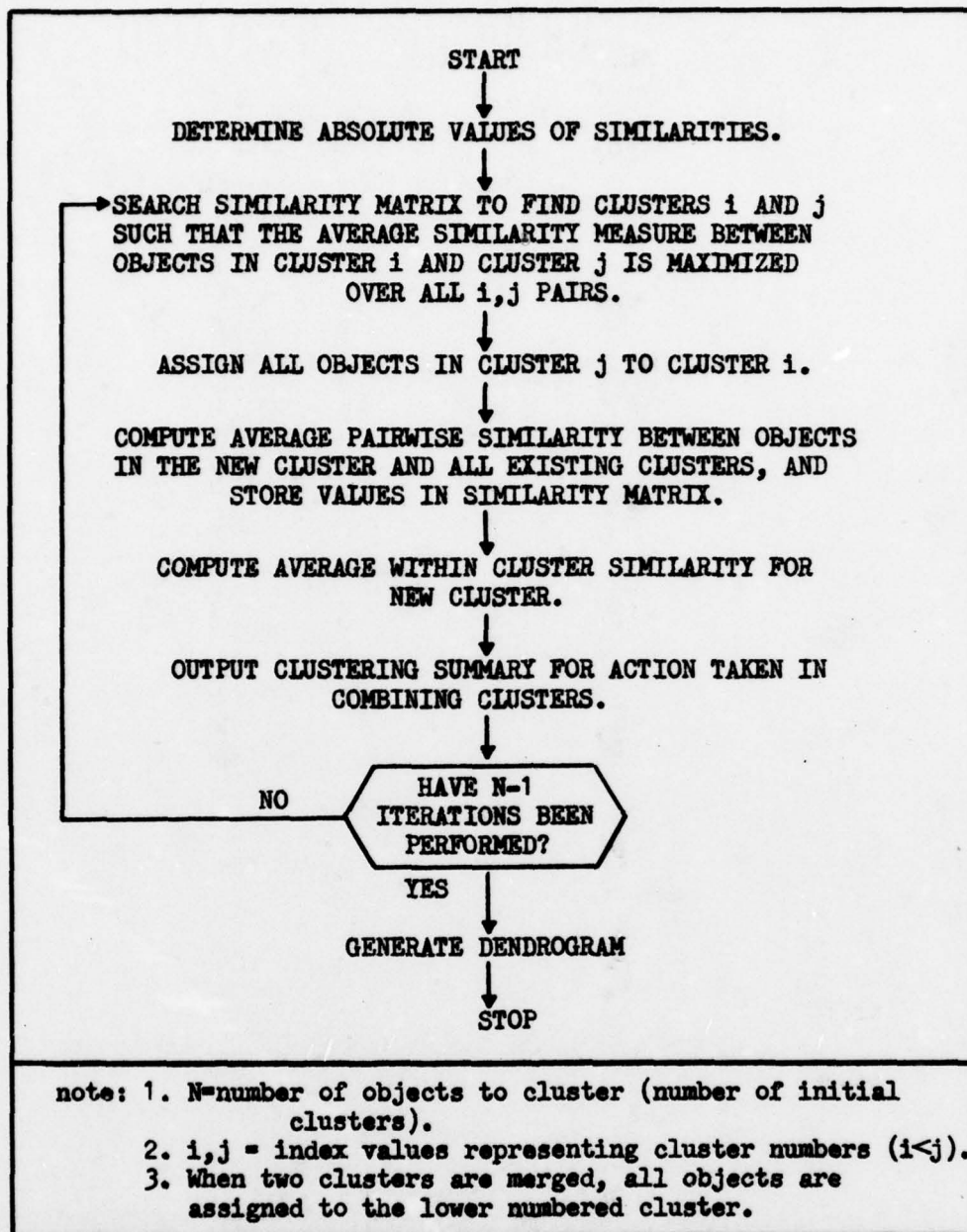
START

DETERMINE ABSOLUTE VALUES OF SIMILARITIES.

SEARCH SIMILARITY MATRIX TO FIND CLUSTERS i AND j
SUCH THAT THE AVERAGE SIMILARITY MEASURE BETWEEN
OBJECTS IN CLUSTER i AND CLUSTER j IS MAXIMIZED
OVER ALL i,j PAIRS.

ASSIGN ALL OBJECTS IN CLUSTER j TO CLUSTER i.

COMPUTE AVERAGE PAIRWISE SIMILARITY BETWEEN OBJECTS
IN THE NEW CLUSTER AND ALL EXISTING CLUSTERS, AND
STORE VALUES IN SIMILARITY MATRIX.

COMPUTE AVERAGE WITHIN CLUSTER SIMILARITY FOR
NEW CLUSTER.

OUTPUT CLUSTERING SUMMARY FOR ACTION TAKEN IN
COMBINING CLUSTERS.

NO   HAVE N-1
          ITERATIONS BEEN
          PERFORMED?

YES

GENERATE DENDROGRAM

STOP

note: 1. N=number of objects to cluster (number of initial
         clusters).
      2. i,j = index values representing cluster numbers (i<j).
      3. When two clusters are merged, all objects are
         assigned to the lower numbered cluster.

Figure IV-2.   Logical Sequence of the ACLUS Routine.
               (McNichols, 1978;2)

105

Results of the analysis were interpreted by examining the magnitudes of the average correlations within and between groups, as well as noting the sequence with which the clustering took place. The dendrogram visually indicated those variables more highly associated with each other than with other variables or clusters.

An example dendrogram, illustrating a cluster pattern that would strongly support HH1, is shown in Figure IV-3. Each work factor merged with its hypothesized primary cluster before these major clusters merged or before other "non-clustering" variables are merged. If any homogenous subsets of the variables exist, this "visual" output will easily indicate them. Cluster analysis was performed on the total sample (N = 126), the military subset (N = 50), and the civilian subset (N = 76).

In addition to cluster analysis, the first hypothesis is ideally suited for testing by factor analysis. In terms of factor analysis theory, the work factor variables are thought to be "manifestation" variables of the "latent" factors of job properties, interaction features, and organization policy variables. Because the first hypothesis deals mainly with the issue of dimensionality, principal component analysis with varimax rotation was utilized. Rotated factor loadings less than .40 (less than 16% of the variance of the manifestation variable is "explained" by the rotated factor) were not included in factor interpretation. Table IV-2 indicated 16 clustering "positions" for the 12 work factors and three work factor clusters. In order to lend objectivity to the degree to which a rotated factor solution supports or fails to support HH1, the following measure of merit (M) was used: $M = HP - NHP$,

where; M = measure of merit ($-32 \leq M \leq 16$).
HP = number of hypothesized high factor loadings ($0 \leq HP \leq 16$).
NHP = number of non-hypothesized high factor loadings
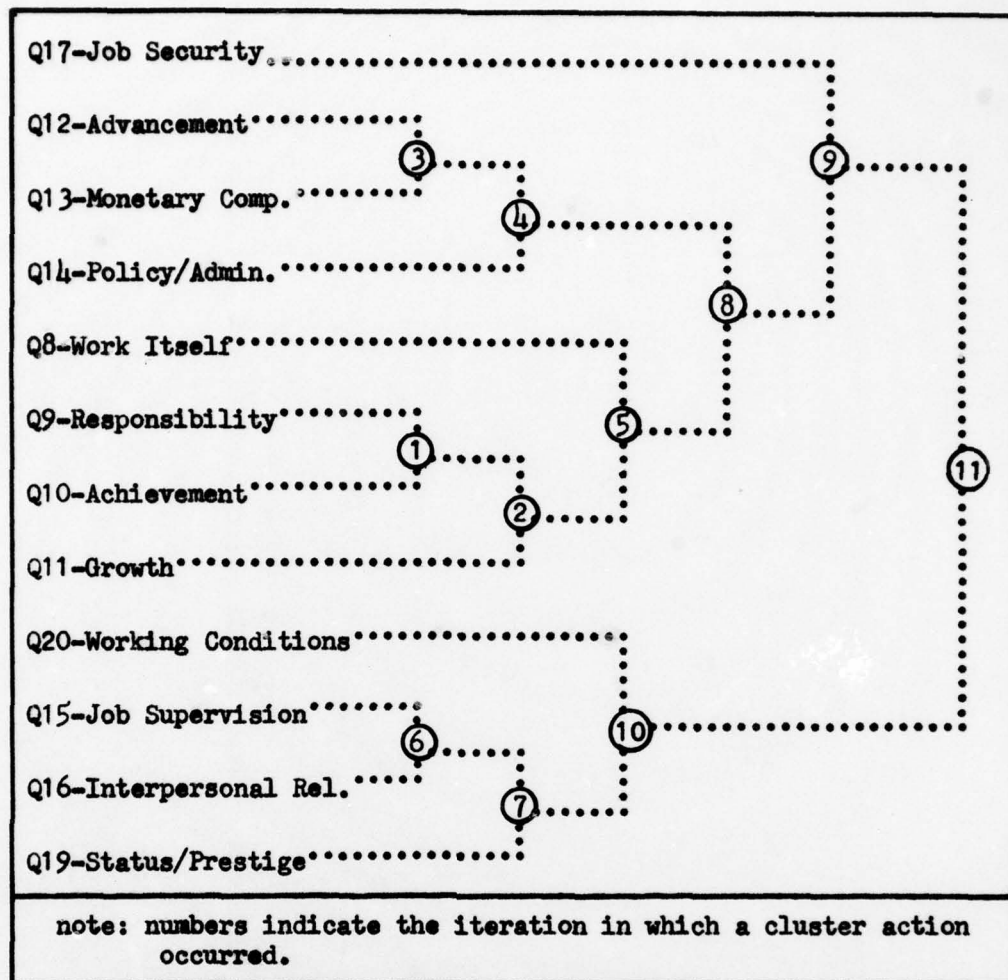   ($0 \leq NHP \leq 32$).

Figure IV-3. Example of Dendrogram Output From the ACLUS Routine.

Support for HH1, using the measure of merit definition was arbitrarily set at the following levels:

     strong support: $M \geq 13$.

     weak to moderate support: $7 \leq M \leq 12$.

     no support: $M \leq 6$.

Factor analysis was performed on the total sample (N = 126), the military subset (N = 50), and the civilian subset (N = 76).

Correlation and Regression Analyses for HH2. The second hypothesis
was examined by zero-order correlations, first-order partial correlation,
and stepwise linear multivariate regression analyses. Initially, relation-
ships between work factor amounts and overall satisfaction were examined
using the Pearson product-moment correlation coefficient (SPSS PEARSON
CORR routine). The resulting coefficient (r) is a measure of association
indicating the strength of the linear relationship between overall job
satisfaction (Q34), and the work factor amounts (Q21 - Q33). The square
of this coefficient (r^2) was also examined to determine the proportion
of overall satisfaction variance "explained" by each work factor amount
variable.

First-order partial correlations were also examined using the SPSS
PARTIAL CORR routine. Each work factor amount was correlated with overall
job satisfaction while adjusting for the effects of every other work factor
amount variable (one-by-one). Whereas zero-order correlation analysis
gives an indication of the general association between variables, n-order
partial correlation analysis attempts to remove the effects of one or
more other variables from the relationship under consideration. In terms
of HH2, both zero-order and first-order partial correlations should indi-
cate the same dominant relationship for the job property variables.

Finally, the second hypothesis was tested using multiple stepwise
regression analysis (SPSS REGRESSION routine). Although correlation
analysis is useful in identifying those work factors which individually
"explain" a proportion of the variance, it does not show the relative
contribution of each individual variable when a number of such "predic-
tor" variables are considered together in a linear model of a criterion
variable.

108

Multivariate linear regression analysis allows such a relative strength determination to be made between the predictor variables in the regression equation. Stepwise regression was used in the analysis in order to observe which work factors entered (or were removed from) the equation. This method selects the variable which has the highest partial correlation with the criterion variable, partialed on those variables which have already entered the regression equation. With all work factors available for entry, support for HH2 would be realized if job property factors were the only significant variables to enter the equation, or at least if those job property factors that did enter the regression equation were weighted more heavily than other work factors.

Comparison of Sample Means: HH3/HH7. The student t-statistic was used to test whether or not the difference between reported Overall Job Satisfaction was significant for sub-groups defined by HH3/HH7. Various steps were required to assign individuals to either the hypothesized low or high-satisfaction group (or to neither group).

1. First, the work factor relative importance scores for each individual case were rank ordered. In the case of duplicate values the "rank" was repeated. The first three columns in Table IV-3 illustrates this procedure. Work Factors 7 and 11 both received a 100 relative importance score, and thus both were assigned a rank order value of 1. The next highest score, (Work Factor #1 - 95) was assigned rank order value of 3, and so on. For each individual case then, a rank order of the 13 work factor relative importance scores was established.

2. High-, medium-, and low- important work factors were then identified for each survey respondent. In order to amplify the moderation effect, work factors with rank order values of four or less were

labeled high-important, while those with rank order values of eight or more were labeled low-important work factors. Again referring to Table IV-3, five work factors were assigned as high-important (rank ≤ 4), while five were labeled as low-important (rank ≥ 8). (Refer to Appendix A, Table A-3 for sample rank order distribution of work factor relative importance values). Note that the work factors assigned in this manner were different for each individual, depending only on the individual's relative importance scores.

3. The third step required a scheme to assign work factor <u>amount</u> scores to either high, medium, or low categories. This was accomplished using the work factor sample mean, and adding/subtracting one-half standard deviation. For a standard normal distribution, 62% of the sample would be assigned to the high-amount and low-amount categories, while the remaining 38% would be labeled medium-amount. For the actual sample data, high-and low-amount categories ranged from a minimum of 25% to a maximum of 40% of the sample. Referring to Column 4 of Table IV-3, in this hypothetical case, five work factors were assigned to high-amount categories, while five were assigned to low-amount category.

4. Using a 3 x 3 matrix, all 13 work factors for each individual case were assigned to one of the nine matrix locations as indicated in Table IV-3. Because the sample means were different for each work factor amount variable, the case matrix actually represents an aggregation of 13 work factor importance/amount matrices. In the hypothetical case (Table IV-3), the five "high importance" work factors were split into "low-amount" (3) and "high-amount" (2). The five "low-importance" work factors were split into "low-amount" (1), "medium-amount" (1) and "high-amount" (3).

5. The final step took into account the number of work factors in

TABLE IV-3

Assignment of Hypothetical Case Work Factors to Importance/Amount Matrix.

Work Factor (i)	WFI_i	Rank Order WFI_i	WFA_i	Matrix Position Assigned
1	95	3	H	A
2	85	4	L	B
3	85	4	L	B
4	70	6	L	H
5	60	7	M	J
6	60	7	M	J
7	100	1	L	B
8	45	9	L	D
9	45	9	H	C
10	45	9	H	C
11	100	1	H	A
12	30	12	H	C
13	30	12	M	G

Hypothetical Case Matrix

Work Factor Importance:

	L	M	H
H	B=3	E=0	A=2
M	H=1	J=2	F=0
L	D=1	G=1	C=3

Work Factor Amount

each matrix location to assign the case to either the high or low satisfaction groups for subsequent mean testing on the group $\overline{OJS}$ scores:

for HH3: if A > C; assign case to HISAT Group,
          if A < C; assign case to LOSAT Group.

for HH4: if D > B; assign case to HISAT Group,
          if D < B; assign case to LOSAT Group.

for HH5: if A > C AND D > B; assign case to HISAT Group,
          if A < C AND D < B; assign case to LOSAT Group.

for HH6: if A > B; assign case to HISAT-AB Group,
          if A < B; assign case to LOSAT-AB Group.

          if C > D; assign case to HISAT-CD Group,
          if C < D; assign case to LOSAT-CD Group.

for HH7: same for HH5 except that work factors were limited to job property variables only.

When elements in the above conditional statements were equal, the case was not assigned to either the HISAT or LOSAT Group.

It is apparent that considerable overlapping of cases existed using this methodology. The hypothesized case (Table IV-3) would have been assigned to the LOSAT Group for HH3, HH4, HH5. For HH6, the case would have been assigned to LOSAT-AB (high WFI), but to HISAT-CD (low WFI). Also, this methodology is such that a case may not be assigned to either HISAT or LOSAT Group.

After the HISAT and LOSAT Groups were formed for each hypothesis, means and variances were calculated. An F-test was then performed to determine if a significant difference existed between the group variances. The null and alternate hypotheses involving mean reported overall job satisfaction ($\overline{OJS}$) were then formulated:

H_o: $\overline{OJS}$ for HISAT Group $> \overline{OJS}$ for LOSAT Group.

H_a: $\overline{OJS}$ for HISAT Group $\leq \overline{OJS}$ for LOSAT Group.

The t-statistic (actual or estimated depending on the F-test result) and probability were calculated. If the computed one-tail T-test probability was smaller than $p=.05$, then the null hypothesis was accepted. This test procedure was used for the total sample (N=126), as well as for the military and civilian subsets for HH3, HH4, and HH6. For HH5 and HH7, only the total sample was used because these hypotheses were so restrictive (causing small group size). The following chapter reports the results of these analyses.

V. Results of Data Analyses

This chapter contains the results of analyses described in the last chapter. The first three sections of this chapter reports the results of tests used to examine three issues related to the proposed model; (1) the clustering of work environment facet satisfactions, (2) the strength of association between work environmrnt factors and over-all job satisfaction, and (3) the effect of reported work factor relative importance on the work factor - job satisfaction relationship. The last section discusses findings and implications.

It is important to recall that the data analyzed were collected three years prior to this reaserch. Thus, the parameters measured do not correspond exactly with those proposed in Chapter III. Clustering of facet satisfactions proposed by the model was not examined directly. Rather, work factor relative importance was analyzed instead. Also, work factor relative importance was used as a measure of perceived value associated with those work factors.

Results of Cluster and Factor Analyses for HH1.

Results of cluster and factor analyses used to test for the work factor structure proposed by HH1 are reported separately. Both methods resulted in basically the same general findings, but with different per-spectives.

Cluster Analysis of the Total Sample. Results of cluster analysis for the total sample (N=126) are shown graphically in Figure V-1. Five of the first eight clustering actions support the first hypothesis. Three job property work factors were grouped at the second iteration for a within-group average similarity of .65 (average of zero-order correlations

113

between Q9-Q10, Q10-Q11, and Q11-Q9). The third iteration combined two interaction features (Q14-Policy/Administration and Q15-Job Supervision). However, Q14 was hypothesized to cluster primarily as an organization policy variable, and only secondarily as an interaction feature. Similarly, the fourth iteration combined Q19-Status/Prestige (hypothesized to cluster primarily as an interaction feature) with the previously clustered group of three job property variables (Q9, Q10, and Q11). The seventh iteration combined Q12-Advancement and Q13-Monetary Compensation as a separate cluster in agreement with HH1.

