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EVALUATION OF POTENTIAL MODERATORS
TO THE CORE
JOB DIMENSIONS-JOB SATISFACTION
RELATIONSHIP

Jerry M. Brickman, Captain, USAF
Gunars J. Fricsons, GS-13

LSSR 105-83

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DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY (ATC)
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Wright-Patterson Air Force Base, Ohio

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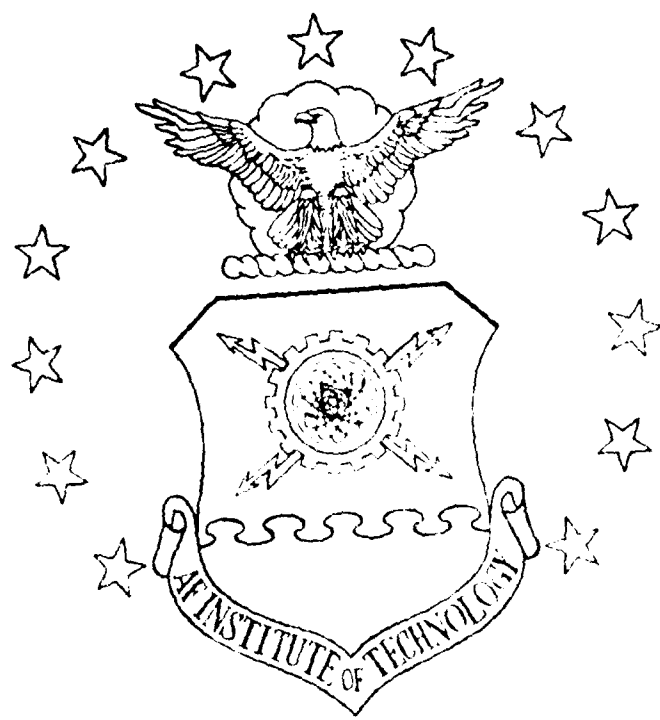Wright-Patterson Air Force Base, Ohio

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The objective of this study was to evaluate the variables of age, tenure, military versus civilian status, and supervisor's management style as possible moderators to the core job dimensions-job satisfaction relationship depicted in the Job Characteristics Model. Data was collected using a questionnaire developed by the Air Force Institute of Technology. Subjects for the study were 991 military and civilian employees of a major DOD installation located in the Midwest. Regression techniques were used to identify and evaluate the hypothesized moderators based on the criteria of differential predictability. Results indicated limited support for the hypothesized moderators of age, tenure, and military versus civilian status. No support was obtained for the hypothesized moderator of supervisor's management style. While limited support was suggested for selected moderators, the overall pattern of results did not support any of the hypothesized moderators.

EVALUATION OF POTENTIAL MODERATORS

TO THE CORE JOB DIMENSIONS-JOB SATISFACTION

RELATIONSHIP

A Thesis

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the Requirement for the

Degree of Master of Science in Logistics Management

By

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Captain, USAF   GS-13

September 1983

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       COMMITTEE CHAIRMAN

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       READER

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CHAPTER 1

INTRODUCTION

Background

In the words of E. A. Locke (1969), "Job satisfac-
tion is the pleasurable emotional state resulting from the
appraisal of one's job as achieving or facilitating one's
job values." The problem of identifying what elements af-
fect employee job satisfaction has challenged managers and
behavioral researchers for many years. Several recent
studies have found that job satisfaction is significantly
correlated with various behavioral outcomes such as
employee turnover (Porter & Steers, 1973); that is to say,
it can function as a predictor variable. Consideration of
these findings logically leads to the need to investigate
what factors function as predictor variables for job satis-
faction; i.e., to view job satisfaction as a criterion
variable.

Problem Statement

The Job Characteristics Model (JCM) (Hackman &
Lawler, 1975) provides a systems view of the relationship
between core job dimensions (skill variety, task identity,
task significance, autonomy, and job feedback) and expected

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outcomes. One of these expected outcomes is job satisfaction. However, previous studies using the JCM have found that comparable levels of corejob dimensions (predictor variables) did not always lead to consistent job satisfaction level effects (criterion variables). These findings highlight the need to identify and evaluate possible personal and environmental variables which may influence the relationship between core job dimensions and job satisfaction.

Recent studies have considered a multitude of personal and environmental factors as possible moderator variables in the context of the JCM. This paper will examine the demographic characteristics of age and military vs. civilian status, and the environmental factor of supervisory characteristics (planning, establishing and explaining work procedures, and setting performance standards) as possible moderators to the core job dimensions-job satisfaction relationship depicted in the JCM.

In summary, the empirical research that has generally supported the basic relationships portrayed in the JCM has also highlighted the need for additional research to identify and evaluate individual and environmental differences that may alter the general core job dimensions-job satisfaction relationship. Identification and evaluation of possible moderators is paramount to the continued use of the JCM as a managerial tool for understanding and enhancing job satisfaction.

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Objectives

The objectives of this research were to determine if the core job dimensions-job satisfaction relationship depicted in the JCM is influenced by the worker's:

- age
- tenure
- military vs. civilian status
- supervisor's style of management

Research Hypotheses

The following research hypotheses were tested to accomplish the research objectives:

H_1: The core job dimensions-job satisfaction relationship is stronger for younger employees than for older employees.

H_2: The core job dimensions-job satisfaction relationship is stronger for junior employees (in terms of tenure) than for senior employees.

H_3: The core job dimensions-job satisfaction relationship is stronger for military employees than for civilian employees.

H_4: Employees who rate their supervisors higher on key supervisory characteristics (planning, establishing and explaining work procedures, and setting performance standards) will perceive a stronger job dimensions-job satisfac-

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tion relationship than employees who rate their supervisors low on those supervisory characteristics.

CHAPTER 2

LITERATURE REVIEW

Theoretical Bases

The Job Characteristics Model (Figure 1) was pub-
lished by Hackman and Oldham in 1976. The JCM, which
evolved from earlier work of Turner and Lawrence (1965) and
Hackman and Lawler (1971), provides a general systems view
of the relationship between core job dimensions, psycholo-
gical states, and expected outcomes. The dimensions in
the model are defined as:

> 1. Skill Variety. The degree to which a job re-
> quires a variety of different activities in carrying
> out the work which involve the use of a number of dif-
> ferent skills and talents of the employee.
>
> 2. Task Identity. The degree to which the job
> requires completion of a whole and identifiable piece
> of work.
>
> 3. Task Significance. The degree to which the job
> has an impact on the lives or work of other people.
>
> 4. Autonomy. The degree to which the job provides
> freedom, independence, and discretion to the employee
> in scheduling the work and determining the procedures
> to be used in carrying it out.
>
> 5. Feedback. The degree to which carrying out the
> work activities required by the job results in the
> employee obtaining direct and clear information about
> the effectiveness of his performance.

Growth Need Strength (GNS) is presented in the model as a
possible moderator between the factors of core job dimen-
sions, psychological states, and outcomes. The Critical

CORE JOB
DIMENSIONS

CRITICAL PSYCHOLOGICAL
STATES

PERSONAL AND
WORK OUTCOMES

Skill Variety
Task Identity
Task Significance

Autonomy

Feedback

Experienced Meaningful-
ness of the Work

Experienced Responsi-
bility for Outcomes of
the Work

Knowledge of the Actual
Results of the Work
Activities

High Interest
Work Motivation

High Quality
Work Performance

High Satisfaction
with the Work

Low Absenteeism
and Turnover

EMPLOYEE GROWTH
NEED STRENGTH

Figure 1. The Job Characteristics Model of Work Motivation
(Hackman & Oldham, 1976)

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Psychological States depicted in the model are viewed as mediating between the basic core job dimensions and the personal/work outcomes.

The Job Diagnostic Survey (JDS) was developed to measure each of the core dimensions (Hackman and Oldham, 1975). Using the JDS, a summary score indicating the over-all motivating potential score (MPS) of a job can be computed based on the following formula:

$$MPS = \frac{\text{Skill Variety} + \text{Task Identity} + \text{Task Significance}}{3} \times (\text{Autonomy}) \times (\text{Feedback})$$

Hackman and Oldham claimed that individuals who describe their jobs with high MPS scores are predicted to display high internal motivation, high quality of work, low absenteeism, low turnover, and high job satisfaction.

The model was primarily designed to serve as a tool to diagnose existing jobs and provide information for job design efforts. Although often classified as a "Motivational Model", the JCM has been widely used as a method to evaluate possible causal relationships between the core job dimensions and measured levels of job satisfaction.

Empirical Research

Evaluation and interpretation of the JCM has been the subject of extensive research over the past seven years.