Clear support for the first hypothesis was reduced somewhat by the fifth, sixth, and eighth iterations. The fifth iteration combined groups three and four prior to inclusion of Q8-Work Itself with other job property variables, and prior to inclusion of Q16-Interpersonal Relations with other interaction feature variables. In spite of the fact that the average within-group similarity was high at the fifth iteration (.53), both job property and interaction feature groups (three and four) were merged contrary to HH1. At the sixth and eighth iterations, the unclustered work factors Q16-Interpersonal Relations and Q8-Work Itself were combined with the six work factors from group five.

Analysis of the alternate clustering possibilities at the fifth iteration revealed that the average similarity between group three and Q16-Interpersonal Relations was .46, and between group four and Q8-Work Itself it was .27. The latter value was considerably smaller than the maximum between-group similarity at the fifth iteration (.48), but the former value of .46 represents virtually no difference between it and the maximum value. The subsequent implication is that the clustering action at the fifth iteration does not represent a significant deviation from the structure proposed by the first hypothesis.
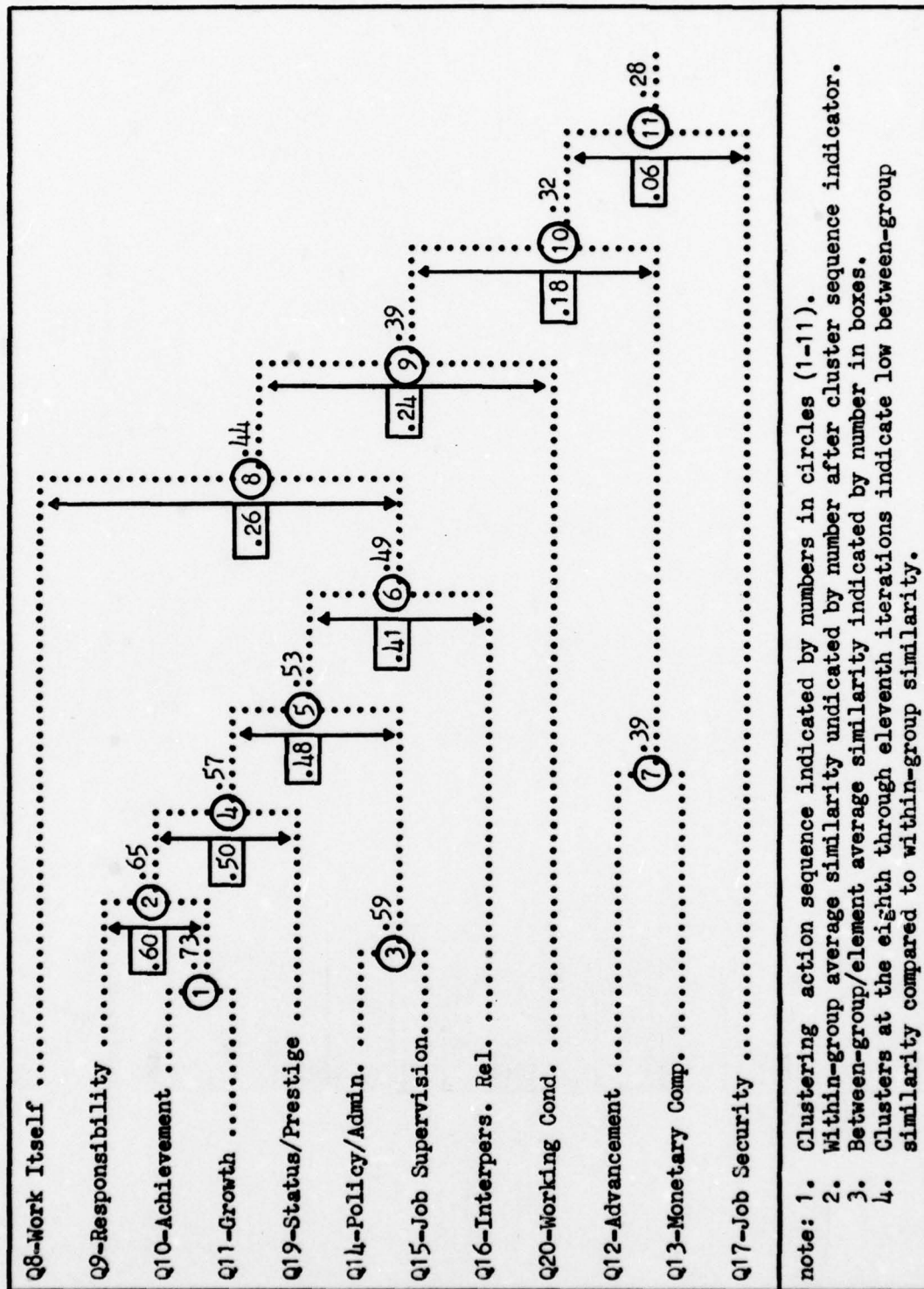
note: 1. Clustering action sequence indicated by numbers in circles (1-11).
2. Within-group average similarity indicated by number after cluster sequence indicator.
3. Between-group/element average similarity indicated by number in boxes.
4. Clusters at the eighth through eleventh iterations indicate low between-group similarity compared to within-group similarity.

Figure V-1. Results of Cluster Analysis of Work Factor Importance for Total Sample (N=126).

Analysis of average between-group similarities at the sixth iter-
ation revealed that the same seven work factors would have been clustered
regardless of which alternate clustering action took place at the fifth
level, group three with group four (.48) or group three with Q16-Inter-
personal Relations (.46). Thus, the only clustering actions which detract
significantly from the first hypothesis occur at the sixth and eighth
iterations. Their combined effect was to preclude the clustering of Q8-
Work Itself with the job property cluster (group four). Further analysis
revealed that the average similarity between Q8-Work Itself and the four
job property variables (Q9, Q10, Q11, and Q19) was .27, while the average
similarity between Q8 and the three interaction features of group six (Q14,
Q15, Q16) was .24.

Clustering at the ninth, tenth, and eleventh iterations added Q20-
Working Conditions, group seven, and Q17-Job Security to the main cluster
(group eight) in general agreement with HH1. The between-group and within-
group similarities at the eighth through eleventh iterations indicate low
support for variable similarity. For example, the difference between the
two similarity measures at the eighth iteration was .18 (.44-26), while at
the sixth iteration, the difference was .08 (.49-41).

In general, cluster analysis of work factor relative importance var-
iables for the total sample resulted in moderate positive support for the
first hypothesis (HH1).

Cluster Analysis of the Civilian Sample. Results of cluster analysis
for the civilian subset of the sample data (Figure V-2) showed something
less than clear support for HH1. On the very first iteration, a proposed
job property variable (Q11-Growth) combined with a proposed organization
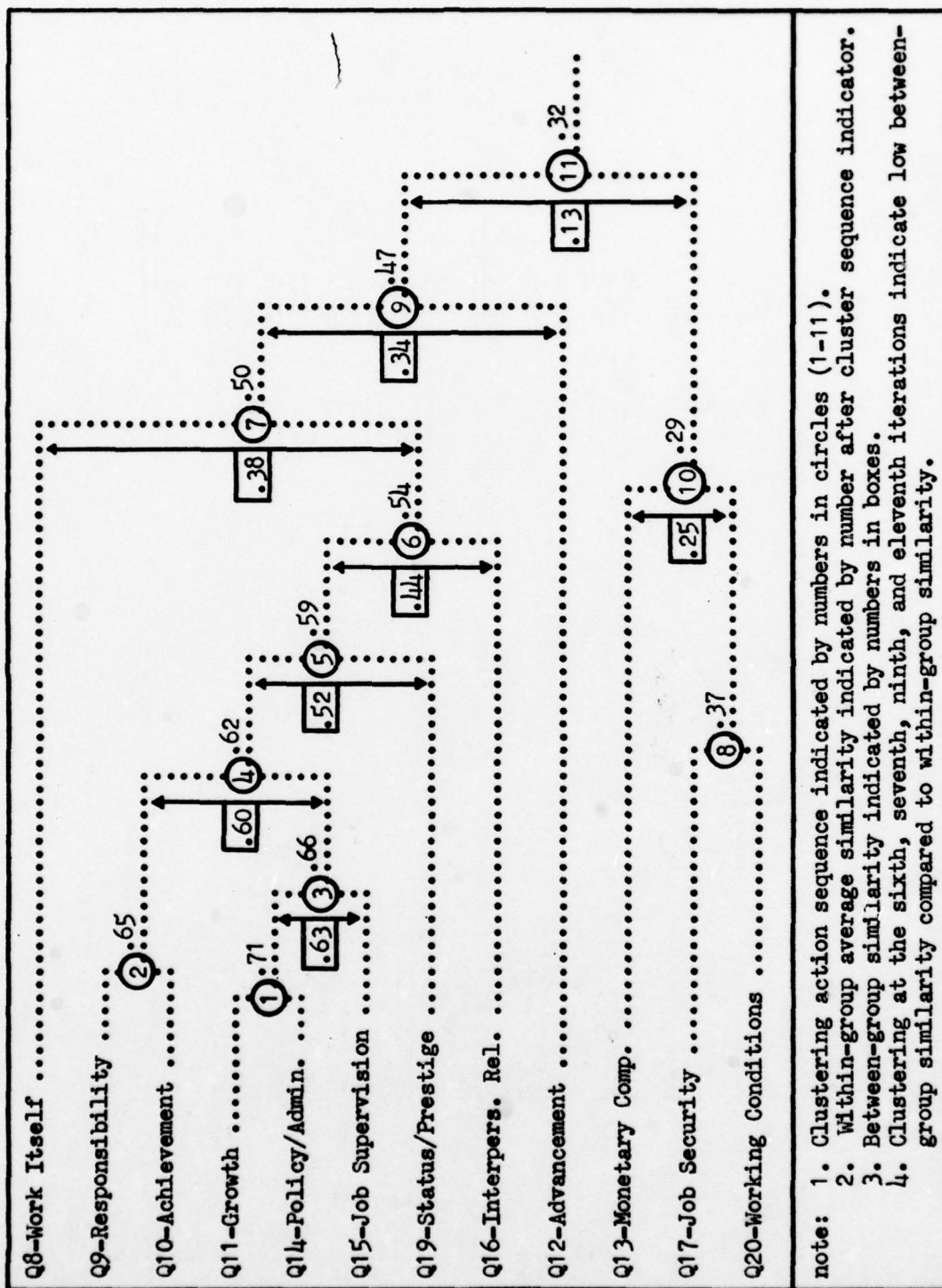policy variable (Q14-Policy/Administration) with a similarity of .71.

Figure V-2. Cluster Analysis of Work Factor Importance Variables for Civilian Subset (*N*=76).

note:
1. Clustering action sequence indicated by numbers in circles (1-11).
2. Within-group average similarity indicated by number after cluster sequence indicator.
3. Between-group similarity indicated by numbers in boxes.
4. Clustering at the sixth, seventh, ninth, and eleventh iterations indicate low between-group similarity compared to within-group similarity.

117

Other alternatives near this maximum similarity value for the first iteration were Q14-Q15 (.68), Q9-Q11 (.66), and Q10-Q11 (.66). By the sixth iteration, the same seven variables were clustered in the civilian subset that clustered at the sixth iteration for the total sample. However significantly less structure (proposed by HH1) was evident among the seven variables for the civilian subset.

Between-group and within-group similarities differed by more than .10 for the sixth, seventh, ninth, and eleventh iterations, indicating relatively low variable similarity for these clusters. In general, results of cluster analysis of work factor relative importance variables for the civilian subset showed little if any support for HH1.

Cluster Analysis of the Military Sample. Results of cluster analysis for the military subset showed strong support for the first hypothesis (refer to Figure V-3). Four of the five proposed job property work factors were clustered at the first, fourth, and fifth iterations. The three primary organization policy variables (Q12, Q13, and Q14) clustered on the third and seventh iterations. Two of the three primary interaction features combined on the second iteration.

Between-group and within-group similarities differed by more than .10 for the fifth, sixth, eighth, tenth, and eleventh iterations, indicating low variable similarity for these clusters. In general, results of cluster analysis for both the military subset and total sample showed comparable support for HH1, but each with a slightly different structure. For the total sample, Q14-Policy/Administration was combined with Q15-Job Supervision on the third iteration, and generally was more similar to other interaction features. For the military subset, Q14 was grouped with Q12-Advancement and Q13-Monetary Compensation on the seventh iteration, and thus interpreted as an organization policy variable.

118

Figure V-3. Cluster Analysis of Work Factor Relative Importance Variables for Military Subset (N=50).

note:
1. Clustering action sequence indicated by numbers in circles (1-11).
2. Within-group average similarity indicated by number aftercluster sequence indicator.
3. Between-group/element average similarity indicated by numbers in boxes.
4. Clusters at the fifth, sixth, eighth, tenth, and eleventh iterations indicate low between-group similarity compared to within-group similarity.

Factor Analysis of the Total Sample. Factor Analysis of relative importance variables for the total sample (Table V-1) resulted in some support for the hypothesized structure. The six-factor solution shown was the most interpretable, and with the exception of Q16-Interpersonal Relations, all variables had relatively high communalities.

Interaction features (Q15 and Q16) loaded heavily on FACTOR I, organization policy variables (Q12 and Q13) loaded on FACTOR II, and job property variables (Q9, Q10, and Q11) loaded on Factor V. Q14-Policy/Administration loaded primarily as an interaction feature, while Q19-Status/Prestige loaded with job property variables on FACTOR V. Q17-Job Security and Q20-Working Conditions were represented by single-variable factors in agreement with HH1 and Table IV-2 (FACTOR III and FACTOR IV).

Two loadings on FACTOR V and the single-variable FACTOR VI were not predicted by HH1. Q12-Advancement (a proposed organization policy variable) and Q15-Job Supervision (a proposed interaction feature) showed loadings on FACTOR V of .43 and .40 respectively. Although these loadings were significantly smaller than their primary loadings of .73 and .74 respectively, they nevertheless represented a structure complexity not proposed by HH1. Additionally, Q8-Work Itself was represented by the single-variable FACTOR VI in disagreement with the hypothesized structure.

In accordance with the categories established in Chapter IV, the measure of merit (M) for this six-factor solution of the total sample reflects weak to moderate support for the first hypothesis (M = HP-NHP = 11-3 = 8). These results are in general agreement with cluster analysis results for the total sample.

Factor Analysis of the Civilian Sample. For the civilian subset, factor analysis results were less supportive of HH1 than were results for the total sample. The four-factor solution presented in Table V-2

TABLE V-1

Principal Component (Varimax Rotated) Factor Analysis of Work Factor Relative Importance Variables (N=126).

	I	II	III	IV	V	VI	C*
Q8-Work Itself						.96	.98
Q9-Responsibility					.78		.77
Q10-Achievement					.72		.81
Q11-Growth					.66		.79
Q12-Advancement		.73			.43		.74
Q13-Monetary Comp.		.86					.81
Q14-Policy/Admin.	.77						.76
Q15-Job Supervision	.74				.40		.74
Q16-Interpers. Rel.	.71						.65
Q17-Job Security			.93				.89
Q19-Status/Prestige					.71		.72
Q20-Working Cond.				.92			.91
Eigenvalue	4.44	1.39	1.29	0.87	0.80	0.78	
Percent Variance	37.0	11.5	10.8	7.3	6.6	6.5	
Cumulative Variance	37.0	48.6	59.3	66.6	73.3	79.8	

note: 1. factor loadings <.40 not included.
*2. C=variable communality for this six-factor solution.

Eigenvalues and variances refer to the unrotated factor solution.

was the most interpretable although some relatively low communalities resulted.

Low magnitude factor loadings did suggest some support for HH1 (FACTOR III - interaction features, and FACTOR IV - organization policy variables), but larger loadings of some of these variables occurred with job property variables (FACTOR I). This complexity remained regardless of the number of factor solutions investigated.

In general, no support for the first hypothesis was realized from factor analysis for the civilian subset. The measure of merit for this

TABLE V-2

Principal Component (Varimax Rotated) Factor Analysis of Work Factor
Relative Importance Variables (N=76).

	I	II	III	IV	C*
Q8-Work Itself			.67		.61
Q9-Responsibility	.78				.70
Q10-Achievement	.73				.70
Q11-Growth	.84				.84
Q12-Advancement	.68			.46	.69
Q13-Monetary Comp.				.87	.81
Q14-Policy/Admin.	.66		.48		.70
Q15-Job Supervision	.64		.42		.66
Q16-Interpers. Rel.			.78		.74
Q17-Job Security		.87			.79
Q19-Status/Prestige	.68	.46			.73
Q20-Working Cond.		.67			.65
Eigenvalue	5.03	1.62	1.17	0.81	
Percent Variance	41.9	13.5	9.8	6.8	
Cumulative Variance	41.9	55.4	65.1	71.9	

note: 1. factor loadings < .40 not included.
      *2. C=variable communality for this four-factor solution.

Eigenvalues and variances refer to the unrotated factor solution.

analysis indicated no support for HH1 (M = HP-NHP = 11-5 = 6).

Factor Analysis of the Military Sample. Factor analysis results
for the military subset showed moderate support for the work factor
structure proposed by the first hypothesis. The six-factor solution
presented in Table V-3 was the most interpretable, and with the except-
ion of Q16-Interpersonal Relations and Q12-Advancement, all variables
showed relatively large communalities.

Three of the four primary job properties loaded on FACTOR I, the
three primary organization policy variables loaded on FACTOR II, and
two of the three primary interaction feature loaded on FACTOR III.

TABLE V-3

Principal Component (Varimax Rotated) Factor Analysis of Work Factor Relative Importance Variables (N=50).

	I	II	III	IV	V	VI	C*
Q8-Work Itself						.95	.93
Q9-Responsibility	.79						.83
Q10-Achievement	.86						.88
Q11-Growth	.78						.82
Q12-Advancement		.77					.69
Q13-Monetary Comp.		.91					.83
Q14-Policy/Admin.		.58	.54				.72
Q15-Job Supervision			.89				.86
Q16-Interpers. Rel.			.72				.67
Q17-Job Security					.89		.84
Q19-Status/Prestige	.57				.44		.67
Q20-Working Cond.				.93			.89
Eigenvalue	3.62	1.65	1.37	1.12	0.99	0.89	
Percent Variance	30.2	13.8	11.4	9.3	8.2	7.4	
Cumulative Variance	30.2	44.0	55.4	64.7	72.9	80.4	

note: 1. Factor Loadings < .40 not included.
　　　*2. C=variable communality for this six-factor solution.

Eigenvalues and variances refer to the unrotated factor solution.

Only Q19-Status/Prestige and Q8-Work Itself failed to factor in agreement with the first hypothesis. Q8-Work Itself, as with all previous analyses, factored independently of other variables (especially job property variables), suggesting some unique and/or independent characteristic. Q19-Status/Prestige did not factor with other interaction features as proposed, but instead loaded moderately with job property variables (FACTOR I) and with Q17-Job Security (FACTOR V).

In general, factor analysis of the military subset supported the first hypothesis. The measure of merit for this analysis reflected moderate

support for HH1 (M = HP−NHP = 12−2 = 10).

Summary of Results for the First Hypothesis. Considering the results of both cluster and factor analyses, overall support for HH1 was moderate. The main difficulty with the analyses and subsequent interpretations appeared to involve variable complexity. That is, the work factors used in the survey instrument were defined in such a manner that may have prevented detection of any underlying structure. At least three work factors (Q10-Achievement, Q14-Policy/Administration, and Q19-Status/Prestige) shared elements from more than one cluster definition. Additionally, Q8-Work Itself included so many different aspects (meaning, importance, challenge, interest, and appeal of one's job), that it seemed to measure job satisfaction (amount of and importance of) rather than any single work factor or outcome of the work environment. The low inter-correlations between Q8 and other relative importance measures together with high correlation between Q21-Work Itself amount and Q34-Overall Job Satisfaction appears to support this idea.

For the total sample and civilian subset, Q12-Advancement and Q15-Job Supervision each loaded on more than one factor (complexity = 2) in conflict with HH1. For the military and civilian subsets, Q14-Policy/Administration and Q19-Status/Prestige each loaded with more than one factor (complexity = 2), in substantial agreement with HH1. In spite of the many aberrations discussed above, cluster and factor analyses resulted in some evidence to support the hypothesis that work factor relative importance variables tend to cluster into job property, interaction feature, and organization policy variables.

Results of Correlation and Regression Analyses for HH2.

The second hypothesis proposed that job property work factors are

better predictors of overall job satisfaction (OJS) compared to other
work factors, and that interaction features are better predictors of
OJS than are organization policy variables. Results of correlation and
regression analyses generally support the first part but not the second
part of this hypothesis.

Job Property Predictors of Satisfaction. Both zero-order and
first order partial correlation coefficients show that job property
variables provide the strongest association between work factor amounts
(WFA) and overall job satisfaction. Considering the total sample, aver-
age zero-order correlation for job property variables (Q22-24, Q32) was
.50 ($\overline{r}^2$ = .25), while for the remaining nine variables, $\overline{r}$ = .32 ($\overline{r}^2$ = .10).
The difference was even more obvious when the $\overline{r}^2$ values were compared.
The average "explained" variance was nearly four times greater for job
property variables (determined by cluster and factor analyses) than for
the remaining variables. Similar results occurred for the military and
civilian subsets of the data (actual zero-order correlation coefficients
are listed in Table V-4):

	Mil.		Civ.	
Work Factors	$\overline{r}$	$\overline{r}^2$	$\overline{r}$	$\overline{r}^2$
Job Property (Q22-Q24,Q32)	.50	.25	.57	.32
Other (9)	.32	.10	.38	.14

Average first-order partial correlation coefficients shown in Table
V-5 (grouped by job property variables and the remaining nine other var-
iables), demonstrates the dominance of these data by those job property
variables identified by previous cluster and factor analyses. For each
work factor in the total sample partial correlations differed from the
zero-order correlations more (on the average) for job property variables.

125

TABLE V-4

Zero-Order Correlation Coefficients Between Reported Work Factor Amounts and Overall Job Satisfaction.

	Total Sample (N=126)		Military Subset (N=50)		Civilian Subset (N=76)	
	r	r^2	r	r^2	r	r^2
Q21-Work Itself	.65	.42	.65	.42	.66	.44
Q22-Responsibility	.48	.23	.45	.20	.50	.25
Q23-Achievement	.66	.44	.61	.37	.69	.48
Q24-Growth	.50	.25	.53	.28	.49	.24
Q25-Advancement	.38	.14	.46	.21	.36	.13
Q26-Monetary Compensation	.11	.01	.02	.00	.16	.03
Q27-Policy/Administartion	.45	.20	.26	.07	.58	.34
Q28-Job Supervision	.31	.10	-.03	.00	.55	.30
Q29-Interpersonal Relations	.22	.05	.23	.05	.21	.04
Q30-Job Security	.26	.07	.29	.08	.24	.06
Q31-Personal Life	.32	.10	.37	.14	.30	.09
Q32-Status/Prestige	.50	.25	.39	.15	.59	.35
Q33-Working Conditions	.26	.07	.15	.02	.35	.12
	$r > .25; p \leq .001$ $r > .20; p \leq .01$ $r > .15; p \leq .05$		$r > .38; p \leq .001$ $r > .32; p \leq .01$ $r > .24; p \leq .05$		$r > .32; p \leq .001$ $r > .26; p \leq .01$ $r > .19; p \leq .05$	

TABLE V-5

Average Partial (First-Order) Correlation Coefficients: Job Property Work Factors Compared to Other Work Factors Effect on the WFA - Overall Job Satisfaction Relationship.

Work Factor Amount	Total (N=126)			Military (N=50)			Civilian (N=76)		
	Q22-Q24 Q32	Q25-Q31 Q21,Q33	r	Q22-Q24 Q32	Q25-Q31 Q21,Q33	r	Q22-Q24 Q32	Q25-Q31 Q21,Q33	r
Q21-Work Itself	.52	.63	.65	.52	.63	.65	.52	.64	.66
Q22-Responsibility	.24	.41	.48	.19	.41	.45	.27	.42	.50
Q23-Achievement	.52	.60	.66	.47	.56	.61	.55	.62	.69
Q24-Growth	.30	.43	.50	.35	.45	.53	.28	.41	.49
Q25-Advancement	.19	.34	.38	.26	.40	.46	.17	.32	.36
Q26-Monetary Comp.	-.01	.03	.11	-.11	-.02	.02	.06	.07	.16
Q27-Policy/Admin.	.30	.40	.47	.11	.22	.16	.45	.52	.58
Q28-Job Supervision	.17	.24	.31	-.18	-.10	-.03	.43	.48	.55
Q29-Interpers. Rel.	.12	.15	.22	.15	.20	.23	.10	.11	.21
Q30-Job Security	.16	.20	.26	.27	.26	.29	.07	.13	.24
Q31-Personal Life	.26	.27	.32	.34	.33	.37	.20	.25	.30
Q32-Status/Prestige	.29	.43	.50	.14	.33	.39	.42	.51	.59
Q33-Working Cond.	.11	.20	.26	.01	.09	.15	.21	.29	.35

note: 1. r = zero-order correlation coefficient between Work Factor Amount and Overall Job Satisfaction (Q34).

2. First-Order Partial Correlations between Overall Job Satisfaction and each Work Factor Amount when eachother Work Factor Amount is held constant (see Tables C-3, C-4, C-5).

127

For example (referring to Table V-5, N = 126), the zero order correlation between Q28-Job Supervision Amount and overall Job Satisfaction was .31 (p < .001). However, the average partial correlation for Q28-OJS when this relationship was held constant for job property variables was .17, while the average partial correlation held constant for the remaining variables was .24. Similar results were also shown for the military subset (except for Q30-Job Security and Q31-Personal Life) and the civilian subset. This effect was not restricted to job property variables held constant for other job property variables as might be expected. Rather, the effect was evident throughout the entire set of work factor amounts.

Regression analysis also showed consistent results for job property variable dominance of the WFA-OJS relationship. Tables V-6, V-7, and V-8 list those variables of the 13 possible work factor amounts that entered the regression equations for the three samples (variables were subject to F-test significance test; p = .10). In each equation, one job property variable (Q23-Achievement) and Q21-Work Itself entered and remained the most significant regression variables. For the total sample, the standardized coefficients (beta weights) for these two variables were twice as large as other significant coefficients (.37 and .42 compared to .18 and .11). For the military subset, standardized coefficients for Q21 and Q23 were at least 80 percent larger than other significant coefficients (.51 and .36 compared to .20 and .18). For the civilian subset, the difference was not as great but nevertheless showed the same trend (.35 and .37 compared to .27).

Because the variable Work Itself was not identified as a job property variable in the previously discussed cluster and factor analyses, additional regression models without Q21-Work Itself were analyzed.

TABLE V-6

Stepwise Multiple Regression Summary for Total Sample (N=126),
With All 13 Work Factor Amount Variables Considered.

Variable	Beta Wt./sig.	R^2	Overall F/sig.
Q23-Achievement	.37/.000	.43	93.4/.000
Q21-Work Itself	.42/.000	.55	76.4/.000
Q27-Policy/Admin.	.18/.007	.58	55.2/.000
Q26-Monetary Comp.	-.11/.085	.59	42.9/.000
Overall Job Satisfaction = 11.50 + .51(Achievement) + .68(Work Itself) + .28(Policy/Admin) - .20(Monetary Comp.)			

TABLE V-7

Stepwise Multiple Regression Summary for Military Subset (N=50),
With All 13 Work Factor Amount Variables Considered.

Variable	Beta Wt./sig.	R^2	Overall F/sig.
Q21-Work Itself	.51/.000	.42	34.2/.000
Q23-Achievement	.36/.003	.51	24.1/.000
Q26-Monetary Comp.	-.20/.048	.54	18.2/.000
Q30-Job Security	.20/.043	.58	15.4/.000
Q28-Job Supervision	-.18/.069	.61	13.7/.000
Overall Job Satisfaction = 12.47 + .82(Work Itself) + .55(Achievement) - .41(Monetary Compensation) + .33(Job Security) - .25(Job Supervision).			

note: For the above Tables, variables entering the regression
equations satisfied the F-test at $p \leq .10$.

Tables V-9, V-10, and V-11 show the resulting significant variables when Q21-Work Itself was denied inclusion in the regression equation. Q31-Personal Life was also not allowed to enter on the grounds that it does not reflect a "work-factor" variable.

Virtually the same regression model occurred for both the total sample and the civilian subset. Two job factors (Q23-achievement and Q32-Status/Prestige) plus one policy variable (Q27-Policy/Administration) were the only significant variables ($p < .10$). The regression equation for the military subset was substantially different from the other two. Four variables were significant at $p < .10$; two job property variables (Q23-Achievement and Q24-Growth) one interaction feature (Q28-Job Supervision), and Q30-Job Security. As before, weighting of job property variables was larger. In fact, two job property variables (Q24-Growth and Q32-Status/Prestige) were the only different variables to enter the new regression equations, while Q26-Monetary Compensation became less significant than $p = .10$. It is clear from these regression models that job property variables (Q23, Q24, Q32) dominated the work factor amount — overall job satisfaction relationship. Q27-Policy/Administration (for the civilian subset) remained the single exception to this finding.

Other Predictors of Satisfaction. The second part of HH2 stated that interaction features are better predictors of OJS compared to organization policy variables. Some difficulty arose in the examination of this part due to the small number of interaction features and organization policy variable (five total), as well as the apparent dual nature of Q27-Policy/Administration. Previously discussed results of clustering and factor analysis showed that Q14-Policy/Administration grouped with other proposed interaction feature variables for the total sample, but with other proposed organization policy variables for the military subset.

130

TABLE V-8

Stepwise Multiple Regression Summary for Civilian Subset (N=76),
With All 13 Work Factor Amount Variables Considered.

Variable	Beta/Wt./sig.	R^2	Overall F/sig.
Q23-Achievement	.35/.000	.47	66.3/.000
Q21-Work Itself	.37/.000	.59	52.2/.000
Q27-Policy/Admin	.27/.000	.64	42.8/.000
Overall Job Satisfaction = 10.04 + .45(Achievement) + .61(Work Itself) + .42(Policy/Administration).			

TABLE V-9

Stepwise Multiple Regression Summary for Total Sample (N=126),
With 12 WFA Variables Considered (Q21-Work Itself excluded).

Variable	Beta Wt./sig.	R^2	Overall F/sig.
Q23-Achievement	.51/.000	.43	93.4/.000
Q27-Policy/Admin	.17/.025	.46	52.4/.000
Q32-Status/Prestige	.17/.043	.48	37.0/.000
Overall Job Satisfaction = 12.34 + .68(Achievement) + .25(Policy/Admin) + .24(Status/Prestige).			

TABLE V-10

Stepwise Multiple Regression Summary for Civilian Subset (N=76),
With 12 WFA Variables Considered (Q21-Work Itself excluded).

Variable	Beta Wt./sig.	R^2	Overall F/sig.
Q23-Achievement	.43/.000	.47	66.3/.000
Q27-Policy/Admin	.27/.004	.55	44.2/.000
Q32-Status/Prestige	.21/.033	.58	32.6/.000
Overall Job Satisfaction = 11.51 + .55(Achievement) + .43(Policy/Admin) + .34(Status/Prestige).			

note: For the above Tables, variables entering the regression
equations satisfied the F-test at $p \leq .10$.

Unclear results were obtained for the civilian subset. Using these results, when Q27 was averaged with other interaction feature variables for the total sample (Q27, Q28, Q29), the average correlation with OJS was r = .33 compared to r = .25 for organization policy variables (Q25, Q26). When Q27 was averaged with other organization policy variables for the military subset (Q25, Q26, Q27), the average correlation with OJS was r = .25 compared to r = .13 for the interaction feature variables (Q28, Q29). Thus, it is unclear whether Policy/Administration should be considered as interaction feature or an organization policy variable, and results treating it as an organization policy variable for the military subset and an interaction feature for the total sample do not support the second part of HH2.

Partial correlation analysis was equally unlear on the issue. No significant trend was detected that could establish Q27-Policy/Administration as either an interaction feature or organization policy variable. Also, comparison of average partial correlation coefficients with zero-order correlation coefficients did not support or refute the proposition that interaction features are better predictors of OJS than are organization policy variables. Regression analyses that included all work factors were also unable to address this issue because most of the interaction and policy variables did not enter the regression equations (the coefficients of these variables were not significantly different from zero at p = .10). The single exception to this was Q27-Policy and Administration.

Using only the five interaction and policy variables (Q25 - Q29), additional regression models were examined. Tables V-12, V-13, and V-14 summarize these results. For the total sample (Table V-12), only Q27-Policy/Administration and Q25-Advancement were significant contributors

132

TABLE V-11

Stepwise Multiple Regression Summary for Military Subset (N=50),
With 12 WFA Variables Considered (Q21-Work Itself excluded).

Variable	Beta Wt./sig.	R^2	Overall F/sig.
Q23-Achievement	.42/.003	.37	28.1/.000
Q24-Growth	.34/.019	.41	16.2/.000
Q28-Job Supervision	-.25/.031	.46	12.9/.000
Q30-Job Security	.21/.058	.50	11.2/.000
Overall Job Satisfaction = 12.70 + .64(Achievement) + .46(Growth) - .35(Job Supervision) + .35(Job Security).			

TABLE V-12

Stepwise Multiple Regression Summary for Total Sample (N=126),
With Five Interaction and Policy Variables Considered.

Variable	Beta Wt./sig.	R^2	Overall F/sig.
Q27-Policy/Admin	.33/.001	.20	31.1/.000
Q25-Advancement	.29/.001	.28	23.7/.000
Q29-Interpers. Rel.	.08/.348	.28	16.2/.000
Q28-Job Supervision	.06/.497	.29	12.2/.000
Q26-Monetary Comp.	-.04/.624	.29	9.8/.000
Overall Job Satisfaction = 14.33 + .51(Policy/Administration) + .35(Advancement).			

to the equation. Again, the issue of whether Policy/Administration was interpreted as an interaction or policy variable leaves unclear results. For the total sample, Policy/Administration Relative Importance merged with Job Supervision Relative Importance, and thus was interpreted as an interaction feature. That being the case, Table V-12 indicates one interaction feature and one policy variable (Q25-advancement) as primary predictors of overall job satisfaction.

TABLE V-13

Stepwise Multiple Resression Summary for Military Subset (N=50),
With Five Interaction and Policy Variables Considered.

Variable	Beta Wt./sig.	R^2	Overall F/sig.
Q25-Advancement	.43/.005	.21	13.0/.001
Q28-Job Supervision	-.23/.113	.24	7.2/.002
Q27-Policy/Admin	.16/.272	.26	5.4/.003
Q29-Interpers. Rel.	.14/.345	.28	4.3/.005
Q26-Monetary Comp.	-.03/.813	.28	3.4/.011
Overall Job Satisfaction = 16.56 + .57(Advancement).			

TABLE V-14

Stepwise Multiple Regression Summary for Civilian Subset (N=76),
With Five Interaction and Policy Variables Considered.

Variable	Beta Wt./sig.	R^2	Overall F/sig.
Q27-Policy/Admin	.36/.004	.34	38.9/.000
Q28-Job Supervision	.28/.017	.40	24.3/.000
Q25-Advancement	.20/.044	.43	18.3/.000
Q26-Monetary Comp.	-.04/.653	.43	13.6/.000
Q29-Interpers. Rel.	.01/.893	.43	10.8/.000
Overall Job Satisfaction = 12.95 + .57(Policy/Administration) + .40(Job Supervision) + .27(Advancement).			

For the military subset, when these five work factor amount variables
were considered, only Q25-advancement was significant in the resulting
equation (Table V-13). Q28-Job Supervision was nearly significant at
p = .113, and had a negative impact on overall Job Satisfaction. The
relationships between Job Supervision and overall Job Satisfaction for
the military and civilian subgroups were substantially different (refer
to Table V-4). For the military subset then, one policy variable (Q25-

Advancement) and one Interaction feature (Q28-Job Supervision) were indicated as the primary predictors of overall job satisfaction.

For the civilian subset, three of the five variables remained significant (Table V-14). Two policy variables (Q27-Policy/Administration and Q25-Advancement) and one interaction feature (Q28-Job Supervision) were indicated as the primary predictors of Overall Job Satisfaction. Referring to previous cluster and factor analyses for the civilian subset, it was not clear how to interpret Policy/Administration relative importance. In either case however, the civilian subset regression summary in Table V-14 showed at least one interaction feature and one policy variable as significant predictors of overall Job Satisfaction.

Regression results using the five interaction and policy variables did not indicate that interaction features were stronger predictors of overall job satisfaction than were organization policy variables. The variable Q25-Advancement was the most consistent, remaining a significant predictor of overall job satisfaction for all three analyses. Because the association between Q28-Job Supervision and overall job satisfaction was markedly different for the two subsets, it was not a significant predicator of OJS for the total sample.

Summary of Results for the Second Hypothesis. Each of the three methods used to examine the strength of association between WFA and OJS supported the first part of HH2 - that job property variables are better predictors of OJS than are interaction features or organization policy variables. The second part of HH2, that interaction features are better predictors of OJS than are organization policy variables, received no clear support.