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In general, this research has focused on verification of the JCM and/or attempting to identify possible moderator variables (i.e., sex, tenure, influence of co-workers, etc.) that might influence the core job dimensions-critical psychological states-personal and work outcome relationships proposed in the original model. The first three studies reviewed (Hackman & Oldham, 1976; Hackman, Pearce & Wolfe, 1978; and Griffin, 1982) each represent research efforts to assess the JCM's basic validity.

Hackman and Oldham (1976) conducted research on data obtained from 658 employees working on 63 different jobs in seven organizations. The jobs were highly heterogenous, including white collar, blue collar, and professional work. Industrial and service organizations were both included in the sample. The organizations were located in the East, Southwest, and Midwest, and in both urban and rural settings. The primary data collection instrument was the JDS. The JDS was administered to groups of employees (ranging from 3 to 25 at a time). Using partial correlation and multiple regression analysis, Hackman and Oldham obtained results that were consistent with expectations of the model. The psychological states generally correlated higher with the outcome measures than did the job dimensions. As additional psychological states were added to the regression equation, the amount of outcome variance predicted did increase. For each relation-

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ship between a job dimension and an outcome measure, statistically controlling the corresponding psychological state substantially lowered the magnitude of the association. Measured correlations *for high vs. low GNS employees* were in the predicted direction of the model.

Acknowledging the need to investigate other possible factors that could be moderating the basic relationships depicted in the model, Hackman and Oldham wrote:

> The present results confirm that the moderators of individuals' reactions to their work can be usefully conceptualized and measured directly in term of human needs. Questions remain, however, regarding the relationships between such measures and the demographic and subcultural variables that also have been proposed as moderators.

Hackman, Pearce, and Wolfe (1978) undertook research to assess the validity of the JCM in a naturally occurring quasi-experiment in hopes of minimizing the confounding factor of employee expectations. The research was conducted in a department of a large metropolitan bank. It involved 49 clerical jobs that required little customer contact. Changes in the jobs were made without regard *for* the motivational characteristics of the jobs, and without cognizance by bank personnel that there might be motivational consequences of the changes. Some jobs were made more complex and challenging, some less so, and the motivational properties of still others were essentially unaffected. Measures of job characteristics, employee attitudes, and work behaviors were collected before and

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after the changes. Complete data for both the pre- and post-change periods were available for 94 employees. Data were gathered two months before the planned changes, and there was no indication that employees' expectations about the changes were affected by the pre-change data collection. None of the pre-change data collected by the researchers were available either to line management or to the support staff as they designed and implemented the changes in employee jobs. The jobs were redesigned solely to meet the new technical demands of the work. Approximately three months after the changes had been implemented, post-change data were collected using the identical collection procedures employed for the pre-change data collection.

There were 22 jobs for which a group of employees had their work redesigned as a unit--that is, for which two or more employees worked on the same job prior to the change, and worked on a common redesigned job after the change. Of these, the work of five groups was enriched by the change (the median increase in MPS was 72), and the work of 12 groups was made more simple and routine by the change (the median decrease in MPS was -43). The remaining five groups also experienced changes in their jobs, but the changes did not significantly affect the motivating potential of the jobs (the median change in MPS was -2).

The basic relationships depicted in the JCM were supported by this study. Statistically significant find-

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ings demonstrated that general satisfaction, internal work motivation, and growth satisfaction increased for the employees whose jobs had been made more complex and challenging and decreased for employees whose jobs had been made less complex and challenging. As was expected, no significant changes were observed for the groups whose MPS had basically remained the same before and after the job changes. The research findings also indicated that the relationship between change in MPS and change in the dependent measures was stronger for high GNS employees than for employees low in GNS. The researchers concluded that their findings had generally supported the JCM. Furthermore, they felt that because the research was conducted in the environment of a naturally occurring quasi-experiment, it was reasonable to conclude that changes in the job characteristics were causally responsible for observed changes in the outcome measures.

In the final discussion of their findings, the researchers aired a general concern with results obtained based primarily on individual perceptions. Specifically, they stated:

> Additional research on how perceptions of job characteristics are jointly affected by the objective properties of the job and the personal and social environment of the job incumbent is clearly called for.

Griffin (1982) collected data from 100 employees (randomly selected) of a Southwest manufacturing plant in

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a basic study of the JCM. Analysis was accomplished using the Pearson product-moment correlation method. Based on correlations computed between task attributes, perceptions, and job satisfaction, Griffin reported a positive relationship between all task attributes (task variety, autonomy, feedback, and identity) and job satisfaction. Additional analysis indicated a moderating effect for GNS on the task attitude-job satisfaction relationship. Griffin contends that his findings reinforced the claims made by task characteristics researchers that show improvements in the design of work may enhance the organizationally relevant outcome of employee satisfaction.

The remaining studies presented in this section focus on a variety of factors (ranging from the multidimensional nature of individual needs to nontask environmental factors) that are hypothesized to influence the basic relationships proposed in the JCM. Although the studies do not represent a complete presentation of the extensive body of research on possible moderators to the JCM, the findings of these studies do highlight the need for an expanded view of the basic relationships contained in the original JCM.

Cawsey, Reed, and Reddon (1982) felt that past studies had failed to provide proper consideration for the multidimensional nature of individual needs. Subjects for the study were members of a Canadian lending company. Two

separate subgroups were evaluated: one group of English-speaking individuals (n=90) and one group of French-speaking individuals (n=106). In addition to collecting data normally used in the JCM, the Personality Research Form (Jackson, 1974) was also used to measure human needs. Two important elements of the Personality Research Form are the Infrequency and Social Desirability validity scales. The Infrequency scale was designed to detect careless or non-purposeful responding, and the Social Desirability scale was designed to detect the extent to which respondents endorse items on the basis of social desirability irrespective of content.

Based on findings obtained by use of regression analysis, Cawsey et al. found that an individual employee's responsiveness to changes in core dimensions of a job will depend on the employee's need <u>structure</u>. The researchers theorized that because of the multidimensional nature of need structure, the variability of responses to change will necessarily be complex and therefore cannot be conceptualized by a unidimensional construct such as GNS. Cawsey et al. suggest that a successful explanatory model for job satisfaction might be built around the concept of congruency among job tasks, the person's personality or needs, and organizational characteristics.

Robey and Bakr (1978) found that the core job dimension-job satisfaction relationship is influenced over time

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by the worker's basic work orientation. Using a relatively small data set (n=30) of employees in the Chicago Transit Authority, the researchers report that identical changes in the task characteristics (predictor variable) produced a quite different reaction in job satisfaction (criterion variable) in various workers, depending on their extrinsic/intrinsic work values. The researchers contend that job changes (changes in the task dimensions) are a stimulating element for those who value challenge (intrinsics). As these persons master the change, their attitudes change because they perceive that the challenge and opportunities for achievement are reduced. Robey and Bakr theorize that this effect is especially true for tasks which incorporate an advanced and fascinating technology (such as the computer) but which essentially simplify a person's work to a considerable extent. The initial response is favorable (increased satisfaction), but the novelty wears off soon. On the other hand, the researchers feel that these same changes in the job produce a quite different reaction for individuals with extrinsic work values. The initial response is not as favorable as those with intrinsic work values because the extrinsics place little importance on new job challenges. However, the attitudes of extrinsics are positively correlated with experience, i.e., there is an opposite novelty effect. The extrinsic responds more favorably to job simplification

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once he or she becomes aware of the effect of the new task. The researchers conclude, based on their findings, that attitude changes should be evaluated over time rather than inferred from cross-sectional data.

Katz (1978) reports that the satisfaction reactions of employees to their task characteristics were significantly affected by job longevity, irrespective of age. Katz collected data from 3,085 public sector employees using the JDS. The respondents were divided into five job longevity categories (0-3 months; 4-12 months; 1-3 years; 3-10 years; and 10+ years) and regression analysis was performed on the data. The correlational findings revealed that significant differences in the task dimension-job satisfaction relationships existed among subgroups of employees who were at particular stages of their jobs. Respondents who were in the beginning months of a new job indicated satisfaction levels that were only significantly related to task significance and job feedback, were unrelated to the dimensions of skill variety and task identity, and were somewhat negatively related to autonomy. Respondents who had been on the job between 1-10 years, especially during the 1-3 year period, were about equally and significantly reactive, in terms of satisfaction, to the various task characteristics of their jobs. Those respondents who had been working on the same job for a considerable period of time, around 10 years or more, appeared to occupy an

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unresponsive stage, for their satisfaction scores were unrelated to the different task dimensions. Katz contends that job longevity may represent an important consideration in research focusing on the task dimension-job satisfaction relationship.