<u>T-Test Results for HH3 - HH7</u>

Results based on mean reported overall job satisfaction (OJS) for the various groups identified by these five hypotheses are discussed in this section. In general, support for the proposition that work factor importance moderates the work factor amount - overall job satisfaction relationship was not established.

<u>Moderation of High Work Factor Amounts (HH3)</u>. Briefly, HH3 stated that mean OJS would be higher for cases grouped by HIGH WFA <u>and</u> HIGH WFI than for cases grouped by HIGH WFA <u>and</u> LOW WFI. T-test results (Table V-15) failed to support HH3 for each of the samples. Analyses for the total sample and civilian subset actually resulted in greater $\overline{\text{OJS}}$ for the proposed LOSAT groups! For each sample, about 65 percent of the possible cases were assigned to either the HISAT or LOSAT groups.

<u>Moderation of Low Work Factor Amounts (HH4)</u>. This hypothesis proposed that mean OJS would be greated for LOW WFA <u>and</u> HIGH WFI cases compared to mean OJS for the group with LOW WFA <u>and</u> HIGH WFI. Results of t-tests shown in Table V-16 failed to provide support for this hypothesis. Although the proposed HISAT groups for each sample did have a higher overall mean job satisfaction than the proposed LOSAT group, none of the differences were statistically significant (largest t value was 0.92, p=.185). For the military sample, 62 percent of the cases were assigned while 72 and 75 percent were assigned for the total and civilian samples respectively.

<u>Combined Moderation of High and Low Work Factor Amounts (HH5/HH7)</u>. Using all 13 work factor amount variables, HH5 proposed higher mean OJS for cases in a group defined by a majority of HIGH WFA <u>and</u> a minority of LOW WFA for those work factors reported high in relative importance. HH7 proposed the same moderation effect but using the four job property variables (Q22-Q24, Q32).

136

TABLE V-15

Results of T-Tests for HIGH WFA and HIGH/LOW WFI Groups (HH3).

Sample	Group/Size	$\overline{OJS}$	Std. Dev.	F-test/sig.	T-test/sig.
Total (N=126)	HISAT/48	19.5	3.11	1.73/.086	-0.31/.378
	LOSAT/33	19.7	4.09		
Military (N=50)	HISAT/20	19.9	3.02	1.50/.413	0.44/.333
	LOSAT/13	19.4	3.71		
Civilian (N=76)	HISAT/29	19.0	3.20	1.70/.189	-1.02/.156
	LOSAT/22	20.1	4.17		
note: One-tailed T-test is estimated if F-test significance is less than .05					

Results of t-tests for both HH5 and HH7 were unable to provide sig-
nificant support for either hypothesis (see Table V-17). Mean OJS values
for the proposed HISAT groups were greater than the $\overline{OJS}$ for the proposed
LOSAT groups, but the actual differences were not statistically signif-
icant. Because of the restrictive nature of both HH5 and HH7, a low
percentage of possible cases were assigned to the HISAT and LOSAT groups.
For HH5, with all 13 work factors considered, only 31 percent of the
possible 126 cases were assigned to either the HISAT or LOSAT groups.
For HH7, with only four work factors considered, only seven of the possible
126 cases (6%) were assigned, thus rendering any conclusions concerning
HH7 tenuous at best.

Moderation of T-test Significance for High and Low Importance (HH6).
Briefly, this hypothesis proposed that the mean OJS difference between
HIGH WFA and LOW WFA would be greater for HIGH WFI than for LOW WFI.
Results of the appropriate t-tests for the three samples are listed in

TABLE V-16

Results of T-Tests for LOW WFA and HIGH/LOW WFI Groups (HH4).

Sample	Group/Size	$\overline{OJS}$	Std. Dev.	F-test/sig.	T-test/sig.
Total (N=126)	HISAT/48	19.0	2.99	2.45/.003	0.89/.188
	LOSAT/43	18.3	4.68		
Military (N=50)	HISAT/19	19.3	3.02	3.56/.017	0.92/.185
	LOSAT/12	17.7	5.69		
Civilian (N=76)	HISAT/25	18.8	3.28	1.51/.305	0.56/.288
	LOSAT/32	18.3	4.02		
note: One-tailed T-test is estimated if F-test significance is less than .05					

Table V-18. For each sample, the difference in $\overline{OJS}$ between HIGH and LOW WFA groups was significantly greater for HIGH WFI than for LOW WFI, thus supporting the hypothesis (HH6). Referring to Table V-18, the proposed HISAT and LOSAT groups for high Work Factor importance showed $\overline{OJS}$ differences of 4.6, 4.3, and 4.8 for the three samples. For low work factor importance HISAT and LOSAT groups, the difference was 3.0, 2.1, and 4.2 for the same three samples. The most significant difference resulted for the military sample (3.36/.002 compared to 1.80/.040). Results of these tests generally support the hypothesis HH6. About 80 percent of the possible cases were assigned to either the HISAT and LOSAT groups in each test.

Summary of Results for HH3 - HH7. Taking into account the results of all five hypotheses dealing with the issue of WFA-OJS moderation by relative importance of work factors, these data do not support the general proposition that reported work factor relative importance measures moderate

TABLE V-17

Results of T-Tests for HIGH/LOW WFA and HIGH/LOW WFI Groups (HH5/HH7)

Work Factors	Group/Size	$\overline{OJS}$	Std. Dev.	F-test/sig.	T-Test/sig.
All (HH5)	HISAT/26	19.5	2.87	3.99/.003	0.61/.274
	LOSAT/13	18.5	5.74		
Q22-Q24, Q32 (HH7)	HISAT/4	20.0	1.83	9.70/.098	0.56/.298
	LOSAT/3	18.3	5.69		
note:	1. For both T-tests, N=126 (Total Sample). 2. One-tailed T-test is estimated if F-test significance is less than .05				

the relationship between reported work factor amount and overall job satisfaction. Results of the four hypotheses HH3, HH4, HH5, and HH7, did not provide support for the moderation proposals. Although six of the eight t-tests were in the proposed direction (though not significant), the range of cases assigned to HISAT and LOSAT Groups were nearly identical. For example, OJS for the HISAT group for HH5 ranged from 14 to 25, while for the LOSAT group, OJS ranged from 8 to 25.

Results of tests for HH6 were positive, but because (1) this hypothesis was established as a secondary validation of the WFI moderation effect, and (2) the primary tests were unable to provide any support, conclusions based only on the acceptance of HH6 are not warranted.

Discussion of Findings

In this section, an attempt will be made to make interpretations of these partial tests results. In general, because of the limited nature of the tests performed, as well as the results themselves, specific conclusions and implications were difficult to make.

TABLE V-18

Results of T-Tests for HIGH WFI/HIGH-LOW WFA Groups and LOW WFI/
HIGH-LOW WFA Groups (HH6).

Sample	Group/Size	$\overline{OJS}$	Std. Dev.	F-test/sig.	T-test/sig.
Total (N=126)	HISAT-AB/60 (high WFI)	20.9	2.27	3.61/.000	6.17/.000
	LOSAT-AB/40	16.3	4.30		
	HISAT-CD/52 (low WFI)	20.5	3.48	1.18/.555	4.23/.000
	LOSAT-CD/52	17.5	3.99		
Military (N=50)	HISAT-AB/24 (high WFI)	20.5	2.60	3.06/.017	3.36/.002
	LOSAT-AB/15	16.2	4.55		
	HISAT-CD/21 (low WFI)	20.1	3.30	1.71/.232	1.80/.040
	LOSAT-CD/23	18.0	4.32		
Civilian (N=76)	HISAT-AB/35 (high WFI)	21.3	2.36	3.16/.002	5.25/.000
	LOSAT-AB/26	16.5	4.19		
	HISAT-CD/35 (low WFI)	20.9	3.41	1.07/.841	4.83/.000
	LOSAT-CD/30	16.7	3.53		

note: One-tailed T-test is estimated if F-test significance is less than .05

Implication of Cluster and Factor Analyses. Moderate support for
the clustering of work factor relative importance measures asserts that
employees in this sample, when presented with this set of work factors,
distinguished perceptually among thos items related to the job/task it-
self, those items related to organization policy, and thos items related
to supervision and workgroup interaction. In general, these findings
support similar findings of James, et al. (1977) and complement research
by Katz and Van Maanen (1977). These findings imply that work satisfac-

tion, specifically the importance attached to those factors that lead to work satisfaction, is interwoven with conceptually independent job, interaction, and policy aspects. While not detracting from the inherent complexity of the work system environment, it may be useful to model individual work behavior using these three "simplified" dimensions, as long as all three spheres are accounted for in the model. It is typical to find, especially with "well advertised" models and theories of work motivation/job design, that only one dimension is emphasized at the expense of the remaining two. The bottom line, with respect to clustering of work factor importance, is that explicit attention must be paid to all three spheres of the employee's environment whenever change in that environment is contemplated.

Implications Related to the Strength of WPA-OJS Relationships. The fact that job property/intrinsic work factor amounts were shown to have the strongest association with overall job satisfaction was not unexpected. Similar results are frequent, if not typical (Mayes, 1978). However, the usual conclusions that accompany such findings are that such intrinsic/job property factors are more important or more critical to the work environment. The model of work motivation proposed in this thesis predicts a stronger job property amount-overall job satisfaction relationship not because job properties are more critical, but because they are less complicated, unambiguous, and unmediated in their relationship with job satisfaction. On the contrary, interaction features and organization policy variables not only require third party mediation, but it is also proposed that they influence overall job satisfaction from two conceptually different directions; performance-related and membership-related work outcomes.

Even though job property amount variables were more strongly assoc-

141

iated with overall job satisfaction, cluster and factor analyses of relative importance measures indicated that individuals distinguished among job property, interaction, and policy variables. Because this survey instrument did not include measurement of separate performance-related and membership-related facet satisfactions, additional conclusions are not possible. However, it seems apparent that focusing strictly on correlation and regression models of job satisfaction can be misleading, unless this viewpoint is tempered by a relativistic and situational perspective.

An excellent example of this is provided by the Work Factor Q28-Job Supervision Amount. For the Military Subset, Q28-Job Supervision was virtually uncorrelated with Q34-OJS, while in the regression models, "more" supervision contributed to "less" job satisfaction. Without knowing the specific reasons why job supervision and job satisfaction were negatively related for the military subset and positively related for the civilian subset, a successful job design program may be difficult to implement. This is especially true if the same program is being used for both employees within the same work center!

Implications Related to Moderation of WFA-OJS BY WFI. The method used to identify the various HISAT and LOSAT groups was an attempt to relate individual work factors/outcomes with reported overall job satisfaction. Work factor relative importance measures for each individual were used in an attempt to indicate those work factors that contribute most to job satisfaction/dissatisfaction for each individual. Overall results of the various tests indicated one or more of the following: (1) that work factor relative importance was not an effective "individual difference" variable for these data; (2) that the methodology used was inappropriate for the sample size, or (3) that the hypothesized re-

lationships were incorrect. The fact that nine of eleven t-tests were
in the predicted direction might suggest that better results would occur
with a larger sample. The "key" moderation hypothesis (HH5) supports
this idea in that only 39 of 126 cases (31%) were considered in the
t-test. Research by Wanous and Lawler (1972) found that work factor
importance was ineffective in improving the facet satisfaction - over-
all job satisfaction relationship. The results of this research using
relative importance measures indicates that they also may be ineffective
moderators of the work factor amount - OJS relationship. However, the
essential assumption needed to come to such a conclusion is that the
Work Factor Amount Variables used in this research were untainted by
work factor satisfaction. Such an assumption is not possible. In fact,
the opposite may be true since the work factor "amount" questions were
composed using positive and negative terminology that were possibly in
agreement with connotations of satisfaction and dissatisfaction. Work
Factor Amount Variables contaminated with work factor "satisfaction"
would also explain some of the poor statistical results.

Military and Civilian Subset Differences. All of the tests used
to examine HH1-HH4 and HH6 were performed on the military and civilian
subsets as well as the total sample. Although statistically significant
results of any test did not occur for one subset over the other, consider-
able differences did occur. The cluster and factor results were stronger
for the military subset, while results were generally unclear for the civ-
ilian subset. Correlation and Regression analyses for HH2 indicated sim-
ilar results between the two subsets with regard to job property variables.
However, Policy and Administration (amount) was considerably more critical
to the regression model for the civilian subset. Also the amount of Job

143

Supervision had a negative impact on the military regression model, but a positive impact on the civilian regression model. Finally, although most of the t-tests between mean OJS values were not statistically significant, the single case of results opposite to those hypothesized, was for the civilian subset (HH3).

In summary, enough differences were found between the two subsets to establish .that substantially different perceptions existed. Because the survey instrument did not measure facet satisfactions or psychological states, little more can be said on this issue. However, it is suggested that large differences may likely exist between the two subsets for variables such as experienced organizational and personal goal congruence, experienced leadership facilitation and support, and experienced equitable treatment by the organization.

VI. Summary

Three specific objectives were established for this research:

1. Synthesis of a model of work motivation, performance, and satisfaction from the integration of contemporary theories of work motivation and current models of job design, that improves the understanding of theoretical and practical implications of job design;

2. Analysis of an existing set of empirical data based on the implications and hypotheses of the proposed model;

3. Evaluation of the results related to objectives 1 and 2 in terms of their implication on job design programs in the Air Force.

Proposed Model

The motivation - performance - satisfaction model proposed in Chapter III represents an extension to the basic Porter-Lawler expectancy model of Work Motivation. Three additional considerations of job design and job satisfaction have been incorporated in their basic model; (1) conceptually independent clusters of work outcomes, facet satisfactions, and associated work outcome values; (2) intervening psychological states; and (3) conceptually different determinants of overall job satisfaction. Also, both process and content aspects of work motivation were integrated in the proposed model.

Work System Clusters. Intrinsic and extrinsic outcomes of the Porter-Lawler model were replaced by three clusters of work system features; job property variables, interaction features, and organization policy variables. Each cluster is thought to represent a relatively independent group of work environment outcomes, satisfactions, and associated values, while at the same time incorporating a majority of

those factors critical to understanding behavior in the work environment.

Psychological States. Psychological or "experienced" states are included in the model as an intervening step between work system outcomes and satisfaction with those outcomes as well as between work system outcomes and future predispositions concerning the individual's work environment. A psychological state reflects a cognitive structuring of the perceived situational influence, and is primarily descriptive rather than evaluative. Trade-offs between the psychological states related to each of the work system clusters conceptualize the interactions involved in the work system. Such trade-offs can have potentially significant implications for work redesign programs.

Determinants of Overall Job Satisfaction. Performance-related and membership-related facet satisfactions are treated as independent sources contributing to overall job satisfaction. This distinction attempts to aid in the understanding of the interrelationships between motivation, performance, and satisfaction as well as clarify why overall job satisfaction is usually a poor correlate of work performance and work motivation.

Data Analysis

An existing set of empirical data, not previously subjected to analysis, was used to examine three aspects of the proposed model; (1) clustering of work factor relative importance measures, (2) strength of association between work factor outcomes and overall job satisfaction, and (3) impact of work factor relative importance on the work factor outcomes - overall job satisfaction relationship while taking into consideration the potential interactions of the work system.

Clustering Results. Moderate support was given by both cluster and factor analyses for the clustering proposition. Responsibility, achievement, and personal growth work factors tended to group together as hypothesized job property variables. Advancement and Monetary Compensation merged as hypothesized organization Policy Variables, and Job Supervision and Interpersonal Relations generally grouped as hypothesized interaction features. The variable Work Itself, hypothesized to group with other job property variables, consistently remained separate from all work factor importance variables.

Different cluster patterns for the military and civilian subsets, as well as some variable complexity in the factor analyses detracted from strong support for a universal clustering proposition. However, it is suggested that the organizational climate differences perceived by military and civilian employees may account in part for these different cluster patterns.

Work Factor Outcomes and Job Satisfaction. Job Property work factors were shown to be clearly stronger than interaction or policy work factors for the work factor amount - overall job satisfaction relationship. Interaction features and policy variables were, in general, similarly related to overall job satisfaction. In spite of the fact that the correlation strength between job property work factor amounts and overall job satisfaction was stronger, clustering of interaction and policy relative importance variables was also evident. One implication of this is that conventional correlation and regression analysis of job satisfaction may be complemented by cluster analysis in order to reveal the "shape" of job satisfaction.

Prediction of Overall Job Satisfaction. Results of tests to predict

147

high and low satisfaction using self-reported measures of relative importance and amount of 13 work factors were unsuccessful. It is possible that the methodology used was inappropriate for the sample size or that the survey instrument itself failed to measure those variables purportedly measured. Also, the proposed model may have failed to include other significant variables affecting job satisfaction. Most likely though, the survey instrument did not tap those work factors essential to the job satisfaction of a majority of respondents.

Impact on Job Design in the Air Force

Extensive system analysis for the design, acquisition, and general management of weapon systems is an expensive but necessary aspect of a successful military organization in today's world. However, it is safe to say that there is nothing comparable for that "most important" of all resources, the human resource. Part of the reason for this is that while weapon systems can be quantified and each part and interaction precisely described, the same is not true for human behavior. As indicated throughout this research, human behavior, and specifically the motivation to work, is complex, multi-dimensional, dynamic, and dependent on mental processes not fully understood by those who may spend their entire lifetime trying. Part of the problem also lies in the fact that past theories and models of work motivation have typically been either too narrow for general application or too broad to provide meaningful answers to critical questions. The essential aspects of the model proposed in this research have implications for job design/enrichment programs in the Air Force.

Complex But Manageable. First, the idea that work system outcomes and associated values and satisfactions cluster according to the three paradigms of human relations, rewards, and resources is conceptually

148

simplifying. However, at the same time, the inherent complexities of the work system and its environment are not ignored. If such a concept-ualization is valid, then by paying explicit attention to all three areas, a manager may be more successful when implementing job design/enrichment programs. By examining possible secondary effects of each specific change action, a change program may have the desired effect on motivation, perform-ance and satisfaction, as opposed to having the desired effect cancelled by undesired and unanticipated reactions.

A diagnostic plan such as proposed by the Job Diagnostic Survey (see Chapter II) is also essential to the determination of an affective change program. However, it should be emphasized that in addition to examining core job dimensions (job property variables), diagnosis must also be performed on the interaction and organization policy variables and their interactions.

Job Satisfaction. The question whether or not a job should be changed, redesigned, enriched or enlarged solely to increase the workers' job sat-isfaction has not been answered or even fully addressed. From all accounts, managers today still require a cost/benefit analysis of job design programs. Thus, it is essential to understand the relationship between motivation, productivity and job satisfaction. This research suggests that an organ-ization's reward structure must be examined and incorporated with job de-sign programs. Those work system outcomes (rewards) not related to perform-ance should not be expected to influence work motivation. Yet, at the same time, non-performance or membership-related outcomes may be a sig-nificant source of overall job satisfaction. The continued use of this variable (overall job satisfaction) to indicate work motivation and/or job performance will likely result in the prolonged mis-application of job design programs. The understanding of the determinants of overall

job satisfaction is essential for sound management as well as successful job design programs.

Areas for Further Research.

Referring to Figure III-1, additional model validation is necessary to establish the work outcome - psychological state - facet satisfaction link as well as the work outcome - psychological state - Effort/Reward probability link. Also, the existence of independent perceptions of performance-related and membership-related satisfactions remains to be established. Cluster analysis of work factor amount, satisfaction, and importance responses for the two AFMIG surveys could also be performed.

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APPENDIX   A

SURVEY INSTRUMENT

AND

RESPONSE DISTRIBUTIONS

APPENDIX A

Survey Instrument and Response Distributions

The unaltered survey instrument is contained in this appendix. Responses to parts II, III, and IV were available to this researcher. Responses to the following questions in Part I (General Information) were not available for analysis, and in so far as this researcher can determine, were not recorded:

4. Job Title.
6. Years of government service.
7. Time in Present job.
9. Highest level of education.
10. Job/educational requirement.
11. Task list.

Respondent comments were also not available for the optional question Part II-5.

The alphanumeric code to the left of each survey question represents the assigned variable name for data processing. In the case of Q34a - Q34d, only the composite variable Q34 was available:

$$Q34 = Q34a(R) + Q34b + Q34c + Q34d(R),$$

where (R) indicates that the responses were reverse coded before being summed.

Basic distributional characteristics for responses to questions Q8 to Q37 are also included in this appendix.

<u>JOB SATISFACTION INTERVIEW FORMAT</u>

<u>PURPOSE</u>: The purpose of this structured interview is to obtain data
on various job factors and personal attitudes which presumably affect
job satisfaction and productivity. Interviews will be conducted at
the following Base Accounting and Finance Offices:

      Wright-Patterson AFB, OH
      Rickenbacker AFB, OH
      Scott AFB, IL
      Chanute AFB, IL

The data obtained from these interviews will be carefully analyzed
and appropriate findings will be summarized in a research report
(AFIT thesis). Persons interviewed will remain anonymous and the in-
formation they provide will be treated confidentially.

<u>INSTRUCTIONS</u>: Please complete sections I and II of this format prior
to being interviewed; read sections III, IV, and V and be prepared to
answer appropriate items during the interview. Please respond explic-
itly and candidly.

I.   GENERAL INFORMATION

   1. Organization and Work Center: _____

   _____

   2. Grade: _____   3. AFSC: _____

   4. Job Title: _____

   5. Sex and Age: _____   6. Years Government Service: _____

   7. Time in Present Job (months): _____

   8. Number of Levels Managed: (Please indicate the number of
   organizational levels which you directly or indirectly manage)

   _____

   9. Highest Level of Education: (Circle the entry letter which
   reflects the highest level of education <u>currently</u> completed)

      a. Grammar school (did not graduate)

      b. Grammar school graduate (no high school)

      c. High school (did not graduate)

      d. High school graduate (no college)

      e. Trade or technical school (no college)

      f. Some college, but less than one year   (continued)

161

g. One year college, but less than two

h. Two years college, but less than three (includes two-year associate degree)

i. Three years or more college, no degree

j. Registered nurse diploma program

k. College degree (BS, BA, or equivalent, except LL.B)

l. Graduate work beyond bachelor's degree (no master's degree)

m. Master's degree

n. Postgraduate work beyond master's degree

o. Doctorate degree (includes LL.B, J.D., D.D.S., M.D., and D.V.M.)

10. Job Educational Requirement: (Referring to the previous item, please indicate the entry letter which, in your opinion, corresponds to the highest level of education required to successfully perform your job) _____

11. Task List: (In the following space, please list the tasks which comprise your job and include the average percentage of total work time that you devote to each task; percentages must total 100%. In describing tasks, identify specific output products and particular positions and/or work centers with which you interact -- e.g. "types letters, messages, memos, AF Forms 47c, and Error Transaction Reports for the Chief, Data Processing Section")

II.   JOB SATISFACTION INFORMATION

1. Which of the following shows how much of the time you feel satisfied with your job? (Circle the appropriate response letter)

Q34a(R)

a. All the time

b. Most of the time

c. A good deal of the time

d. About half of the time

e. Occasionally

f. Seldom

g. Never

2. Choose the one of the following statements which best tells how well you like your job.

Q34b

a. I hate it

b. I strongly dislike it

c. I dislike it

d. I am indifferent to it

e. I like it

f. I am enthusiastic about it

g. I love it

3. Which of the following best tells how you feel about changing your job?

Q34c

a. I would quit this job at once if I could

b. I would take almost any other job in which I could earn as much as I am earning now

c. I would like to change both my job and my occupation

d. I would like to exchange my present job for another one

e. I am not eager to exchange my present job but would do so if I could get a better one

f. I cannot think of any jobs for which I would exchange

g. I would not exchange my job for any other

4. Which of the following shows how you think you compare with other people?

Q34d(R)

   a. No one likes his job better than I like mine

   b. I like my job much better than most people like theirs

   c. I like my job better than most people like theirs

   d. I like my job about as well as most people like theirs

   e. I dislike my job more than most people dislike theirs

   f. I dislike my job much more than most people dislike theirs

   g. No one dislikes his job more than I dislike mine

5. In the space below, please list any specific constructive recommendations for improving the content or quality of your job. (OPTIONAL)

III. CATEGORY I FACTORS (On a scale of 0 to 10, please rate each of the following factors according to the perceived characteristics or contents of your present job)

Q21 1. <u>Work Itself</u> - the intrinsic meaning, importance, challenge, interest, or appeal of the tasks comprising your job

0	5	10
Totally disinter-esting, meaning-less, monotonous, unappealing, in-significant	Neutral	Absolutely stimulating, meaningful, challeng-ing, appealing, signif-icant

RATING: _____

Q22 2. <u>Responsibility</u> - the degree of responsibility or accountabil-ity for people, equipment, supplies, money, various programs, combat missions and exercises, etc.; the authority to make sig-nificant decisions (or the degree of participation in the decis-ion-making process); the control over various aspects of a par-ticular job, process, or mission; the completeness (closure) of your job

0	5	10
No meaningful re-sponsibility; no authority to make decisions; no con-trol over the plan-ning or accomplish-ment of one's job	Neutral	Maximum responsibility and authority; control over all aspects of job planning and per-formance

RATING: _____

Q23 3. <u>Achievement</u> - the feeling of accomplishment that you derive from performing your job, including proper recognition of, or feedback on, job performance

0	5	10
Extremely low sense of achievement; ab-solutely no recog-nition for, or feed-back on, job per-formance	Neutral	Extremely high sense of achievement; suit-able and timely recog-nition for, or feedback on, job performance

RATING: _____

Q24 4. <u>Growth</u> - the possibility or prospect of learning important new job skills, developing individual capacities, assuming in-creased responsibility, or pursuing challenging new dimensions in your job

4. Growth (continued)

```
0_____5_____10
Extremely limited       Moderate           Unlimited growth
growth opportuni-                           opportunities
ties
```

RATING: _____

Q25 5. Advancement - the prospects or opportunities for promotion
or advancement in position and/or grade

```
0_____5_____10
Extremely limited       Moderate           Unlimited advance-
advancement oppor-                          ment opportunity
tunity
```

RATING: _____

IV.   CATEGORY II FACTORS (On a scale from 0 to 10, rate each of the
following factors according to the characteristics of your present
job situation or environment)

Q26 1. Monetary Compensation - wages, salary, various monetary or
economic fringe benefits (e.g. reenlistment bonuses, medicare,
commissary privileges, etc.); this factor also encompasses a
sense of economic security associated with the degree of com-
pensation

```
0_____5_____10
Totally inadequate      Barely             Compensation exceeds
compensation offer-     adequate           all expectations and
ing virtually no                           desires and affords
economic secutity                          complete economic se-
                                           curity
```

RATING: _____

Q27 2. Policy and Administration - organizational regulations, poli-
cies, programs, etc.; general management and administrative
practices

```
0_____5_____10
Absolutely unfair       Acceptable         Extremely fair and
or intolerable pol-     or tolerable       logical policies and
icies and regula-                          regulations; sound
tions; inept manage-                       management and admin-
ment and administra-                       istration
tion
```

RATING: _____

Q28 3. <u>Job Supervision</u> - the competence, effectiveness, or fairness
of your immediate supervisor (or his/her proxy) in performing
various supervisory functions such as assigning work, monitor-
ing and assessing job performance, and maintaining effective
human relations

```
        0_____5_____10
Extremely inept,          Barely              Extremely competent
ineffective, or          acceptable           and effective; out-
unjust; has no                                standing human re-
concept of effect-                            lations, etc.
ive job performance
or effective human
relations
```

RATING: _____

Q29 4. <u>Interpersonal Relations</u> - on or off-duty interaction with
various members of your organization, excluding your immediate
supervisor (except in a non-duty social situation -- e.g. an
office picnic)

```
        0_____5_____10
Extremely poor           Neutral             Extremely harmonious
rapport with                                 relations with super-
organization mem-                            iors, peers, and sub-
bers; strong feel-                           ordinates; strong
ings of isolation,                           sense of organization-
etc.                                         al attachment or unity
```

RATING: _____

Q30 5. <u>Job Security</u> - job tenure, prospects for continued employment,
etc.

```
        0_____5_____10
Extremely poor           Barely              Extremely strong
tenure; constant         adequate            sense of security;
fear of being            security            " Rock of Gibraltar"
RIFed, fired, etc.                           feeling
```

RATING: _____

Q31 6. <u>Personal Life</u> - this factor is a "catch all" which includes
a number of features that are not included in the work environ-
ment -- e.g., leisure activities, the suitability of the geog-
raphic location, family and community relations, business and
investment opportunities, etc.

```
        0_____5_____10
Extremely unfavora-      Neutral             Extremely favorable
ble; no leisure time;                        personal life; com-
inharmonious rela-                           plete harmony with
tionship with commun-                        family, community,
ity, etc.                                    and environment
```

RATING: _____

Q32 7. Status - the feeling of status or prestige derived from your job, position, occupation, or organizational affiliation

```
0                      5                      10
```
Extremely low   Neutral   Extremely high stat-
status   us

RATING: _____

Q33 8. Working Conditions - this factor encompasses numerous aspects of the job environment not previously covered -- e.g. hours of work, volume of work, noise, temperature, facilities, equipment

```
0                      5                      10
```
Extremely adverse   Just   Extremely favorable
working conditions   acceptable   working conditions

RATING: _____

OTHER FACTORS

1. Factor Hierarchy - In the space below, rank the aforementioned factors in descending order of personal importance. Assign a numerical weight of 100 to the first (most important) factor; weight each succeeding factor according to its perceived degree of importance relative to preceding factors. The weight of each succeeding factor must not exceed the weight of any of its predecessors.

	FACTORS	SUBJECTIVE RANKING	WEIGHT
Q8	Work Itself		
Q9	Responsibility		
Q10	Achievement		
Q11	Growth		
Q12	Advancement		
Q13	Monetary Compensation		
Q14	Policy and Administration		
Q15	Job Supervision		
Q16	Interpersonal Relations		
Q17	Job Security		
Q18	Personal Life		
Q19	Status		
Q20	Working Conditions		

Q35 2. <u>Educational Compatibility</u> - Select the following entry which best describes the degree of compatibility between your present job and your educational background (in terms of both educational level and academic major or area of specialization)

    a. Moderately to extremely incompatible

    b. Neutral

    c. Moderately to extremely compatible

Q36 3. <u>Career Compatibility</u> - Select the following entry which best describes the level of compatibility between your present job and your occupational or career aspirations

    a. Moderately to extremely incompatible

    b. Neutral

    c. Moderately to extremely compatible

Q37 4. <u>Job/Supervisory Context</u> - Indicate the type of job/supervisory context that you prefer

    a. A job with limited, explicitly-defined scope and responsibilities; work that does not require frequent adaptation to unfamiliar situations or continuing expansion of existing knowledge and skills; freedom from demanding responsibilities and critical decisions; a supervisor who tells you exactly what your job consists of and how it should be done, and who closely monitors your work to insure that it meets standards of excellence or quality.

    b. No particular preference

    c. A job with broad scope and extensive responsibilities; complete control over job objectives, planning and programming, and resource allocation; work that exposes you to a variety of new situations and provides unlimited opportunities to acquire new skills and fully develop your potential; a job that requires you to make several key decisions; a supervisor who permits you complete freedom of action in doing your job the way you see fit.

Basic Response Distributions

Q8-Work Itself Relative Importance

Response	Total #	Total %	Civ. #	Civ. %	Mil. #	Mil. %
0 - 10	0	0	0	0	0	0
11 - 20	0	0	0	0	0	0
21 - 30	1	1	1	1	0	0
31 - 40	1	1	1	1	0	0
41 - 50	3	2	0	0	3	6
51 - 60	3	2	2	3	1	2
61 - 70	10	8	8	11	2	4
71 - 80	18	14	11	14	7	14
81 - 90	32	25	20	26	12	24
91 - 100	58	46	33	43	25	50

mean:	87.6	87.2	88.2
median:	90.3	90.2	90.5
mode:	100	100	100
variance:	207.3	206.9	211.5
s.d.:	14.4	14.4	14.5
s.e.:	1.3	1.7	2.1
cases:	126	76	50

Q9-Responsibility Relative Importance

Response	Total #	Total %	Civ. #	Civ. %	Mil. #	Mil. %
0 - 10	0	0	0	0	0	0
11 - 20	1	1	1	1	0	0
21 - 30	2	2	1	1	1	2
31 - 40	3	2	2	3	1	2
41 - 50	6	5	4	5	2	4
51 - 60	9	7	5	6	4	8
61 - 70	11	9	6	8	5	10
71 - 80	31	25	23	30	8	16
81 - 90	26	21	15	20	11	22
91 - 100	37	29	19	25	18	36

mean:	80.3	79.3	81.7
median:	80.5	80.3	89.5
mode:	80	80	90
variance:	317.4	320.7	315.6
s.d.:	17.8	17.9	17.8
s.e.:	1.6	2.1	2.5
cases:	126	76	50

Q10-Achievement Relative Importance

Response	Total #	Total %	Civ. #	Civ. %	Mil. #	Mil. %
0 - 10	0	0	0	0	0	0
11 - 20	1	1	1	1	0	0
21 - 30	2	2	1	1	1	2
31 - 40	2	2	1	1	1	2
41 - 50	10	8	6	8	4	8
51 - 60	5	4	1	1	4	8
61 - 70	6	5	2	3	4	8
71 - 80	28	22	19	25	9	18
81 - 90	26	21	14	18	12	24
91 - 100	46	37	31	41	15	30

mean:	82.3	83.7	80.2
median:	89.7	89.9	85.0
mode:	100	100	90
variance:	340.8	350.6	325.1
s.d.:	18.5	18.7	18.0
s.e.:	1.6	2.1	2.6
cases:	126	76	50

Q11-Growth Relative Importance

Response	Total #	Total %	Civ. #	Civ. %	Mil. #	Mil. %
0 - 10	2	2	2	3	0	0
11 - 20	1	1	1	1	0	0
21 - 30	3	2	1	1	2	4
31 - 40	3	2	1	1	2	4
41 - 50	6	5	4	5	2	4
51 - 60	13	10	6	8	7	14
61 - 70	14	11	9	12	5	10
71 - 80	31	25	19	25	12	24
81 - 90	29	23	18	24	11	22
91 - 100	24	19	15	20	9	18

mean:	76.0	76.5	75.1
median:	80.0	80.1	79.9
mode:	80	80	90
variance:	396.2	417.2	370.8
s.d.:	19.9	20.4	19.3
s.e.:	1.8	2.3	2.7
cases:	126	76	50

Q12-Advancement Relative Importance

Response	Total #	Total %	Civ. #	Civ. %	Mil. #	Mil. %
0- 10	3	2	2	3	1	2
11 - 20	0	0	0	0	0	0
21 - 30	0	0	0	0	0	0
31 - 40	3	2	2	3	1	2
41 - 50	6	5	5	7	1	2
51 - 60	9	7	6	8	3	6
61 - 70	8	6	6	8	2	4
71 - 80	25	20	17	22	8	16
81 - 90	28	22	13	17	15	30
91 - 100	44	35	25	33	19	38

	Total	Civ.	Mil.
mean:	81.2	79.4	83.4
median:	85.5	80.5	89.8
mode:	90	80	90
varaince:	388.7	426.4	326.7
s.d.:	19.7	20.7	18.1
s.e.:	1.8	2.4	2.6
cases:	126	76	50

Q13-Monetary Compensation Relative Importance

Response	Total #	Total %	Civ. #	Civ. %	Mil. #	Mil. %
0 - 10	1	1	0	0	1	2
11 - 20	0	0	0	0	0	0
21 - 30	0	0	0	0	0	0
31 - 40	4	3	1	1	3	6
41 - 50	5	4	3	4	2	4
51 - 60	6	5	4	5	2	4
61 - 70	8	6	7	9	1	2
71 - 80	24	19	17	22	7	14
81 - 90	25	20	14	18	11	22
91 - 100	53	42	30	39	23	46

	Total	Civ.	Mil.
mean:	84.0	84.4	83.4
median:	89.8	89.7	90.1
mode:	100	100	100
variance:	304.2	216.1	444.6
s.d.:	17.4	14.7	21.1
s.e.:	1.6	1.7	3.0
cases:	126	76	50

Q14-Administration and Policy Relative Importance

Response	Total #	Total %	Civ. #	Civ. %	Mil. #	Mil. %
0 - 10	4	3	2	3	2	4
11 - 20	5	4	3	4	2	4
21 - 30	4	3	3	4	1	2
31 - 40	8	6	3	4	5	10
41 - 50	15	12	7	9	8	16
51 - 60	13	10	6	8	7	14
61 - 70	18	14	10	13	8	16
71 - 80	28	22	19	25	9	18
81 - 90	20	16	14	18	6	12
91 - 100	11	9	9	12	2	4

	Total	Civ.	Mil.
mean:	65.9	69.2	60.8
median:	70.2	75.0	60.5
mode:	80	80	50
variance:	531.4	544.2	479.6
s.d.:	23.1	23.3	21.9
s.e.:	2.1	2.7	3.1
cases:	126	76	50