Oldham and Miller (1979) examined the extent to which the complexity of co-workers' jobs impacted on focal employees' reactions to their own job characteristics. A job complexity score was formed for each employee by summing measures of five job characteristics (Hackman & Oldham, 1976). A composite referent job complexity index was then formed for each employee by sampling within the focal's job classification all employees who were of the same sex as the focal. These employees' description of their job characteristics were averaged to form a composite index for each focal. The degree to which the composite referent index interacted with the focal job complexity index in determining the focal's satisfaction was then examined. Results were substantially in line with the basic concepts of equity theory. Individuals who worked on jobs that were either more or less complex than the jobs of the assigned referent showed lower levels of satisfaction than those who worked on jobs comparable in complexity.

The results of this study suggest that individuals' reaction to job characteristics may be influenced by the

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characteristics of referents' jobs, and individuals might respond to job inequity in a direction predicted by equity theory. Although by no means conclusive, the results of this study highlight the complex reality of possible influences on the job dimensions-job satisfaction relationship featured in the JCM.

Similar results as those obtained by Oldham and Miller (1979) were obtained by Oldham, Nottenburg, Kassner, Ferris, Fedor, and Masters (1982) in a study involving a large manufacturing organization located in the Midwest. Data were collected from 130 full-time employees with heterogenous jobs that included: machine operators, inspectors, laborers, clerks, and supervisors. In this study, findings indicated that 76% of the respondents compared the complexity of their jobs to the job complexity of a referent, and 63% of these employees selected referent jobs that were more complex than their own. The study also showed that individuals use a variety of referents when evaluating the complexity and challenge of their jobs. In addition to the five core job dimensions, factors such as office size and supervisory behavior were also found to be of concern to the focal when comparing his job with the referent.

Oldham et al. concluded that their findings have significant consequences for the interpretation of the JCM. They suggest that it is no longer sufficient to simply

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diagnose the characteristics of an employee's job prior to the implementation of a work redesign program. A broader diagnosis would seem to be in order--one that included an evaluation of the job characteristics of the employee's referent.

Focusing on possible influences upon the job characteristics-job satisfaction relationship, O'Reilly III and Caldwell (1979) found that "informational cues" are important determinants of an individual's perceptions about the job. Informational cues represent the normative and informational influences of others that tend to influence an individual's perception of task characteristics. These cues may make salient certain aspects of the work and may suggest appropriate responses. Under this concept, the same job may be perceived differently by different groups, and even the same dimensions may be seen as positive in one setting and negative in another. To investigate this assumption, 42 students were randomly assigned to one of four experimental conditions (e.g., enriched task design-unenriched cues, unenriched task design-enriched cues, enriched task design-enriched cues, and unenriched task design-unenriched cues). Two task designs were developed to maximize the differences in variety, autonomy, task identity and significance, and feedback. Both tasks involved the processing of applications to an MBA program and used the same material. The enriched condition required

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subjects to read and evaluate the application files, as well as to make judgments about the applicant. The unenriched task required only laborious coding of information and provided little time and no incentive to peruse the files. Informational cues describing the tasks as either enriched or unenriched were manipulated.

The research findings demonstrated the substantial influence of informational cues as determinants of perceptions of task characteristics and expressed satisfaction with the job. Subjects completing the enriched task with informational cues suggesting that the task was unenriched rated the task as lower in skill, variety, autonomy, feedback, and task significance than subjects in an enriched task with enriched cues. Based on their findings, the authors concluded that social norms may operate as demand characteristics transmitted by informational cues.

In a laboratory setting involving 88 undergraduate students at Purdue University, Weiss and Shaw (1979) also found that individuals' task judgments were significantly influenced by the attitudes of other workers. Two variations, "enriched" and "unenriched", of the same electrical assembly task were used in the study. Both variations required the subjects to wire an electrical circuit board containing a mixture of series and parallel circuits, light sockets, and battery connections. Two versions of the task were designed to manipulate "motivating potential"

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through task characteristics of feedback (observations vs. nonobservations of successful completion), autonomy (explicit instructions vs. schematic only), task identity (by allowing or not allowing the individual to complete the task), and skill variety (by allowing or not allowing subjects to interpret the schematic, etc.). Subjects were unaware that other participants might work on different tasks. Before beginning the task, each subject was shown a videotape on individual viewing monitors. Although subjects were led to believe that the film was made and being shown to them for training purposes, it was actually designed to unobtrusively communicate other workers' attitudes about the task. Four versions of the videotapes were used. Following completion of the task, the JDS was used to gather data and the MPS, serving as the dependent variable, was calculated.

The results of the study supported the position that an individual's judgment about task attributes is only partly a function of the task's objective characteristics, and that personal and situational factors can also influence a worker's perceptions of a task. Based on their findings, the researchers contend that future research using the JCM should analyze the weight given to social information going beyond simple personality moderators and looking to situational influences as well.

White and Mitchell (1979) also report that the expressed affective responses of one's co-workers influence the core job characteristics-job satisfaction relationship. Their findings, based on results of a study involving 41 student employees, indicated that people receiving positive social cues from co-workers were more satisfied than people receiving negative social cues from co-workers, even when all subjects were performing the same tasks under the same physical conditions.

Expanding the scope of investigation regarding the JCM, O'Reilly III, Parletter, and Bloom (1981) questioned: (a) whether the five core dimensions commonly assessed are relevant or important to a particular job holder, or (b) whether the perceptions by job incumbents of task characteristics assessed by the JDS will vary according to an individual's frame of reference, definition of the job, and general job satisfaction at the time of the measurement. Subjects for the study were 76 county public health nurses. Great detail was taken to ensure the 76 nurses filled positions with a single job description, performed the same tasks, had the same specialized training, and had very comparable clients and case loads. A job analysis using expert judges and other measures was also employed to ensure objective similarity among jobs. To test for systematic variations in frame of affect, a hierarchical regression procedure was used. The relationship claimed

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in many previous studies attributed causality to relation-
ships observed between certain job characteristics and
satisfaction, with variations in task design seen as
resulting in changes to workers' job satisfaction. Find-
ings from the present study raise the possibility that the
opposite or reciprocal effects may be occurring, with
satisfied workers describing their jobs in more positive
and socially desirable terms. The researchers argued that
considering that the job was the same for all nurses in
the study, and given that the frame of reference and pro-
fessionalism variables that might account for objective or
perceptual redefinitions of the job were controlled for,
one's general satisfaction is more likely to result in
differential assessments of job characteristics than the
opposite relationship.

Based on their findings, O'Reilly III et al. con-
cluded that it is reasonable that individuals may respond
differentially to the same stimulus (e.g., task charac-
teristics) depending on factors such as background, exper-
ience, expectations, or mood. Further, and perhaps most
important, the researchers raise the possibility that if
the consistency bias found in this study generalizes, it
may be that findings from previous job design research
reflect not the impact of objective task characteristics,
but rather that more satisfied workers report their jobs
as possessing more desirable attributes.

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Dunham (1977), building on earlier work that had found a large proportion of attitude variance could be accounted for by indexing subjects according to their departments or functions within an organization (Herman & Huline, 1972; Herman, Dunham & Huline, 1975; Newman, 1975), sought to explore the basic concept that macro-organizational components (factors external to the immediate work environment) could moderate workers' responses to micro-organizational components (job dimensions). Data were gathered from 784 executives from the corporate branch of a large retail merchandise corporation. These subjects were from eight functional specialty groups within the organization and included all persons holding the jobs of assistant buyer, buyer, and assistant retail sales manager within the eight groups.

Dunham theorized that the moderating effects of individual differences can be understood in terms of differences in individual valences (workers respond favorably to expanded jobs only if they value the intrinsic outcomes which accompany them). Relating this theory to the JCM, Dunham proposed that nontask environmental factors "block" the workers from obtaining the outcomes suggested in the model. Thus, a worker could value (have positive valence for) outcomes which normally accompany expanded task design, but would not show positive responses to the job changes because of a blocking (low instrumentality) of the

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valued outcomes (i.e., workers respond favorably to expanded jobs only if they are aware of receiving valued outcomes).

Dunham's findings supported his original hypothesis and showed that persons in some parts of an organization respond favorably to enlarged jobs, while persons in other parts of the same organization do not. His research indicated that nontask environmental factors blocked some workers from obtaining the valued intrinsic outcomes which expanded tasks had the potential to provide. Dunham contends that existing theories which attempt to explain worker responses to task design do not account for organizational (macro) factors as possible moderating factors in task characteristics-job satisfaction relationships. He suggests that future studies should investigate the micro-macro organizational link and consider its possible moderating effect on the core job dimensions-job satisfaction relationship.

Meadows (1980) hypothesized that job satisfaction is positively associated with the "organicity" of small work groups. Meadows derived the construct "organicity" based on the concept of organic and mechanistic systems presented by Burns and Stalker (1961). Using a sample of 93 individuals in 24 work groups, the conduciveness of organic work group structure to job satisfaction was evaluated. The study's results indicated a positive, moderately

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strong and statistically significant Pearson product-moment correlation between organicity and satisfaction levels. Checks were made to measure the possibility that personality traits were moderating the organicity-satisfaction relation, but results indicated a minimal and statistically nonsignificant impact. Meadows theorized that whereas a relatively mechanistic group structure might seem appropriate on grounds of technical effectiveness for a routine predictable task, it is probably not conducive to employee satisfaction. Meadows points out that previous research on job satisfaction has often overly stressed the task (work itself) to the exclusion of group structure. Based on his findings, Meadows contends that an organic group structure enhances the work environment's impact on employee job satisfaction, irrespective of the task involved.

Since its conception, the JCM has been the subject of extensive empirical research and critical review. Recent reviews of the JCM (Glick & Roberts, 1981; Terborg & Davis, 1982; O'Reilly III & Caldwell, 1982; and Kiggundu, 1983) suggest that although the basic relationships depicted in the JCM appear to be conceptually sound, additional research is needed regarding the multitude of important variables that may influence or moderate the task characteristics-job satisfaction relationship. This view, that other possible moderators warrant consideration, represents the

common thread of the studies reviewed in this paper. Factors such as the workers' extrinsic/intrinsic work values (Robey & Bakr, 1978), job longevity (Katz, 1978), characteristics of referent's jobs (Oldham & Miller, 1979; and Oldham et al., 1982), informational cues (O'Reilly III & Caldwell, 1979; Weiss & Shaw, 1979; and White & Mitchell, 1979), work group structure (Meadows, 1980), and individual valence differences (Dunham, 1977) demonstrated the capacity to influence the task characteristics-job satisfaction relationship.

Obviously, not all researchers support the utility of moderator variable research. White (1978) contends that moderator effects in the field are generally both modest and inconsistent. His review of the literature indicates that when statistical support for hypothesized moderators is found, the findings are often situation and sample specific; and extreme caution is needed in generalizing validity coefficients to new samples or situations.

In summary, the JCM has proved to be a valuable conceptual model in the search for a clear understanding of what factors influence an employee's job satisfaction. However, as the overwhelming majority of the studies presented in this review have indicated, additional research into the identification and evaluation of potential moderators of the task characteristics-job satisfaction relationship (despite its apparent difficulty) may be the key

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in the JCM's evolution from a useful research tool to a general management theory.

CHAPTER 3

METHOD

The purpose of this study was to investigate the effect of employee age, time spent in the organization (tenure), military versus civilian status, and supervisory characteristics as moderators of the core job dimensions-job satisfaction relationship depicted in the task characteristics model. Age, time in the organization, military versus civilian status, supervisory characteristics, core job dimensions, and job satisfaction were measured by a questionnaire developed and administered by the Air Force Institute of Technology (AFIT). Regression techniques were used to test hypotheses and answer research questions.

Subjects

The sample consisted of 991 military and civilian employees of a major DOD installation located in the Midwest. Of these, 28% were military and 72% were civilian subjects. This included 72% males and 28% females. Ages ranged from under 20 years old to over 50 years old.

Procedures

Design

The source of data for this study was pre-measure data taken by AFIT personnel in the fall of 1982 as part of an organization development intervention conducted at the DOD installation. Organizational sub-units were briefed by the survey administrator, and personnel were requested to complete questionnaires on a voluntary and anonymous basis.

Data Collection

For the pre-measure, a 139-item Organizational Development Survey questionnaire was used to measure employee attitudes in eight major areas as follows: supervision, task characteristics. job satisfaction and performance, organization supporting structures, employee work goals, role and group processes, job involvement, and creativity. Each area contained a number of variables measured by two to eight individual survey items. Potential responses for most questions were on a scale of one to seven. For example, strongly disagree (1), moderately disagree (2), slightly disagree (3), neither agree nor disagree (4), slightly agree (5), moderately agree (6), and strongly agree (7). In addition, seven questions dealt with demographic data as follows: age, education level, sex, time in organization, number of personnel supervised

(if applicable), military or civilian status, and grade
level (if civilian). The sections of the questionnaire
pertinent to this study are contained in Appendix A.

Measures

Core Job Dimensions

Core job dimensions were measured using the Job
Diagnostic Survey (JDS) instrument reported by Hackman and
Oldham (1975). According to the authors, the JDS provides
a fairly accurate measure of jobs for the five core job
dimensions. The operational definitions of the core job
dimensions used in this study were developed in prior
research. The definitions for task autonomy, task signifi-
cance, task variety, and task identity were developed by
Hackman and Oldham (1976); and the definition for feedback
was developed by Sims, Szilagyi, and Keller (1976).

    1. _Task Autonomy_ - the degree to which an employee
perceives his/her job as providing an opportunity for
freedom, independence, and discretion in scheduling the
work and choosing the methods of task accomplishment.

    2. _Feedback_ - the degree to which performing the
work or interacting with one's supervisor provides
direct and clear information regarding the effective-
ness of the employee's job performance.

    3. _Task Significance_ - the degree to which the job
has a substantial impact on the lives of other people,
whether those people are in the immediate organization
or in the world at large.

    4. _Task Variety_ - the degree to which a job
requires a variety of different activities in carrying
out the work, involving the use of a number of differ-
ent skills and talents of the person.

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5. Task Identity - the extent to which a job is perceived as providing an opportunity to perform a whole identifiable module of work; that is, doing a job from beginning to end with a visible outcome.

Each of these core job dimensions was measured by averaging the responses of at least three different 5-(feedback) or 7-point items. The means, standard deviations, and intercorrelations for the core job dimensions (and job satisfaction) for the sample population used in this study are presented in Table 1. Evidence for the reliability and validity of the JDS may be found in Hackman & Oldham (1975; 1976) and Katz (1978).

Job Satisfaction

Job satisfaction was measured using the JDS approach (Hackman and Oldham, 1975). The operational definition of job satisfaction used in this study was developed by Andrews and Whithey (1976).

Job Satisfaction - the extent to which an employee is satisfied with his/her job including satisfaction with the job itself, co-workers, the general task environment, and resources available.

Job satisfaction was measured by averaging the responses to five 7-point items ranging from completely satisfied to completely dissatisfied, e.g., "How do you feel about your job?" and "How do you feel about the work you do on your job--the work itself?"

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TABLE 1

VARIABLE STATISTICS AND INTERCORRELATIONS

	Intercorrelations					
	1	2	3	4	5	6
1 Task Variety	–					
2 Task Identity	.42	–				
3 Task Significance	.49	.34	–			
4 Task Autonomy	.58	.47	.37	–		
5 Feedback	.31	.28	.37	.32	–	
6 Job Satisfaction	.46	.38	.45	.49	.46	–
Means	5.13	5.10	5.07	5.34	3.11	4.89
Standard Deviations	1.44	1.40	1.44	1.37	1.08	0.97

$N = 928$; with this large sample size, a correlation coefficient of .10 is significant at the .001 level (two-tailed).

Core Job Dimension and Job Satisfaction Comparisons

For comparative purposes, the Hackman and Oldham (1975) intercorrelations are reproduced in Table 2. A later study by Katz (1978) was also used to compare variable statistics and intercorrelations. These statistics are reproduced in Table 3. The means and standard deviations from our study are generally comparable to the other two studies, except for the mean for feedback. Feedback was measured on a 5-point rather than the 7-point item scale used in the other studies. This probably accounted for the difference. The intercorrelations from our study are generally higher than those found by Hackman and Oldham (1975). However, when comparing intercorrelations across all three studies, they are similar.

Hackman and Oldham's (1975) measures of discriminant validity shown in Table 2 ranged from .12 for task identity to .25 for job satisfaction. Internal consistency reliabilities shown in Table 2 ranged from .76 for job satisfaction to a low of .59 for task identity. Reliabilities found by Katz (1978), presented in Table 3, ranged from .82 for task variety to .71 for feedback. They concluded that the internal consistency reliability of the scales and the discriminant validity of the items is satisfactory. (Hackman & Oldham, 1975; Katz, 1978). Further validity and reliability evaluation of the JDS was not pursued.

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TABLE 2

HACKMAN & OLDHAM (1975)
VARIABLE STATISTICS AND INTERCORRELATIONS

	Intercorrelations					
	1	2	3	4	5	6
1 Task Variety	-					
2 Task Identity	.16	-				
3 Task Significance	.21	.20	-			
4 Task Autonomy	.51	.38	.22	-		
5 Feedback	.32	.26	.26	.34	-	
6 Job Satisfaction	.42	.22	.24	.43	.37	-
Means	4.49	4.87	5.49	4.80	4.98	4.62
Standard Deviations	1.67	1.43	1.29	1.43	1.41	1.18
Discriminant Validity	.19	.12	.14	.19	.19	.25
Internal Consistency Reliabilities	.71	.59	.66	.66	.71	.76

N = 658; correlations greater than .10 are significant at the .01 level (two-tailed).