Q15-Job Supervision Relative Importance

Response	Total #	Total %	Civ. #	Civ. %	Mil. #	Mil. %
0 - 10	6	5	5	7	1	2
11 - 20	1	1	1	1	0	0
21 - 30	2	2	1	1	1	2
31 - 40	7	6	4	5	3	6
41 - 50	12	10	8	11	4	8
51 - 60	12	10	4	5	3	6
61 - 70	17	13	7	9	10	20
71 - 80	30	24	18	24	12	24
81 - 90	24	19	16	21	8	16
91 - 100	15	12	12	16	3	6

	Total	Civ.	Mil.
mean:	69.7	70.4	68.8
median:	75.0	75.5	70.2
mode:	80	80	60
variance:	538.1	659.3	362.0
s.d.:	23.2	25.7	19.0
s.e.:	2.1	2.9	2.7
cases:	126	76	50

Q16-Interpersonal Relations Relative Importance

Response	Total #	Total %	Civ. #	Civ. %	Mil. #	Mil. %
0 - 10	3	2	3	4	0	0
11 - 20	2	2	2	3	0	0
21 - 30	3	2	0	0	3	6
31 - 40	7	6	4	5	3	6
41 - 50	16	13	12	16	4	8
51 - 60	11	9	4	5	7	14
61 - 70	14	11	4	5	10	20
71 - 80	28	22	20	26	8	16
81 - 90	25	20	16	21	9	18
91 - 100	17	13	11	14	6	12

mean:	70.4	70.9	69.6
median:	75.4	79.7	70.3
mode:	80	80	70
variance:	494.4	574.3	381.2
s.d.:	22.2	24.0	19.5
s.e.:	2.0	2.7	2.8
cases:	126	76	50

Q17-Job Security Relative Importance

Response	Total #	Total %	Civ. #	Civ. %	Mil. #	Mil. %
0 - 10	0	0	0	0	0	0
11 - 20	0	0	0	0	0	0
21 - 30	0	0	0	0	0	0
31 - 40	4	3	3	4	1	2
41 - 50	7	6	4	5	3	6
51 - 60	4	3	3	4	1	2
61 - 70	10	8	6	8	4	8
71 - 80	21	17	14	18	7	14
81 - 90	30	24	13	17	17	34
91 - 100	50	40	33	43	17	34

mean:	84.2	83.9	84.8
median:	89.7	89.9	89.6
mode:	100	100	100
variance:	270.3	299.3	231.0
s.d.:	16.4	17.3	15.2
s.e.:	1.5	2.0	2.1
cases:	126	76	50

Q18-Personal Life Relative Importance

Response	Total #	Total %	Civ. #	Civ. %	Mil. #	Mil. %
0 - 10	4	3	3	4	1	2
11 - 20	4	3	2	3	2	4
21 - 30	5	4	4	5	1	2
31 - 40	2	2	1	1	1	2
41 - 50	7	6	4	5	3	6
51 - 60	9	7	3	4	6	12
61 - 70	7	6	4	5	3	6
71 - 80	19	15	13	17	6	12
81 - 90	21	17	15	20	6	12
91 - 100	48	38	27	36	21	42

	Total	Civ.	Mil.
mean:	77.5	77.4	77.8
median:	88.5	89.6	85.5
mode:	100	100	100
variance:	651.6	674.6	629.6
s.d.:	25.5	26.0	25.1
s.e.:	2.3	3.0	3.5
cases:	126	76	50

Q19-Status/Prestige Relative Importance

Response	Total #	Total %	Civ. #	Civ. %	Mil. #	Mil. %
0 - 10	8	6	6	8	2	4
11 - 20	4	3	3	4	1	2
21 - 30	6	5	4	5	2	4
31 - 40	6	5	5	7	1	2
41 - 50	24	18	12	16	12	24
51 - 60	11	9	6	8	5	10
61 - 70	18	14	10	13	8	16
71 - 80	31	25	20	26	11	22
81 - 90	14	11	8	11	6	12
91 - 100	4	3	2	3	2	4

	Total	Civ.	Mil.
mean:	60.7	59.1	63.0
median:	69.6	66.0	69.6
mode:	50	80	50
variance:	580.4	654.4	469.3
s.d.:	24.1	25.6	21.7
s.e.:	2.1	2.9	3.1
cases:	126	76	50

Q20-Working Conditions Relative Importance

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
0 - 10	7	6	5	7	2	4
11 - 20	0	0	0	0	0	0
21 - 30	2	2	0	0	2	4
31 - 40	1	1	1	1	0	0
41 - 50	14	11	8	11	6	12
51 - 60	11	9	4	5	7	14
61 - 70	17	13	11	14	6	12
71 - 80	32	25	20	26	12	24
81 - 90	28	22	18	24	10	20
91 - 100	14	11	9	12	5	10

	Total	Civ	Mil
mean:	71.6	72.6	70.1
median:	78.5	79.6	75.2
mode:	80	80	80
variance:	501.6	505.8	501.4
s.d.:	22.4	22.5	22.4
s.e.:	2.0	2.6	3.2
cases:	126	76	50

Q21-Work Itself Amount

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
0	5	4	4	5	1	2
1	2	2	0	0	2	4
2	1	1	1	1	0	0
3	2	2	0	0	2	4
4	9	7	4	5	5	10
5	24	19	17	22	7	14
6	6	5	2	3	4	8
7	24	19	14	18	10	20
8	37	29	26	34	11	22
9	8	6	4	5	4	8
10	8	6	4	5	4	8

	Total	Civ	Mil
mean:	6.5	6.5	6.4
median:	7.1	7.2	6.9
mode:	8	8	8
variance:	5.3	5.2	5.6
s.d.:	2.3	2.3	2.4
s.e.:	.2	.3	.3
cases:	126	76	50

Q22-Responsibility Amount

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
0	9	7	6	8	3	6
1	4	3	1	1	3	6
2	5	4	1	1	4	8
3	5	4	3	4	2	4
4	6	5	4	5	2	4
5	22	17	14	18	8	16
6	11	9	5	7	6	12
7	18	14	12	16	6	12
8	29	23	20	26	9	18
9	6	5	2	3	4	8
10	11	9	8	11	3	6

	Total	Civ	Mil
mean:	6.0	6.2	5.6
median:	7.7	6.8	6.0
mode:	8	8	8
variance:	7.7	7.3	8.2
s.d.:	2.8	2.7	2.9
s.e.:	.2	.3	.4
cases:	126	76	50

Q23-Achievement Amount

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
0	8	6	7	9	1	2
1	3	2	0	0	3	6
2	5	4	4	5	1	2
3	5	4	3	4	2	4
4	11	9	4	5	7	14
5	22	17	12	16	10	20
6	10	8	7	9	3	6
7	17	13	14	18	3	6
8	24	19	9	12	15	30
9	9	7	7	9	2	4
10	12	10	9	12	3	6

	Total	Civ	Mil
mean:	6.0	6.0	5.9
median:	6.4	6.6	5.8
mode:	8	7	8
variance:	7.5	8.4	6.4
s.d.:	2.7	2.9	2.5
s.e.:	.2	.3	.4
cases:	126	76	50

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AN INTEGRATION OF CONTEMPORARY THEORIES OF WORK MOTIVATION: A P--ETC(U)
SEP 78   P F DASPIT

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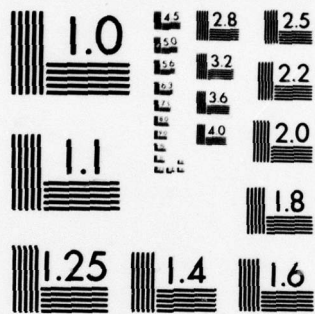
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Q24-Growth Amount

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
0	19	15	15	20	4	8
1	1	1	0	0	1	2
2	8	6	4	5	4	8
3	8	6	5	7	3	6
4	8	6	4	5	4	8
5	37	29	24	32	13	26
6	7	6	4	5	3	6
7	10	8	6	8	4	8
8	20	16	12	16	8	16
9	3	2	0	0	3	6
10	5	4	2	3	3	6

mean:	4.8	4.5	5.3
median:	5.0	4.9	5.2
mode:	5	5	5
variance:	8.0	8.0	7.7
s.d.:	2.8	2.8	2.8
s.e.:	.3	.3	.4
cases:	126	76	50

Q25-Advancement Amount

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
0	39	31	32	34	7	14
1	4	3	2	3	2	4
2	7	6	6	8	1	2
3	7	6	1	1	6	12
4	12	10	10	13	2	4
5	33	26	18	24	15	30
6	3	2	0	0	3	6
7	4	3	2	2	2	4
8	9	7	2	3	7	14
9	2	2	0	0	2	4
10	6	5	3	4	3	6

mean:	3.6	2.7	4.8
median:	4.0	2.2	5.0
mode:	0	0	5
variance:	9.3	8.1	8.6
s.d.:	3.0	2.8	2.9
s.e.:	.3	.3	.4
cases:	126	76	50

Q26-Monetary Compensation Amount

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
0	2	2	1	1	1	2
1	0	0	0	0	0	0
2	4	3	3	4	1	2
3	4	3	2	3	2	4
4	3	2	2	3	1	2
5	20	16	13	17	7	14
6	14	11	3	4	11	22
7	34	27	20	26	14	28
8	34	27	24	32	10	20
9	4	3	4	5	0	0
10	7	6	4	5	3	6

	Total	Civ	Mil
mean:	6.6	6.7	6.4
median:	7.0	7.2	6.6
variance:	3.9	4.0	3.6
s.d.:	2.0	2.0	1.9
s.e.:	.2	.2	.3
cases:	126	76	50

Q27-Administration and Policy Amount

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
0	7	6	4	5	3	6
1	4	3	1	1	3	6
2	4	3	2	3	2	4
3	12	10	6	8	6	12
4	11	9	5	7	6	12
5	35	28	23	30	12	24
6	10	8	7	9	3	6
7	18	14	10	13	8	16
8	13	10	10	13	3	6
9	8	6	5	7	3	6
10	4	3	3	4	1	2

	Total	Civ	Mil
mean:	5.3	5.6	4.9
median:	5.2	5.4	4.9
mode:	5	5	5
variance:	6.0	5.7	6.2
s.d.:	2.4	2.4	2.5
s.e.:	.2	.3	.4
cases:	126	76	50

179

Q28-Job Supervision Amount

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
0	7	6	5	7	2	4
1	2	2	1	1	1	2
2	1	1	1	1	0	0
3	5	4	1	1	4	8
4	3	2	2	3	1	2
5	15	12	10	13	5	10
6	16	13	10	13	6	12
7	13	10	8	11	5	10
8	24	19	17	22	7	14
9	20	16	12	16	8	16
10	20	16	9	12	11	22

	Total	Civ	Mil
mean:	6.9	6.8	7.0
median:	7.5	7.5	7.6
mode:	8	8	10
variance:	7.2	7.1	7.6
s.d.:	2.7	2.7	2.8
s.e.:	.2	.3	.4
cases:	126	76	50

Q29-Interpersonal Relations

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
0	7	6	4	5	3	6
1	1	1	1	1	0	0
2	2	2	1	1	1	2
3	3	2	3	4	0	0
4	4	3	1	1	3	6
5	26	21	17	22	9	18
6	13	10	7	9	6	12
7	12	10	6	8	6	12
8	28	22	20	26	8	16
9	14	11	8	11	6	12
10	16	13	8	11	8	16

	Total	Civ	Mil
mean:	6.6	6.5	6.7
median:	7.1	7.2	7.0
mode:	8	8	5
variance:	6.7	6.6	6.9
s.d.:	2.6	2.6	2.6
s.e.:	.2	.3	.4
cases:	126	76	50

Q30—Job Security Amount

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
0	2	2	1	1	1	2
1	1	1	1	1	0	0
2	2	2	0	0	2	4
3	1	1	0	0	1	2
4	2	2	1	1	1	2
5	8	6	7	9	1	2
6	9	7	4	5	5	10
7	16	13	9	12	7	14
8	28	22	16	21	12	24
9	21	17	13	17	8	16
10	36	29	24	32	12	24

	Total	Civ	Mil
mean:	7.9	8.1	7.7
median:	8.3	8.4	8.1
mode:	10	10	8
variance:	4.7	4.3	5.4
s.d.:	2.2	2.1	2.3
s.e.:	.2	.2	.3
cases:	126	76	50

Q31—Personal Life Amount

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
0	2	2	1	1	1	2
1	0	0	0	0	0	0
2	2	2	0	0	2	4
3	1	1	0	0	1	2
4	6	5	3	4	3	6
5	13	10	8	11	5	10
6	8	6	3	4	5	10
7	14	11	8	11	6	12
8	28	22	14	18	14	28
9	16	13	10	13	6	12
10	36	29	29	38	7	14

	Total	Civ	Mil
mean:	7.7	8.1	7.0
median:	8.1	8.6	7.6
mode:	10	10	8
variance:	5.1	4.4	5.5
s.d.:	2.3	2.1	2.3
s.e.:	.2	.2	.3
cases:	126	76	50

Q32-Status/Prestige Amount

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
0	10	8	6	8	4	8
1	0	0	0	0	0	0
2	4	3	2	3	2	4
3	8	6	3	4	5	10
4	6	5	5	7	1	2
5	32	25	25	33	7	14
6	12	10	5	7	7	14
7	20	16	13	17	7	14
8	28	22	13	17	15	30
9	3	2	2	3	1	2
10	3	2	2	3	1	2
mean:	5.6		5.5		5.8	
median:	5.8		5.4		6.4	
mode:	5		5		8	
variance:	5.9		5.6		6.6	
s.d.:	2.4		2.4		2.6	
s.e.:	.2		.3		.4	
cases:	126		76		50	

Q33-Working Conditions Amount

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
0	8	6	3	4	5	10
1	1	1	1	1	0	0
2	3	2	1	1	2	4
3	4	3	4	5	0	0
4	5	4	4	5	1	2
5	27	21	18	24	9	18
6	13	10	5	7	8	16
7	22	17	16	21	6	12
8	30	24	18	24	12	24
9	9	7	5	7	4	8
10	4	3	1	1	3	6
mean:	6.1		6.1		6.1	
median:	6.6		6.6		6.5	
mode:	8		5		8	
variance:	5.8		4.9		7.4	
s.d.:	2.4		2.2		2.7	
s.e.:	.2		.3		.4	
cases:	126		76		50	

Q34-Overall Job Satisfaction

Response	Total		Civ		Mil	
	#	%	#	%	#	%
4	1	1	0	0	1	2
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	2	2	2	3	0	0
9	0	0	0	0	0	0
10	2	2	1	1	1	2
11	0	0	0	0	0	0
12	2	2	1	1	1	2
13	2	2	2	3	0	0
14	4	3	3	4	1	2
15	6	5	4	5	2	4
16	8	6	4	5	4	8
17	7	6	3	4	4	8
18	7	6	6	8	1	2
19	13	10	8	11	5	10
20	26	21	15	20	11	22
21	14	11	5	7	9	18
22	16	13	12	16	4	8
23	7	6	5	7	2	4
24	2	2	1	1	1	2
25	5	4	3	4	2	4
26	1	1	0	0	1	2
27	1	1	1	1	0	0
28	0	0	0	0	0	0

mean:	19.1	19.1	19.2
median:	19.8	19.8	20.0
mode:	20	20	20
variance:	14.3	14.1	14.8
s.d.:	3.8	3.8	3.8
s.e.:	.3	.4	.5
cases:	126	76	50

Q35—Job/Education Compatibility

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
1	13	10	3	4	10	20
2	60	48	39	51	21	42
3	53	42	34	45	19	38

	Total	Civ	Mil
mean:	2.3	2.4	2.2
median:	2.3	2.4	2.2
mode:	2	2	2
variance:	.4	.3	.6
s.d.:	.7	.6	.8
s.e.:	.1	.1	.1
cases:	126	76	50

Q36—Job/Career Compatibility

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
1	27	21	10	13	17	34
2	44	35	30	39	14	28
3	55	44	36	47	19	38

	Total	Civ	Mil
mean:	2.2	2.3	2.0
median:	2.3	2.4	2.1
mode:	3	3	3
variance:	.6	.5	.7
s.d.:	.8	.7	.9
s.e.:	.1	.1	.1
cases:	126	76	50

Q37—Job and Supervisor Preference

Response	Total #	Total %	Civ #	Civ %	Mil #	Mil %
1	3	2	2	3	1	2
2	27	21	21	28	6	12
3	96	76	53	70	43	86

	Total	Civ	Mil
mean:	2.7	2.7	2.8
median:	2.8	2.8	2.9
mode:	3	3	3
variance:	.2	.3	.2
s.d.:	.5	.5	.4
s.e.:	.0	.1	.1
cases:	126	76	50

TABLE A-1

Analysis of Variance Tests Using Base (Q1) and Workcenter (Q2)
(Figures in the Matrix are $\overline{OJS}$/n)

Q2-Workcenter	Q1-Base				
	1.	2.	3.	4.	
1. Military Pay	18.7/18	19.9/11	18.6/14	17.1/15	18.5/58
2. Travel	19.9/10	19.4/18	18.9/11	no data	19.4/29
3. Accounts Control	21.4/7	23.0/4	18.9/7	19.1/21	19.9/39
	19.6/35	20.3/23	18.8/32	18.3/36	19.1/126

		Sum of Squares	df	Mean Square	F/signif.
Q1-Base:	B-G	69.6	3	23.2	1.65/.180
	W-G	1711.6	122	14.0	
	T	1781.2	125		
Q2-Work-center:	B-G	47.5	2	23.8	1.69/.189
	W-G	1733.7	123	14.1	
	T	1781.2	125		
Q1::Q2:	B-G	508.5	10	50.85	4.59/.001
	W-G	1272.7	115	11.07	
	T	1781.2	125		

185

TABLE A-2

Analysis of Variance Using Employee (Q3) and Number of Levels Supervised (Q5). (Figures in the Matrix are $\overline{OJS}/n$)

Q3-Employee	Q5-Number of Levels Supervised			
	1. None	2. One	3. Two	
1. Military	18.6/35	20.1/8	21.0/7	19.2/50
2. Civilian	18.6/59	20.3/10	21.1/7	19.1/76
	18.6/94	20.1/18	21.1/14	19.1/126

		Sum of Squares	df	Mean Square	F/signif.
Q3:	B-G	0.1	1	0.1	0.01/.922
	W-G	1781.1	124	14.4	
	T	1781.2	125		
Q5:	B-G	99.0	2	49.5	3.62/.030
	W-G	1682.3	123	13.7	
	T	1781.2	125		
Q3::Q5:	B-G	99.3	5	19.9	1.42/.251
	W-G	1681.9	120	14.02	
	T	1781.2	125		

TABLE A-3

Rank Order Frequency Distribution for Work Factor Relative Importance Variables (N=126).