TABLE 3

KATZ (1978)
VARIABLE STATISTICS AND INTERCORRELATIONS

	Intercorrelations					
	1	2	3	4	5	6
1 Task Variety	-					
2 Task Identity	.20	-				
3 Task Significance	.38	.24	-			
4 Task Autonomy	.44	.43	.31	-		
5 Feedback	.29	.33	.33	.37	-	
6 Job Satisfaction	.23	.21	.24	.28	.26	-
Means	5.14	5.03	6.04	4.98	5.08	4.80
Standard Deviations	1.41	1.40	1.10	1.35	1.36	1.22
Internal Consistency Reliabilities	.82	.72	.72	.74	.71	.75

N = 3060-3080; with such a large sample size, a correlation of .06 is significant at the .001 level.

Moderators

Age, time in the organization, military versus civilian status, and supervisory characteristics scales were developed by AFIT personnel for the organizational development intervention survey.

Age was measured on a 7-point ordinal scale using 5 and 10 year intervals. Time in the organization was measured on a 7-point ordinal scale with six month intervals. Military versus civilian status was measured on a 6-point ordinal scale with two military and four civilian intervals. Supervisory characteristics were measured by averaging the responses to eight 7-point items ranging from strongly disagree to strongly agree, e.g., "My supervisor is a good planner" and "My supervisor encourages teamwork". Supervisory characteristics items were taken from the JDS (Hackman & Oldham, 1975) and modified by AFIT personnel. The mean sample population score for supervisory characteristics was 4.998, and the standard deviation was 1.545. These values are similar to those obtained by Hackman & Oldham (1975), 5.28 and 1.27 respectively. As measured by Hackman & Oldham (1975), the internal consistency reliability was .79, and the discriminant validity was .25. In general, the results suggest that both the internal consistency reliability and the discriminant validity of the items are satisfactory. No further reliability and validity research was pursued.

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Factor composition for core job dimensions, job satisfaction, and supervisory characteristics are presented in Appendix B. The next section discusses how the moderator subgroups were formed.

Moderator Structure

To evaluate the moderating effect of age, time in organization, military status, and supervision on the core job dimensions-job satisfaction relationship, the sample population was subdivided for each moderator into two or more subpopulations based on specified criteria. Statistical procedures were then used to evaluate differences between subpopulations in order to draw conclusions about the presence of moderating effects in the core job dimensions-job satisfaction relationship (Zedeck, 1971).

Age

Age was separated into three subgroups similar to the age subpopulation classification used by Katz (1978). The three subgroups included under 30 years old, 31-50 years old, and 51 years and older. This provided three age related core job dimensions-job satisfaction subgroups. The Statistical Package for the Social Sciences (SPSS) procedure Crosstabs, implemented on the Harris computer system at AFIT, was used for all moderators to examine the size/characteristics of each subgroup data base (Norusis, 1982). These results (sample size) are presented in Table 4.

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Time in Organization (Tenure)

Time in organization was separated into three sub-
groups: less than one month to less than 12 months, more
than 12 months but less than 36 months, and more than 36
months. The category structure for the organization devel-
opment intervention survey dictated the way the three sub-
populations were chosen. For example, there was no further
category breakout beyond the greater than 36 months cate-
gory. This eliminated the opportunity to compare between
36 months to 10 years and 10 years and greater, as has been
done in other research (Katz, 1978). The less than 12
months in the organization group was considered as an entry
level group. The middle group, more than 12 months but
less than 36 months, was considered as a fairly mature group
in terms of time in the organization, but one that might
have different attitudes than the other two groups.
Employees in the organization longer than 36 months were
considered the senior group. The size of the subgroup data
base is presented in Table 5.

Military Versus Civilian Status

The third potential moderator considered was the
effect of military versus civilian status. The military
employee group included both officers and enlisted person-
nel. The civilian group included general service (GS),
general management (GM), and wage grade (WG). This poten-

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TABLE 4

MODERATOR CHARACTERISTICS: NUMBER OF RESPONDENTS (N)
IN EACH CATEGORY OF AGE AND MILITARY VERSUS CIVILIAN
STATUS

Age	Military	Civilian	Total
Under 31 Years	146	156	302
31-50 Years	124	415	539
Over 51 Years	2	130	132
TOTAL	272	701	973

TABLE 5

MODERATOR CHARACTERISTICS: NUMBER OF RESPONDENTS (N)
IN EACH CATEGORY OF TIME IN ORGANIZATION

Time in Organization	Total
Under 1 Year	151
1 to 3 Years	225
Over 3 Years	600
TOTAL	976

tial moderator was separated into two subgroups: military and civilian. The size of the subgroup data base is also presented in Table 4.

Supervisory Characteristics

The fourth potential moderator was supervisory characteristics. To examine the responses for this potential moderator and identify a means for separating the responses into subgroups, the SPSS procedure Crosstabs was used. First, the overall average score by employee for the eight supervisory characteristics questions were computed. Average scores were then grouped into class intervals, and a histogram was developed (McClave & Benson, 1982). The histogram is shown in Figure 2.

The histogram was used to identify a "natural" break point in the data. For example, a bi-modal distribution with a noticeable peak at a low average score level and a similar peak at a high average score level would have been useful in subdividing the data base. Instead, the data showed a stepwise rise from low average scores to high average scores. Since there is no observable natural break point, the mean was chosen as the basis for dividing supervisory characteristics into two subgroups. Separation at the mean, 4.998, places 398 employees below and 553 employees above the mean in two subgroups.

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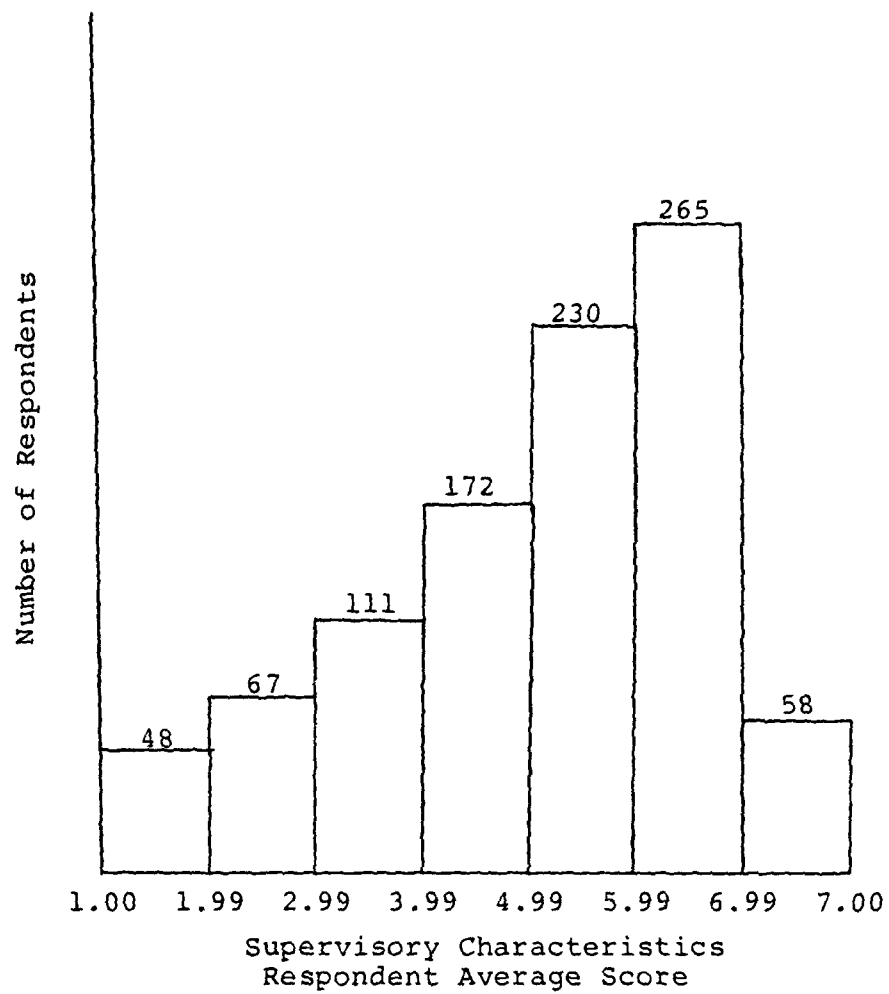
Figure 2. Moderator Characteristics:
Number of Respondents (N) By Supervisory
Characteristics Average Score

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Data Considerations

Since more than one question was used to obtain information on each core job dimension variable, the variable average scores were determined by averaging multi-item scales. For example, task variety was measured by questions 13, 15, and 17 (see Appendix A). For employee XYZ, the three responses were 5, 5, 6. The average score was (5+5+6)/3 or 5.33. The average score of 5.33 represented employee XYZ's attitude about task variety. Other core job dimensions and job satisfaction scores were computed in the same manner for each employee and used as the regression analysis data base. Employee individual scores were combined with the other scores to form subgroups during computer processing by using the SPSS Command Select IF (Norušis, 1982).

A missing response for any core job dimension variable, job satisfaction, or supervisory characteristics question excluded the subject from the data base. Also, if the subject had not completed the question on age, military versus civilian status, or time in the organization, the subject was excluded from this study. The sample population used in this study for regression analysis was 928 of the 991 subjects surveyed.

Statistical Procedures

The statistical analysis chosen for this study was linear regression analysis. Linear regression analysis is the appropriate technique when it is desired to investigate the effects on the criterion variable (job satisfaction) of one or more predictor variables (core job dimensions). Linear regression is used to predict the value of the criterion variable for any set of predictor variables (McClave & Benson, 1983). One method of analysis was correlational analysis. This procedure was used to establish the relationship for each core job dimension, e.g., task variety, task identity, task significance, task autonomy, and feedback, with job satisfaction for each potential moderator subgroup. The second procedure was stepwise multiple regression. This procedure was used to establish the relationship of a set of core job dimensions with job satisfaction for each potential moderator subgroup. Both procedures are discussed in more detail later in this chapter. The statistical method used was the new regression technique implemented on the Harris Computer System at AFIT.

Linear Regression Analysis

Linear regression analysis is a method used to describe whether a linear relationship exists between a dependent variable and an independent variable for a set of data points (McClave & Benson, 1982). The model is of

the general form:

$$Y = B_0 + B_i X_i + E$$

where,

    Y = dependent variable (job satisfaction)
    X_i = independent variable (one of the core job dimensions)
    B_i = coefficient computed in regression analysis
    E = error term

The following assumptions are necessary to use regression analysis and establish the linear relationship between the dependent and independent variables (McClave & Benson, 1982; Moss, Meister & Ruschmann, 1978):

    1. The expected value of the error term, actual value of Y minus the estimated value of Y, is zero.

    2. The error terms are uncorrelated.

    3. The variance of the error terms is constant.

    4. The error terms are normally distributed.

An important measure of the strength of the linear relationship between the predictor (X) and the criterion variables (Y) is the Pearson product moment coefficient (McClave & Benson, 1982). One common formulation of the correlation coefficient is:

$$r = \frac{\Sigma\, XY}{\sqrt{\Sigma\, X^2 \cdot \Sigma\, Y^2}}$$

where,

    r = the correlation coefficient
    ΣXY = the sum of the products of the predictor (X) and criterion (Y) variables
    ΣX^2 = the squared sum of the predictor variable
    ΣY^2 = the squared sum of the criterion variable

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Correlation coefficients were computed for each core job dimension variable-job satisfaction relationship for each subgroup and for each potential moderator. Since correlation coefficients measure the strength of the linear relationship between the predictor and criterion variables, they are often used in statistical testing to evaluate the significance of the relationship and whether or not two correlation coefficients taken from two subgroups are significantly different. These correlation coefficient statistical tests, used in this study to evaluate the core job dimension variable-job satisfaction relationship for each potential moderator's subgroups, are discussed in the next two sections.

Significance Tests for Correlation Coefficients

For each moderator, the core job dimension variable-job satisfaction subgroup correlation coefficient was tested to establish whether a non-zero value of r could have occurred by chance, even though there is no association between the predictor and criterion variables in the population, e.g., $p = 0$ (Yeomans, 1968). If $p = 0$, then no linear relationship exists between the predictor and criterion variables. If $p > 0$, this implies that a positive relationship exists between feedback and job satisfaction. For example, as the scores for the predictor variable increase, it is expected that scores for the criterion variable would also increase.

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To perform the statistical test, a null and alter-
native hypothesis must be established. The null hypothesis
(H_0) is that the population correlation coefficient (p) is
equal to 0.

$$H_0: \quad p = 0$$

The alternative hypothesis is that the population correla-
tion coefficient is greater than 0.

$$H_a: \quad p > 0$$

Although more stringent confidence levels were also consi-
dered during analysis, the confidence level chosen for this
discussion was .95 with α = .05. In this case, there are
five chances in 100 that the null hypothesis would be
rejected when in fact it should not be rejected (McClave &
Benson, 1982).

Before the tests can be carried out, inferences
must be made about the sampling distribution of the r sta-
tistic and its standard error. The sampling distribution
of r (with $\bar{r}$ = p = 0) is symmetrical around zero. This is
expected since the limits of r are fixed at -1 and +1. As
with the sampling distribution of means, the specific form
of this symmetrical distribution will depend upon sample
size (n). When n is large, the distribution tends toward
a normal distribution. Sample sizes over 30 are considered
large, and the sampling distribution is assumed to tend

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toward normality (Yeomans, 1968). In this study, the smallest sample size was 120. This is well above the minimal level needed to be considered a large sample.

The standard error, then, of the normal sampling distribution is:

$$\sigma_X = \frac{1}{\sqrt{n-1}} \qquad (1)$$

where,

n = subgroup sample size

The test statistic is Z and is given by the following formula:

$$Z \text{ calculated} = \frac{r-p}{\frac{1}{\sqrt{n-1}}} \qquad (2)$$

where,

r = subgroup correlation coefficient for a core job dimensions-job satisfaction relationship, e.g., feedback for the 31-50 year age group versus job satisfaction.

p = population correlation coefficient (p = 0 for this test).

The decision criteria used is that if Z calculated exceeds Z_α, the null hypothesis will be rejected. The value of Z_α is taken from areas under the normal curve (McClave & Benson, 1982). For $Z_{.05}$, the value is 1.65. The following example shows how this procedure was applied to the core job dimension variable-job satisfaction correlation coefficients in this study.

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Moderator: Military Personnel

Relationship: Task autonomy-job satisfaction

Correlation Coefficient: .552

Sample Size (n): 267

Hypothesis: H_0: p = 0

H_a: p > 0

Level of Significance: α = .05, one-tailed,

$$Z_{.05} = 1.65$$

Decision Rule: If Z calculated is greater than $Z_{.05}$,
reject H_0. Else, cannot reject H_0
and p = 0.

Test Statistic (equation 2): Z calculated = $\dfrac{\frac{r-p}{1}}{\sqrt{n-1}}$

Computation: Z calculated = $\dfrac{\frac{r-p}{1}}{\sqrt{n-1}} = \dfrac{\frac{0.552-0}{1}}{\sqrt{267-1}} = 9.003$

Decision: Since Z calculated of 9.003 is greater
than $Z_{.05}$ of 1.65, reject H_0. There seems
to be a positive relationship between task
autonomy and job satisfaction for military
personnel (p ≠ 0).

Test for Difference Between Moderator Subgroup Correlation
Coefficients

For each moderator, the core job dimension variable-
job satisfaction subgroup correlations were tested across
groups to determine if differences in predictability
occurred between the subgroups (Zedeck, 1971). The statis-

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tical method used was the Fisher Z transformation. The
Fisher Z transformation method is used to compare correlation coefficients from two subgroups and evaluate whether
or not a statistically significant difference exists between
the correlation coefficients and, therefore, whether a difference exists between the two subgroups (Goodman, 1964;
Yeomans, 1968).

The Fisher Z transformation formula is:

$$Z_i = \tfrac{1}{2} \log_e \left(\frac{1+r_i}{1-r_i}\right) \tag{3}$$

where,

r_i = the subgroup correlation coefficient

$\log_e$ = log to the base e

i = an index defining subgroup one or two

The sampling distribution of Z is normal, even though the
distribution of r, on which it is based, may not be. This
test is similar to the more familiar tests for $\overline{X}_1 - \overline{X}_2$ and
$P_1 - P_2$. The sampling distribution of $Z_1 - Z_2$ is approximately normal, while the sampling distribution of $r_1 - r_2$
is skewed and non-normal (Yeomans, 1968).

The null hypothesis (H_0) is that the means of the
two populations are equal:

$$H_0: \mu_{Z_1} = \mu_{Z_2}$$

The alternative hypothesis is that the means of the two
populations are not equal:

$$H_a: \mu_{z_1} \neq \mu_{z_2}$$

Although more stringent confidence levels were also considered during analysis, the confidence level chosen for this discussion was .95 with $\alpha = .05$. There are five chances in 100 that the null hypothesis would be rejected when, in fact, it should not be rejected. Since H_a is formulated as a "not equal to", a two-tailed test is required. In this case, $\alpha = .05/2$ and the level of significance is 1.96 taken from areas under the normal curve for the .95 confidence level chosen for statistical testing (McClave & Benson, 1982). The standard error of the difference is:

$$\sigma_{z_1 - z_2} = \sqrt{\sigma_{z_1}^2 + \sigma_{z_2}^2} = \sqrt{\frac{1}{n_1 - 3} + \frac{1}{n_2 - 3}} \qquad (4)$$

where,

> n_1 and n_2 are the sample sizes from the subgroups from which the two correlation coefficients were derived.