Work Factor	Rank Order (Most Important = 1)													$\overline{WFI}_r$
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Q8—Work Itself	43	15	12	8	12	10	8	7	2	3	1	2	3	3.9
Q9—Responsibility	19	16	4	16	13	12	16	7	9	8	3	2	1	5.3
Q10—Achievement	29	11	9	20	14	10	6	9	8	5	5	0	0	4.6
Q11—Growth	9	9	10	10	13	12	16	13	9	9	9	7	0	6.4
Q12—Advancement	17	22	13	16	14	8	10	5	7	3	5	2	4	4.9
Q13—Monetary Comp.	30	19	17	8	8	6	7	4	10	6	5	4	2	4.7
Q14—Policy/Admin.	4	4	3	6	5	5	15	12	12	17	15	17	11	8.7
Q15—Job Supervision	10	3	10	5	10	7	12	8	20	15	9	11	6	7.5
Q16—Interpers. Rel.	9	5	7	10	8	9	12	10	12	13	13	9	9	7.5
Q17—Job Security	34	16	11	5	11	8	5	5	6	14	4	6	1	4.9
Q18—Personal Life	34	14	7	9	11	8	3	4	3	7	9	7	10	5.4
Q19—Status/Prestige	4	4	1	2	4	4	15	8	12	14	13	17	28	9.5
Q20—Working Cond.	9	5	11	8	6	9	13	8	15	9	11	11	11	7.5
*Total number of assigned rank order values	251	143	115	123	129	108	138	100	125	123	102	95	86	

note: *1. Total number of assigned rank order values are different (and ≠ 126) as a result of tie Work Factor Importance scores.
2. $\overline{WFI}_r$ =average rank order value of Work Factor Importance measures.

APPENDIX B

<u>WORK CENTER DESCRIPTIONS</u>

APPENDIX B

Work Center Descriptions

The work center descriptions contained in this appendix were
extracted from Air Force Manual 26-3, Volume II (1 January 1973),
"Air Force Manpower Standards". The date of the actual descriptions
is July 1977. These are an updated version from the last revision
which was dated June 1970. Although the data for this research was
collected in August 1975, these descriptions accurately reflect job
and task requirements at the time the survey instrument was admin-
istered. The revision process required 18 to 24 months to accomplish.

DEFINITION OF RESPONSIBILITIES

DIRECT:

1. ACCOUNTS CONTROL: Audit computer transactions; process Vehicle Integrated Management System (VIMS) transactions; process Base Engineer Automated Management System (BEAMS) transactions; make data and inquiry inputs; establish and maintain the General Accounting System; provide technical support to work center personnel, Subject Matter Areas (SMA), Air National Guard (ANG) accounting offices, and other functions maintaining cost systems. Perform annual accounts conversion.

    a. AUDIT COMPUTER TRANSACTIONS: Audit computer input and output products for accuracy and assure changes are made as required.

        (1) REVIEW: Review interfund billings, register of transactions for/and by others, and 1050 II output.

        (2) AUDIT: Audit compatibility of obligations, expenditures, commitments, status of funds, and related transactions for/and by others. Audit Daily Disbursement and Collection transactions and balances to the AF Form 1394 prepared by Paying and Collecting SMA.

        (3) ANNOTATE DISCREPANCIES: Annotate documents or machine listings of discrepancies identified.

        (4) RESOLVE DISCREPANCIES: Reconcile and balance computer products by submitting needed changes to the computer file.

    b. PROCESS VIMS TRANSACTIONS: Monitor VIMS input transactions for validity of accounting data. Return erroneous transactions and reinput corrections into the General Accounting System via the B3500/4700 computer.

    c. PROCESS BEAMS TRANSACTIONS: Monitor input transactions for validity of accounting data; maintain ledgers to ensure proper transfer of transactions to the BEAMS system. Process recycle transactions for previously rejected transactions.

    d. MAKE DATA/INQUIRY INPUTS: Make data corrections by punch cards and inquiries by the remote unit.

        (1) KEYPUNCH: Keypunch Electronic Accounting Machine (EAM) cards to provide corrections to the accounts as an alternate to the remote unit.

        (2) OPERATE REMOTE: Transmit and receive inquiries made to the computer. Operate remote devices to update the General Accounting System.

    e. ESTABLISH AND MAINTAIN THE GENERAL ACCOUNTING SYSTEM: Establish and maintain general ledger and control accounts covering appropriations, costs, expenses, inventories, capital properties, working capital and management funds, disbursements, collections, and Merged Accountability Fund Reporting (MAFR).

        (1) ESTABLISH ACCOUNTS: Establish addresses in the General Accounting System, ensuring validity and capability of all coding.

        (2) POST ENTRIES: Manually and mechanically post line item entries to

AF FORM 1110
MAY 73

PREVIOUS EDITION IS OBSOLETE.

PAGE 1 OF 2 PAGES

interfund registers and general ledgers.

(3) <u>PREPARE VOUCHERS</u>: Prepare journal vouchers from reports, registers, and machine listings.

f. <u>PROVIDE TECHNICAL SUPPORT</u>: Provide technical assistance, guidance and financial data to work center personnel, subject matter areas, Air National Guard (ANG) accounting offices, and other functions maintaining cost systems.

(1) <u>PROVIDE ASSISTANCE</u>: Develop plans and procedures for administering directed programs in consonance with prescribed ceilings and priorities, and assist in analytical studies that entail compilation and interpretation of financial data.

(2) <u>PRESENT FINANCIAL DATA:</u> Serve as the Accounting and Finance (A&F) focal point for control, analysis, consolidation, presentation, and reporting of financial data.

(3) <u>PERFORM LIAISON</u>: Perform liaison duties and coordinate with Data Automation for Air National Guard and/or tenant activities, or higher head-quarters to resolve accounting system problems. Schedule production of various products with Data Automation. Monitor recovery actions and accomplish required conversions.

g. <u>PERFORM ANNUAL ACCOUNTS CONVERSION</u>: Establish and coordinate time-phased actions for year-end closing with Data Automation, Budget and other offices involved in planning; review, purify, and validate all recordable obligations; close and convert accounts; reconcile and certify appropriation balances.

2. <u>REPORT PROCESSING</u>: Receive reports from Data Automation and sort for each SMA; prepare Merged Accountability and Fund Report (MAFR) reports, financial statements, and other prescribed or regulated reports; transmit or deliver reports to other activities. Prepare and submit various RCS reports as required to higher authority.

3. <u>QUALITY CONTROL</u>: Monitor and identify areas for improvement in all areas; conduct internal audits, note discrepancies, and document actions; develop, analyze, and review current procedures to effect an improvement in the quality of products; plan, control, evaluate, and monitor changes in both manual and data processing techniques whether locally or higher level initiated.

<u>INDIRECT</u>: See list of common indirect categories and task definitions.

4. <u>SUPERVISION</u>: (all tasks apply)   10. <u>CLEANUP</u>: (all tasks apply)

5. <u>ADMINISTRATION</u>: (all tasks apply)   11. <u>TRAVEL</u>: (all tasks apply)

6. <u>MEETINGS</u>: (all tasks apply)

7. <u>TRAINING</u>: (all tasks apply)

8. <u>SUPPLY</u>: (all tasks apply)

9. <u>EQUIPMENT MAINTENANCE</u>: (all tasks apply)

DEFINITION OF RESPONSIBILITIES

DIRECT:

1. TRAVEL PAYMENTS AND COLLECTIONS: Receive, screen, compute, audit and validate travel vouchers for payment of Temporary Duty (TDY) and Permanent Change of Station (PCS) travel. Initiate collection of monies due. Provide input data to Merged Accountability and Fund Reporting (MAFR) system. Provide support of other Department of Defense (DOD) agencies.

2. ENTITLEMENT AND CLAIMS: Receive voucher, obtain cost data, check entitlements, compute payables and determine pay action on travel vouchers for payment resulting from personal arrangements with carriers for transportation of household goods and house trailers. Process doubtful claims. Followup on outstanding accounts. Process Permissive TDY/"No Pay" vouchers. Mail copies of payment for TDY personnel to their servicing Accounting and Finance Office (AFO) for posting to their Record of Travel Payments (DD Form 1588). Transmit copies of civilian travel vouchers to Civilian Pay Subject Matter Area. Mail to the Air Force Accounting and Finance Center (AFAFC) copies of payments made to separatees and retirees.

3. FUND ACCOUNTING: Receive fund allotment, distribute funds, enter and certify Temporary Duty (TDY) fund availability. Review and verify Permanent Change of Station (PCS) travel. Receive, verify, post and process transactions for the payment of household goods transportation. Process Transportation Requests (TRs) and MAC Transportation Authorities (MTSs) for payment. Provide remote input transactions, reconcile data input, perform followup, reconcile payment/collection transactions, process By Others payments, audit allowance report, prepare journal vouchers, record payment transactions, and file documents.

4. SEPARATION MILEAGE: Review entitlement, compute entitlement and prepare input for pay separation mileage for members separated from the service or release from active duty, and dependents.

5. PCS ARRIVAL TRANSACTION: Extract PCS arrival data from Permanent Change of Station (PCS) travel voucher. Prepare transaction card, and forward PCS arrival transaction voucher to Military or Civilian Pay.

6. LEAVE ACCOUNTING: Review settlement vouchers, extract leave data, prepare transaction card and forward leave data to military pay. Review Daily Register of Transactions.

INDIRECT: See list of common indirect categories and task definitions.

7. SUPERVISION: (all tasks apply)

8. ADMINISTRATION: (tasks d&k do not apply)

9. MEETING: (all tasks apply)

10. TRAINING: (all tasks apply)

11. SUPPLY: (all tasks apply)

12. EQUIPMENT MAINTENANCE: (only task a applies)

13. CLEANUP: (all tasks apply)

14. TRAVEL: (all tasks apply)

TASK DEFINITIONS

Work Center Title and Code: Travel, 1514/(B3500) (B4700)

DIRECT:

1. TRAVEL PAYMENTS AND COLLECTIONS:

a. RECEIVE TRAVEL VOUCHERS FROM MILITARY AND CIVILIAN PERSONNEL:
Receive Temporary Duty (TDY) and Permanent Change of Station (PCS) travel
vouchers for advance, accrued, and completed travel transactions; dependent
travel vouchers for completed travel transactions; reimbursement vouchers for
local travel; and individual claims from travelers for lost tickets. Assist
travelers as required with voucher preparation.

b. SCREEN TRAVEL VOUCHERS FOR PROPER PREPARATION: Check for applicable
data against points of travel, number of days spent TDY versus number of days
authorized, required signatures, and for essential attachments, such as
certificates or non-availability or vouchers for reimbursement for transpor-
tation within the vicinity of TDY or permanent duty station; ascertain if a
dislocation/trailer allowance is due; determine if member shipped a house
trailer; verify Record of Travel Payment to ensure prepared travel vouchers and
suspense same.

c. COMPUTE TRAVEL VOUCHERS: Determine monies due and enter money
amounts payable for per diem, mileage or transportation allowances and
reimbursable expenses; and ensure the entitlement of reimbursement expenses
claimed.

d. AUDIT TRAVEL VOUCHERS: Review entitlement to payment; recompute
money amounts due for payment; and post data on member's Record of Travel
Payment.

e. VALIDATE TRAVEL VOUCHERS: Enter voucher number on voucher control
log; enter voucher number on travel voucher, and "Brief Block" the voucher in the
"paid by block."

f. INITIATE COLLECTION OF MONIES DUE: Notify traveler of monies due,
prepare cash collection voucher or pay adjustment authorization, and maintain
suspense file.

g. PROVIDE INPUT DATA: Input disbursement and collection voucher data and
adjustments for entry into MAFR system.

h. PROVIDE SUPPORT OF OTHER DOD AGENCIES: Service members of the ANG,
AFROTC, AFRES and others on training duty as well as cross-servicing
of other DOD members and employees.

2. ENTITLEMENT AND CLAIMS:

a. RECEIVE VOUCHER: Receive travel voucher from member.

b. OBTAIN COST DATA: Obtain cost data from Traffic Management Office (TMO).

c. CHECK ENTITLEMENT: Check account for proper documentation and certification; check Record of Travel Payment to assure the claim is not a duplicate or erroneous payment.

d. COMPUTE PAYABLES: Compute the amount payable.

e. DETERMINE PAY ACTION: Determine action required to make local payment or submission to Government Accounting Office (GAO).

f. PROCESS DOUBTFUL CLAIM: Review and prepare documentation on doubtful travel claims. Submit to MAJCOM/AFAFC for determination.

g. FOLLOW UP ON OUTSTANDING ACCOUNTS: Perform follow up on advance payments and outstanding travel accounts to ensure prompt settlement.

h. PROCESS PERMISSIVE TDY/"NO PAY" VOUCHERS: Suspense permissive TDY orders and take follow up actions to ensure that settlement of "no pay" vouchers are received and processed.

i. PAYMENT OF TDY PERSONNEL: Mail copies of payment for TDY personnel to their servicing AFO for posting to their Record of Travel Payments (DD Form 1588), when appropriate.

j. TRANSMIT CIVILIAN TRAVEL VOUCHERS: Forward by transmittal letter, copies of civilian travel vouchers to the Civilian Pay Subject Matter Area.

k. PAYMENTS TO SEPARATEES AND RETIREES: Mail to the AFAFC, copies of payments made to separatees and retirees.

3. FUND ACCOUNTING:

a. RECEIVE FUND ALLOTMENT: Receive administrative subdivision of funds and record in allotment ledgers.

b. DISTRIBUTE FUNDS: Prepare and distribute Obligation Authority or Request and Authority to cite funds.

c. ENTER AND CERTIFY TDY FUND AVAILABILITY: Receive TDY travel requests, enter and certify fund availability, and ensure accounting classification is accurate.

d. REVIEW AND VERIFY PCS TRAVEL: Review requests for PCS travel of personnel. Verify accounting classification cited by Consolidated Base Personnel Office (CBPO) for accuracy and compatability with PCS travel cost identifier and Transfer Effective Date (TED).

e. RECEIVE REQUESTS FOR PAYMENT OF HOUSEHOLD GOODS TRANSPORTATION: Receive vouchers, invoices and special orders from Transportation Management Office (TMO).

f. VERIFY REQUEST FOR PAYMENT OF HOUSEHOLD GOODS TRANSPORTATION: Verify voucher signature, appropriations, money amounts and ensure ion-duplication of vendor payments.

g. POST AND PROCESS HOUSEHOLD GOODS PAYMENT TRANSACTIONS: Post travel payment transaction to the Miscellaneous Obligation Document (MOD), and provide accounting for the transportation of household goods.

h. PROCESS TRANSPORTATION REQUEST (TRS): Receive TR, post TR to member's Travel Card (DD Form 1588) if at home station, forward TR to accountable station if not home station, receive AF Form 529 (Request for Air Carrier Service), SF 1171 (Public Voucher of Transportation) and ticket listing, audit ticket listing, verify monetary totals by fund code, input data, forward required data to appropriate Subject Matter Areas (SMAs).

i. PROCESS MAC TRANSPORTATION AUTHORITY (MTA): Receive SF 1080 (Voucher for Transfer Between Appropriations and/or Funds) and Detailed Statement of Charges, Passenger (PCN DRPEUQ), audit to ensure accuracy and process for payment.

j. REMOTE INPUT TRANSACTIONS: Assemble information, enter transactions by remote to record fund availability, obligation and disbursement data into general A & F system.

k. RECONCILE DATA INPUT: Reconcile source documents to open item listing within each accounting period.

l. PERFORM FOLLOW UP: Perform follow up of all outstanding travel orders, government bills of lading, transportation requests, and MAC transportation authorizations.

m. RECONCILE TRANSACTIONS: Reconcile payment/collection transactions to original vouchers retained in paying and collecting daily.

n. PROCESS BY OTHERS PAYMENTS: Process By Others payments after review of payment to ensure validity and proper charge to local station funds.

o. AUDIT ALLOWANCE REPORT: Review/audit dislocation and trailer allowance report monthly.

p. PREPARE JOURNAL VOUCHERS: Prepare journal vouchers and Voucher for Transfer Between Appropriations and/or Funds (SF 1080).

q. RECORD PAYMENT TRANSACTIONS: Record payment transactions, includes self, others and open allotment accounting classifications.

r. FILE DOCUMENTS: File documents by Accounting Classification for items and by disbursing voucher number for paid vouchers.

4. SEPARATION MILEAGE:

a. REVIEW ENTITLEMENT: Review data on DD Form 1351 and Discharge Order to determine mileage entitlement.

b. COMPUTE ENTITLEMENT: Compute mileage entitlement, prepare necessary travel documentation to effect payment of separation travel between last duty station and home of record, place of selections, or place from which he was ordered to active duty, as shown in the Official Table of Distances. Prepare and file contingent travel card.

c. PREPARE INPUT: Prepare JUMPS input transaction to report separation travel payments for final separations.

5. PCS ARRIVAL TRANSACTION:

a. EXTRACT DATA: Extract pertinent data from PCS travel voucher.

b. PREPARE TRANSACTION CARD: Code input transaction card.

c. FORWARD PCS ARRIVAL TRANSACTION TO MILITARY OR CIVILIAN PAY: Forward copy of settlement voucher to Military or Civilian Pay.

6. LEAVE ACCOUNTING:

a. REVIEW SETTLEMENT VOUCHERS: Review PCS and TDY settlement vouchers to determine applicable leave charges.

b. EXTRACT LEAVE DATA: Prepare report of leave extract and enter or individuals Report of Travel/Leave Time (JUMPS) (AF Form 985).

c. PREPARE TRANSACTION CARD: Prepare input transaction card and enter leave authorization number.

d. FORWARD LEAVE DATA: Forward leave data to military pay to include report of travel/leave time and transaction card.

e. REVIEW DAILY REGISTER OF TRANSACTIONS: Review daily register of transactions for proper processing.