The test statistic is Z and is given by the following formula:

$$Z \text{ calculated} = \frac{z_1 - z_2}{\sqrt{(\frac{1}{n_1 - 3}) + (\frac{1}{n_2 - 3})}} \qquad (5)$$

where,

> z_1 and z_2 are the computed Z scores for the two subgroup correlation coefficients using equation (3).

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The following example shows how this procedure was applied to all core job dimension variable-job satisfaction moderator subpopulations in this study.

Moderator: Military versus Civilian status

Relationship: Task autonomy-job satisfaction

Data:

	Corr. Coeff. (r)	Sample Size (n)
Military	0.552	267
Civilian	0.632	661

Hypothesis: H_0: $\mu_{z_1} = \mu_{z_2}$

H_a: $\mu_{z_1} \neq \mu_{z_2}$

Level of Significance: $\alpha = .05$, two-tailed test,

$$Z_\alpha = Z_{.025} = 1.96$$

Decision Rule: If Z calculated is greater than Z_α, reject H_0. Else cannot reject H_0. μ_{z_1} may equal μ_{z_2} and the two correlation coefficients may not be statistically different.

Test Statistic: Z statistic (equation 5)

Computation (using equation 3 and equation 5):

$$Z_1 = \tfrac{1}{2} \log_e (\tfrac{1+0.552}{1-0.552}) = 0.62125$$

$$Z_2 = \tfrac{1}{2} \log_e (\tfrac{1+0.463}{1-0.463}) = 0.50112$$

$$Z \text{ calculated} = \frac{0.62125 - 0.50112}{\sqrt{(\tfrac{1}{267-3}) + (\tfrac{1}{661-3})}} = 1.649$$

Decision: Z calculated of 1.649 is not greater than Z_α of 1.96. H_0 cannot be rejected. There

does not seem to be a significant difference between military and civilian personnel in the task autonomy-job satisfaction relationship.

Multiple Linear Regression

The second statistical procedure used was multiple linear regression analysis. Multiple linear regression (MLR) is the appropriate technique when it is desired to investigate the effects on the criterion variable (job satisfaction) of several predictor variables (core job dimensions) simultaneously. With MLR, a model can be developed which would predict job satisfaction (criterion variable) as a function of a number of the core job dimension variables (predictor variables) (McClave & Benson, 1982; Yeomans, 1968).

The core job dimensions-job satisfaction regression model can be expressed as:

$$Y = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + B_5 X_5 + E$$

where,

Y = job satisfaction

X_1 = task variety

X_2 = task identity

X_3 = task significance

X_4 = job autonomy

X_5 = job feedback

B = coefficients computed in regression analysis

E = error term

The MLR analysis for this study used the SPSS stepwise procedure implemented on the Harris Computer System at AFIT. The stepwise technique enters and removes variables (core job dimensions) based on pre-established entry and removal levels to develop a statistically valid model. The objective for using stepwise regression in this study was to identify whether or not the subgroup models for each moderator contained the same significant core job dimension variables. If the subgroup models did not contain the same core job dimension variables, then inferences could be drawn about the importance of these variables between moderator subgroups. The stepwise procedure first fits all possible one variable models, identifies the variable that has the highest F value, and considers this as the best one variable predictor of Y. The stepwise program then searches through the remaining (K-1) predictor variables for the best two-variable model. The program also back-checks variable 1 after variable 2 has been included in the model to determine whether or not it should be retained in the model. When enough predictor variables have been added so that further significant reduction in the residual variance is either not possible or the specified criteria have been met,

the search process stops (McClave & Benson, 1982; Norusis, 1982). For this study, entry level (significance) for a variable was set at .05 and removal at .10. The SPSS stepwise procedure performs statistical tests as it considers the predictor variables for inclusion/retention in the model.

The following discussion provides a brief summary of the tests. The test for statistical significance is applied to the overall equation and the predictor variables. The equation test for significance is used to determine whether or not the equation can be considered a good predictor of the criterion variable (Moss, Meister, and Ruschmann, 1978). The test used for this purpose is the F test. One formulation of the F test is (McClave & Benson, 1982):

$$F = \frac{R^2/k}{(1-R^2)/[n-(k+1)]} \qquad (6)$$

where,

R^2 = the correlation coefficient squared

k = the degrees of freedom (number of coefficients but not including the intercept, B_0)

n = the sample size

Although more stringent confidence levels were also considered during analysis, the confidence level chosen for this discussion is .95 with α = .05. The following procedure is used to test the overall equation:

$$H_0: \quad B_1 = B_2 \ldots = B_i = 0/\alpha = .05$$

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$$H_a: \quad \text{At least one } B_i \neq 0$$

If performed manually, the following procedure is used. F_α is taken from F tables using k and n - (k+1) degrees of freedom. If F calculated is greater than F_α (table value), then H_0 is rejected. At least one of the model coefficients is non-zero. The regression model is statistically significant at the selected α level and useful for predicting the criterion variable. If F calculated is less than or equal to F_α, we cannot reject H_0. The overall equation reduces down to $Y = B_0 + E$, and no linear relationship exists between the criterion variable and the predictor variables (Moss, Meister & Ruschmann, 1978). The test statistic, F calculated, is computed by SPSS as shown in equation 6. The critical level, F_α, is also computed by the SPSS stepwise procedure, and the significance level for the F calculated value is printed.

Each predictor variable is tested for its contribution to the overall regression equation. The commonly used test for this purpose is the t test (McClave & Benson, 1982). The stepwise procedure does not, in the final model, contain variables whose coefficients are not statistically significant. Through the screening process described earlier, nonsignificant variables based on the significance level chosen for variable (core job dimension) inclusion/retention are excluded from the equation.

Moderator Identification

The procedure used to establish whether or not the variables under investigation were in fact moderators for the core job dimensions-job satisfaction relationship was based on comparing the difference between correlation coefficients from moderator subgroups to the results of stepwise regression analysis for each moderator subgroup.

The following procedure was used to identify moderators:

1. Each moderator subgroup core job dimension variable-job satisfaction correlation coefficient was tested for statistical significance, e.g., whether or not a linear relationship exists between the core job dimension variable and job satisfaction.

2. The core job dimension variable-job satisfaction correlation coefficient for the two moderator subgroups being evaluated must be found to be statistically different using the Fisher Z test.

3. Given that, the stepwise MLR procedure must include the core job dimension variable with the higher correlation coefficient in the subgroup MLR model.

4. The other subgroup MLR model must not include the core job dimension variable.

If the application of this procedure is successful, then the potential moderator can be considered a moderator

between the two subgroups for the core job dimension variable-job satisfaction relationship under consideration. All moderator subgroup results were evaluated in the same manner.

CHAPTER 4

RESULTS

The purpose of this section is to discuss the results of linear regression analysis and statistical testing used to evaluate the moderating effects of age, time in the organization, military versus civilian status, and supervisory characteristics on the core job dimensions-job satisfaction relationship.

For the overall sample population, means and standard deviations were computed for each core job dimension variable and job satisfaction. Simple correlation coefficients were computed for each core job dimension variable-job satisfaction relationship. These values are presented in Table 6. Each core job dimensions-job satisfaction simple correlation coefficient was tested for significance. All coefficients were found to be statistically significant, i.e., a linear relationship exists between the core job dimension variable and job satisfaction. The stepwise regression technique was used to develop the overall sample population regression model. All five core job dimension variables entered the model. These results are presented in Table 7.

TABLE 6

JDS JOB DIMENSIONS-JOB SATISFACTION
CORRELATIONS FOR THE TOTAL SAMPLE

	M	S.D.	r
Task Characteristics			
Task Autonomy	5.34	1.37	0.49**
Feedback	3.11	1.08	0.46**
Task Significance	5.07	1.44	0.45**
Task Variety	5.13	1.44	0.46**
Task Identity	5.10	1.40	0.38**
Job Satisfaction	4.89	0.97	--

NOTE: Sample size N = 928.
         * $p < .05$
        **$p < .01$

TABLE 7

STEPWISE LINEAR REGRESSION
FOR THE TOTAL SAMPLE

	R^2	ΔR^2	F
Task Characteristics			
Task Autonomy	0.242	0.242	295.15***
Feedback	0.342	0.100	240.24***
Task Significance	0.387	0.045	194.46***
Task Variety	0.398	0.011	152.68***
Task Identity	0.403	0.005	124.43***

NOTE: * $p < .05$
       ** $p < .01$
      ***$p < .001$

Age

This section discusses the statistical analysis results used to evaluate Hypothesis 1: The core job dimensions-job satisfaction relationship is stronger for younger employees than for older employees. First, the age subgroup means, standard deviations, and simple correlation coefficients for the core job dimensions-job satisfaction relationship were computed. Next, all coefficients were tested and found to be statistically significant. These results are presented in Table 8. The test for correlation coefficient differences provided in Table 9 yielded three cases where a statistical difference was observed between subgroups. One case was feedback for the under 31 year age group versus the 31-50 year age group. The younger age group showed a stronger relationship between feedback and job satisfaction ($r = .53$) than the 31 to 50 year age group ($r = .41$). The second case was task identity for the under 31 year age group versus the over 50 year group. The younger age group showed a stronger relationship between task identity and job satisfaction ($r = .39$) than the older group ($r = .16$). The third case was task identity for the 31-50 year age group versus the over 50 year age group. The 31-50 year age group showed a stronger relationship between task identity and job satisfaction ($r = .34$) than the older age group ($r = .16$).