DEFINITION OF RESPONSIBILITIES

<u>DIRECT</u>:

1. <u>PAY SERVICE AND CONTROL</u>: Receive and control source documents; receive transaction listings; prepare correspondence, forms, and reports; prepare materials for shipment; provide customer service; prepare personal financial records (PFRs); prepare and transmit input documents; control vouchers; distribute mid-month pay advice and Leave and. Earnings Statement (LES) member copy; distribute Treasury Department (TD) form W-2 member copy; process claims, remissions, and waivers.

a. <u>RECEIVE AND CONTROL SOURCE DOCUMENTS</u>: Receive and review the documents for completeness and obvious administrative errors; acknowledge receipt of documents to input source as applicable; sort documents according to action required and distribute to processing activity; retain suspense file.

b. <u>RECEIVE TRANSACTION LISTINGS</u>: Identify each listing; determine action required and establish processing date; record control data in pre-established control logs and sort for distribution to the appropriate processing activity.

c. <u>PREPARE CORRESPONDENCE, FORMS, AND REPORTS</u>: Prepare and/or type correspondence, forms, and reports in support of the Joint Uniform Military Pay System (JUMPS).

d. <u>PREPARE MATERIAL FOR SHIPMENT</u>: Prepare, package, and transmit JUMPS substantiating documents and detail transaction listings to the Air Force Accounting and Finance Center (AFAFC).

e. <u>PROVIDE CUSTOMER SERVICE</u>: Assist members in the preparation of allotment documents; allotment change of address, local address changes; biannual BAQ recertification; requests to start, change, or cancel a bank payment election, and other pay documents. Research data for returned bonds, Leave and Earnings Statements (LESs), Net Pay Advice (NPAs), and W-2s. Provide answers for pay and leave inquiries and prepare authorizations for partial, casual, advance, or Temporary Lodging Allowance (TLA) payments. Provide information and assistance to members requesting remission/waiver or appeal of indebtedness, and monitor progress of same.

f. <u>PREPARE PERSONAL FINANCIAL RECORDS (PFRs)</u>: Prepare PFRs for transfer with departing members; establish PFRs to receive and control the records hand-carried for transfer-in members. Prepare PFRs for retired and separated members.

g. <u>PREPARE AND TRANSMIT INPUT DOCUMENTS</u>: Prepare and transmit local documents, such as changes of address and organizational changes, to update the pay service file.

h. <u>CONTROL VOUCHERS</u>: Control and assign voucher numbers.

i. <u>DISTRIBUTE MID-MONTH PAY ADVICE AND LEAVE AND EARNINGS STATEMENT (LES) MEMBER COPY</u>: Receive documents from base level Data Processing Installation (DPI) and distribute the member's copy.

j. <u>DISTRIBUTE TREASURY DEPARTMENT (TD) FORM W-2 MEMBER COPY</u>: Provide DPI with

TD Forms W-2 and AFAFC input, receive completed forms from DPI and distribute to member.

k. **PROCESS CLAIMS, REMISSIONS, AND WAIVERS:** Provide counselling and technical data to members and commanders on required documents necessary for submission to AFAFC through MAJCOM. Process applications when all documents have been completed.

1. VERIFY BAQ ENTITLEMENTS: Semiannually receive and cross-check a list from Family Housing Offices in the area with PFR to verify BAQ entitlement.

2. JUMPS TRANSACTION PROCESSING: Review source documents; code JUMPS transaction input; keypunch JUMPS transaction input.

a. REVIEW SOURCE DOCUMENTS: Review the source documents for accuracy and completeness; stamp "rejected" on unacceptable documents, date and enter reason for rejection; prepare source document reject control form and send back to originator for correction.

b. CODE JUMPS TRANSACTION INPUT: Determine the JUMPS data elements and codes to translate the source documents data into machine-language; prepare and record the codes on the JUMPS Input Transaction (PCAM) card; initial and date each card; prepare corrected JUMPS Input Transaction cards for incorrectly coded or keypunched cards; prepare and code reject control cards to report rejected documents to the computer; transmit daily update to AFAFC by AUTODIN.

c. KEYPUNCH JUMPS TRANSACTION INPUT: Keypunch the coded JUMPS Input Transaction cards; keypunch correct cards when JUMPS Input Transaction cards contain keypunching or coding errors.

3. PAYROLL: Prepare payrolls; prepare accountability data; prepare collection, payment, and suppression data.

a. PREPARE PAYROLLS: Prepare payrolls and cover sheets for mechanically prepared money lists, including supplemental payrolls for members not included on the mechanically prepared money lists.

b. PREPARE ACCOUNTABILITY DATA: Prepare disbursement and collection data for the Merged Accountability and Fund Reporting (MAFR).

c. PREPARE COLLECTION, PAYMENT, AND SUPPRESSION DATA: Prepare collection data for indebtedness reflected in centralized Master Military Pay Account (MMPA); prepare collection data for the Personel Financial Record (PFR) on indebtedness not yet reflected in the MMPA; prepare pay suppression data to update base level payroll file and subsequent MMPA update; prepare JUMPS payment data to DPI for processing and transmission to AFAFC. Prepare miscellaneous vouchers for collections and local payments to members.

4. QUALITY EXAMINATION AND CONTROL JUMPS TRANSACTIONS: Review JUMPS input transactions; control error corrections; reconcile out-of-balance conditions; improve operations and productivity.

a. REVIEW JUMPS INPUT TRANSACTIONS: Review all JUMPS Input cards against substantiating documents to ensure completeness and accuracy before batching and releasing to DPI.

b. CONTROL ERROR CORRECTIONS: Receive the Daily Register of Transactions from DPI and control the correction of all transactions which fail edit; receive from DPI, cards prepared from AFAFC AUTODIN reject messages, and control the correction and resubmission or cancellation of rejected transactions; return error cards to AFAFC; receive from AFAFC a microfiche copy of the Daily Transaction Register, associate with corresponding transaction listings; review, initiate, and control to completion the actions necessary by pay technicians, outside activities, and Geographically Separated Unit commanders to clear rejects, remove suspenses, and correct any erroneously supplied codes entered by AFAFC; ensure all rejected transactions erroneously supplied codes entered by AFAFC; ensure all rejected transactions were previously received by AUTODIN, or initiate corrective actions if there is no access to AUTODIN: rebutt errors erroneously charged to Military Pay.

c. RECONCILE OUT-OF-BALANCE CONDITIONS: Reconcile out-of-balance conditions resulting from payment/pay authorization, payment/MAFR, detail payment/voucher total imbalances; review pay authorization and Pay Service File (PSF) update to ensure the file was updated as intended.

d. IMPROVE OPERATIONS AND PRODUCTIVITY: Periodically review source document controls, PFRs and Pay service File, LES files, and payment and collections operations to detect operatational deficiencies and initiate improvements; accumulate and analyze performance and workload data; perform internal utilization studies. Provide or advise Quality Assurance Program (QAP) monitor of documented results of internal audits or inspections. Notify QAP monitor of trends or errors identified and corrective action effected.

INDIRECT: See list of common indirect categories and task definitions.

5. SUPERVISION: (all tasks apply)

6. ADMINISTRATION: (all tasks apply)

7. MEETINGS: (all tasks apply)

8. TRAINING: (all tasks apply)

9. SUPPLY: (all tasks apply)

10. EQUIPMENT MAINTENANCE: (all tasks apply)

11. CLEANUP: (all tasks apply)

12. TRAVEL: (all tasks apply)

APPENDIX C

ZERO-ORDER AND

FIRST-ORDER PARTIAL

CORRELATION TABLES

TABLE C-1

Similarity Matrix (Zero-Order Correlations) for Work Factor Relative Importance Variables (N=126).

	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q19	Q20
Q8-Work Itself		.30	.26	.24	.12	.04	.22	.27	.25	.09	.29	.17
Q9-Responsibility			.63	.58	.35	.06	.44	.50	.34	.07	.50	.11
Q10-Achievement				.73	.29	.08	.46	.47	.44	.19	.51	.24
Q11-Growth					.49	.20	.58	.49	.42	.07	.48	.25
Q12-Advancement						.39	.29	.19	.20	.01	.29	.10
Q13-Monetary Compensation							.30	.05	.07	.16	.14	.12
Q14-Policy/Administration								.59	.42	.07	.39	.22
Q15-Job Supervision									.51	.09	.52	.26
Q16-Interpersonal Relations										.10	.36	.32
Q17-Job Security											.26	.21
Q19-Status/Prestige												.38
Q20-Working Conditions												

note: r > .25; p ≤ .001
     r > .20; p ≤ .01
     r > .15; p ≤ .05

201

TABLE C-2

Similarity Matrix (Zero-Order Correlations) for Work Factor Relative Importance Variables
(Civilian Subset Above Diagonal, Military Subset below Diagonal).

	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q19	Q20
Q8-Work Itself		.44	.37	.38	.15	.15	.42	.38	.38	.06	.32	.24
Q9-Responsibility	.08		.65	.66	.39	.03	.63	.56	.38	.06	.52	.25
Q10-Achievement	.09	.61		.66	.33	.01	.54	.54	.47	.21	.53	.22
Q11-Growth	.03	.47	.86		.63	.20	.71	.58	.45	.05	.48	.25
Q12-Advancement	.06	.26	.26	.24		.25	.37	.27	.25	.03	.31	.18
Q13-Monetary Compensation	.08	.10	.18	.21	.59		.20	.02	.16	.25	.04	.26
Q14-Policy/Administration	.07	.19	.30	.38	.23	.43		.68	.53	.04	.49	.26
Q15-Job Supervision	.05	.38	.33	.32	.01	.10	.41		.47	.09	.57	.36
Q16-Interpersonal Relations	.00	.28	.39	.37	.11	.04	.19	.60		.08	.33	.34
Q17-Job Security	.14	.09	.14	.12	.05	.06	.14	.09	.13		.22	.37
Q19-Status/Prestige	.02	.37	.41	.40	.08	.11	.17	.34	.29	.13		.38
Q20-Working Conditions	.07	.11	.26	.26	.03	.03	.12	.07	.30	.06	.29	

note: 1. For values above the diagonal (N=76):

   $r > .32; p \le .001$

   $r > .26; p \le .01$

   $r > .19; p \le .05$

2. For values below the diagonal (N=50):

   $r > .38; p \le .001$

   $r > .32; p \le .01$

   $r > .24; p \le .05$

TABLE C-3

First-Order Partial Correlation Coefficients Between Reported Work Factor Amounts and Overall Job Satisfaction Held Constant for Each (other) Work Factor Amount (N=126).

Held Constant For:

	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33
Q21-Work Itself	.65	.52	.47	.54	.61	.65	.61	.63	.64	.63	.63	.54	.64
Q22-Responsibility	.14	.48	.12	.35	.43	.47	.41	.43	.46	.45	.46	.25	.46
Q23-Achievement	.47	.52	.66	.51	.59	.65	.57	.61	.64	.64	.64	.52	.62
Q24-Growth	.29	.39	.17	.50	.36	.50	.37	.45	.48	.48	.49	.34	.46
Q25-Advancement	.25	.32	.15	.06	.38	.37	.31	.33	.38	.35	.40	.22	.34
Q26-Monetary Comp.	-.04	-.06	-.06	-.04	.03	.11	.00	.06	.09	.03	.08	-.01	.01
Q27-Policy/Admin.	.35	.38	.23	.27	.39	.44	.47	.36	.41	.41	.41	.30	.39
Q28-Job Supervision	.20	.21	.07	.18	.24	.30	.11	.31	.27	.28	.29	.21	.25
Q29-Interpers. Rel.	.15	.16	.07	.13	.20	.21	.09	.14	.22	.15	.12	.11	.17
Q30-Job Security	.15	.19	.15	.20	.19	.24	.17	.22	.21	.26	.17	.13	.21
Q31-Personal Life	.22	.28	.25	.28	.33	.31	.25	.29	.26	.25	.32	.23	.28
Q32-Status/Prestige	.27	.31	.22	.34	.41	.49	.39	.45	.47	.46	.46	.50	.45
Q33-Working Cond.	.19	.22	.02	.12	.18	.24	.11	.19	.23	.21	.21	.09	.26

note:
1. Diagonal elements are zero-order correlation coefficients.
2. For the Partial Correlation Coefficients: $r > .26$; $p \leq .001$ $r > .21$; $p \leq .01$
   $r > .16$; $p \leq .05$

203

TABLE C-4

First-Order Partial Correlation Coefficients Between Reported Work Factor Amounts and Overall Job Satisfaction Held Constant For Each (other) Work Factor Amount (N=50).

Held Constant For:

	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33
Q21-Work Itself	.65	.56	.47	.47	.52	.67	.63	.66	.66	.64	.62	.58	.64
Q22-Responsibility	.24	.45	.02	.25	.34	.46	.41	.46	.43	.46	.45	.30	.43
Q23-Achievement	.39	.46	.61	.43	.49	.61	.57	.63	.58	.59	.61	.51	.60
Q24-Growth	.17	.39	.25	.53	.31	.53	.47	.57	.50	.52	.47	.40	.51
Q25-Advancement	.15	.36	.24	.13	.46	.47	.41	.49	.43	.41	.44	.31	.44
Q26-Monetary Comp.	-.25	-.12	-.12	-.08	-.09	.02	-.02	.02	.07	-.01	.05	-.12	-.04
Q27-Policy/Admin.	.19	.19	.07	.05	.11	.26	.26	.29	.22	.24	.20	.13	.22
Q28-Job Supervision	-.17	-.13	-.20	-.25	-.17	-.03	-.14	-.03	-.10	-.06	-.08	-.13	-.08
Q29-Interpers. Rel.	.29	.18	.11	.16	.13	.24	.18	.25	.23	.21	.12	.16	.20
Q30-Job Security	.27	.31	.23	.28	.17	.29	.27	.30	.27	.29	.25	.27	.27
Q31-Personal Life	.28	.37	.37	.26	.33	.37	.33	.37	.31	.34	.37	.35	.34
Q32-Status/Prestige	.18	.18	.10	.13	.17	.40	.32	.41	.36	.37	.37	.39	.36
Q33-Working Cond.	.07	.07	-.03	.03	-.01	.16	.04	.17	.09	.10	.07	-.04	.15

note: 1. Diagonal elements are zero-order correlation coefficients.
2. For the Partial Correlation Coefficients: $r > .39$; $p \leq .001$ $r > .33$; $p \leq .01$
    $r > .25$; $p \leq .05$

TABLE C-5

First-Order Partial Correlation Coefficients Between Reported Work Factor Amounts and Overall Job Satisfaction Held Constant For Each (other) Work Factor Amount (N=76).

Held Constant For:

	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33
Q21-Work Itself	[.66]	.50	.47	.59	.65	.66	.59	.61	.65	.64	.64	.50	.64
Q22-Responsibility	.06	[.50]	.20	.40	.46	.51	.44	.40	.48	.47	.48	.21	.50
Q23-Achievement	.52	.57	[.69]	.55	.63	.68	.56	.57	.67	.67	.66	.53	.63
Q24-Growth	.36	.39	.11	[.49]	.37	.48	.24	.40	.48	.46	.48	.34	.41
Q25-Advancement	.33	.29	.08	.06	[.36]	.34	.24	.29	.39	.33	.36	.24	.32
Q26-Monetary Comp.	.10	.19	-.02	-.02	.08	[.16]	.00	.07	.12	.07	.11	.08	.04
Q27-Policy/Admin.	.48	.54	.38	.42	.54	.57	[.58]	.38	.56	.56	.57	.44	.53
Q28-Job Supervision	.47	.46	.31	.47	.51	.53	.29	[.55]	.52	.52	.53	.47	.49
Q29-Interpers. Rel.	.05	.15	.05	.11	.24	.17	-.01	.05	[.21]	.12	.11	.07	.17
Q30-Job Security	.06	.11	.08	.13	.17	.19	.06	.15	.17	[.24]	.12	-.04	.15
Q31-Personal Life	.20	.25	.18	.27	.29	.28	.26	.25	.25	.22	[.30]	.09	.25
Q32-Status/Prestige	.35	.39	.31	.47	.53	.57	.44	.52	.56	.55	.53	[.59]	.54
Q33-Working Cond.	.28	.34	.07	.18	.30	.32	.20	.24	.34	.30	.31	.23	[.35]

note: 1. Diagonal elements are zero-order correlation coefficients.
2. For the Partial Correlation Coefficients: r > .33; p ≤ .001   r > .27; p ≤ .01
r > .20; p ≤ .05

VITA

Paul Francis Daspit was born on 19 May 1946 in New Orleans, Louisiana. He graduated from high school in Santa Monica, California in 1964 and enlisted in the United States Air Force in 1969. He attended Louisiana Tech University while participating in the Airman Education and Commissioning Program (AECP), and received the degree of Bachelor of Science in Electrical Engineering in August 1973. Upon graduation, he received a commission in the USAF through OTS/AECP in December 1973.

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206

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER AFIT/GSM/SM/78S-4	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE *(and Subtitle)* AN INTEGRATION OF CONTEMPORARY THEORIES OF WORK MOTIVATION: A PROPOSED MODEL AND PARTIAL TEST WITH IMPLICATIONS FOR JOB DESIGN		5. TYPE OF REPORT & PERIOD COVERED M. S. Thesis
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Paul F. Daspit Capt USAF		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Air Force Institute of Technology (AFIT/EN) Wright-Patterson AFB, OH 45433		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Air Force Institute of Technology (AFIT/EN) Wright-Patterson AFB, OH 45433		12. REPORT DATE September 1978
		13. NUMBER OF PAGES 219
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

18. SUPPLEMENTARY NOTES

Approved for public release; IAW AFR 190-17

JOSEPH P. HIPPS, Major, USAF   OCT 1 0 1978
Director of Information

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

Work Motivation   Psychological States
Job Design
Job Satisfaction
Expectancy Theory

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

The primary objective of this research was a comprehensive model of work motivation, performance, and satisfaction based on contemporary theories of work motivation and models of job design. General motivation theories and specific theories of work motivation and job design were reviewed and compared in terms of their explanation of the process and content of work motivation. The Porter-Lawler expectancy model of work motivation was selected as a framework on which to develop a comprehensive model. The proposed model expanded

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the Porter-Lawler model by (1) replacing intrinsic and extrinsic work system outcomes with job property, interaction feature, and organization policy outcome clusters; (2) adding psychological states as mediators between work system outcomes and job facet satisfactions and between work system outcomes and effort-outcome expectancies; and (3) distinguishing between performance-related and membership-related job facet satisfactions.

Empirical data were analyzed to investigate the work outcome cluster hypothesis. Self-reported work factor relative importance measures for 13 work factors from 76 civilian and 50 military employees of three accounting and finance work centers at four USAF bases were analyzed. Results of cluster and factor analyses indicated moderate support for the clustering hypothesis.

Additional correlation and regression analyses supported the hypothesis that job property work factor amounts were better predictors of overall job satisfaction than interaction features or organization policy variables. No support was found for the hypothesis that interaction features were better predictors of overall job satisfaction than organization policy variables. Results of t-tests for hypothesized high and low satisfaction subgroups failed to support the general hypothesis that self-reported work factor relative importance was an effective moderator of the work factor amount - overall job satisfaction relationship.

It was concluded that the proposed model requires further testing and refinement before specific implications can be made. However, the proposed model is considered a necessary and significant first step toward understanding the complex and dynamic interrelationships present in the work system that impact motivation, performance, and satisfaction.