TABLE 8

SUBGROUP DESCRIPTIVE STATISTICS AND CORRELATIONS
WITH JOB SATISFACTION BASED ON TRICHOTIMIZATION OF
AGE VARIABLE

	Under 31 Years			31-50 Years			Over 50 Years		
	M	S.D.	r	M	S.D.	r	M	S.D.	r
Task Characteristics									
Task Autonomy	4.97	1.41	0.50**	5.48	1.34	0.47**	5.65	1.19	0.44**
Feedback	2.95	1.05	0.53**	3.14	1.09	0.41**	3.39	1.08	0.40**
Task Significance	4.69	1.44	0.46**	5.18	1.44	0.43**	5.56	1.19	0.41**
Task Variety	4.48	1.54	0.49**	5.40	1.31	0.42**	5.54	1.20	0.34**
Task Identity	4.82	1.40	0.39**	5.21	1.38	0.39**	5.31	1.42	0.16*
Job Satisfaction	4.68	1.06	--	4.96	0.93	--	5.10	0.82	--

NOTE: Sample sizes for the three groups were 294, 514, and 120 respectively.

* p<.05
** p<.01

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TABLE 9

DIFFERENCES BETWEEN TASK CHARACTERISTICS–JOB SATISFACTION
CORRELATORS YIELDED BY AGE SUBGROUPS

Task Characteristic	(1) Under 31 r_z	(2) 31-50 r_z	(3) Over 50 r_z	(1-2)	z (2-3)	(1-3)
Task Autonomy	0.55	0.51	0.47	0.64	0.36	0.77
Feedback	0.59	0.44	0.43	2.00*	0.12	1.45
Task Significance	0.49	0.46	0.43	0.41	0.31	0.56
Task Variety	0.54	0.45	0.35	1.23	0.96	1.71
Task Identity	0.41	0.41	0.16	0.05	2.46*	2.27*

* $p < .05$
** $p < .01$

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The stepwise regression results presented in Table 10 show that feedback entered all three age subgroup models. As discussed in the METHOD chapter, identification of moderators would be based on consistency between the correlation coefficient test of subgroup differences (Fisher Z test) and the stepwise results. To be consistent with the test for correlation coefficient differences, feedback is expected to enter the stepwise regression model for the younger age group (r = .53) but not for the 31-50 year age group (r = .41). This result would also be consistent with Hypothesis 1 by reflecting a stronger relationship in the younger age group than in the older age group for the feedback-job satisfaction relationship. However, feedback entered both regression models. While feedback also entered the over 50 year age group model, the test for correlation coefficient differences between this age group and the other two age groups was not statistically significant. Therefore, we conclude that age was not a moderator for the feedback-job satisfaction relationship in this study.

The same conclusion was drawn for the task identity-job satisfaction relationship between the younger and oldest age group. While a significant difference was found between the correlation coefficients, task identity did not enter either age group regression model.

However, the 31-50 year age group versus the over 50 age group task identity-job satisfaction relationship

TABLE 10

STEPWISE LINEAR REGRESSION FOR THE AGE SUBGROUPS

Under 30 Years

Variables	R^2	ΔR^2	F
Feedback	0.277	0.277	111.75***
Task Variety	0.425	0.148	107.60***
Task Autonomy	0.465	0.040	84.15***
Task Significance	0.489	0.024	69.20***

31-50 Years

Variables	R^2	ΔR^2	F
Task Autonomy	0.218	0.217	142.50***
Task Significance	0.293	0.075	105.63***
Feedback	0.336	0.043	86.04***
Task Identity	0.349	0.013	68.22***

Over 50 Years

Variables	R^2	ΔR^2	F
Task Autonomy	0.191	0.191	27.79***
Feedback	0.309	0.118	26.20***
Task Significance	0.333	0.024	19.35***

* $p < .05$

** $p < .01$

***$p < .001$

shows consistency between both tests. For the 31-50 year age group, task identity entered the regression model. Task identity did not enter the older age group regression model. As already discussed, the test of correlation coefficient differences showed a statistical difference between the two age groups. Also, the task identity-job satisfaction relationship was stronger for the 31-50 year age group ($r = .34$ versus $r = .16$ for the older age group). Age, therefore, is a possible moderator in the task identity-job satisfaction relationship.

Hypothesis 1 stated that the core job dimensions-job satisfaction relationship is stronger for younger employees than for older employees. The findings support only a limited variation of Hypothesis 1. In the case of task identity, results of the test of correlation coefficient difference indicated that age functioned as a moderator for the task identity-job satisfaction relationship for the middle age group versus the senior age group. The moderating effect was in the predicted direction with the younger age group demonstrating a stronger task identity-job satisfaction relationship. The moderating effect of age between the middle and senior age groups was supported by the stepwise regression results in that task identity was in the model for the middle group but not in the model for the senior group. No other cases of age functioning as a moderator to the core job dimensions-job satisfaction relationship could be supported by findings.

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Time in the Organization (Tenure)

This section discusses the statistical analysis results used to evaluate Hypothesis 2: the core job dimensions-job satisfaction relationship is stronger for junior employees (in terms of tenure) than for senior employees. First, time in organization subgroup means, standard deviations, and simple correlation coefficients for the core job dimensions-job satisfaction relationship were computed. All coefficients were tested and found to be statistically significant. These results are presented in Table 11. The test for correlation coefficient differences shown in Table 12 provided only one case where a statistically significant difference was observed. This occurred for task variety between the one year to three year group and the over three years group. The latter group shows a weaker relationship between task variety and job satisfaction (r = .40) than the former group (r = .54). It should be noted that there are two other cases where the Z calculated value approaches statistical significance. This occurred for task significance between the less than one year group and the three years or more group. The Z calculated value was 1.93. The other instance was for task variety between the same two subgroups where the Z calculated value was 1.92.

The stepwise regression results provided in Table 13 show that task variety did not enter the model for the

TABLE 11

SUBGROUP DESCRIPTIVE STATISTICS AND CORRELATIONS WITH
JOB SATISFACTION BASED ON TRICHOTIMIZATION OF
TIME IN ORGANIZATION VARIABLE

	Under 1 Year			1-3 Years			Over 3 Years		
	M	S.D.	r	M	S.D.	r	M	S.D.	r
Task Characteristics									
Task Autonomy	5.00	1.47	0.53**	5.16	1.46	0.54**	5.49	0.92	0.46**
Feedback	3.13	1.16	0.54**	2.92	1.05	0.40**	3.18	1.07	0.45**
Task Significance	5.02	1.48	0.54**	4.84	1.46	0.49**	5.18	1.41	0.40**
Task Variety	4.61	1.58	0.54**	4.79	1.53	0.54**	5.40	1.30	0.40**
Task Identity	4.89	1.43	0.43**	5.08	1.40	0.42**	5.16	1.40	0.34**
Job Satisfaction	4.91	1.05	--	4.75	1.04	--	4.94	0.92	--

NOTE: Sample sizes for the three groups were 151, 219, and 558 respectively.

* $p < .05$
** $p < .01$

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TABLE 12

DIFFERENCES BETWEEN TASK CHARACTERISTICS-JOB SATISFACTION
CORRELATORS YIELDED BY TIME IN ORGANIZATION SUBGROUPS

	(1) Under 1 Year r_z	(2) 1-3 Years r_z	(3) Over 3 Years r_z	Z (1-2)	Z (2-3)	Z (1-3)
Task Characteristics						
Task Autonomy	0.59	0.60	0.49	0.16	1.39	1.03
Feedback	0.61	0.43	0.48	1.70	0.91	1.39
Task Significance	0.60	0.54	0.43	0.06	1.44	1.93
Task Variety	0.60	0.61	0.42	0.04	2.27*	1.92
Task Identity	0.46	0.44	0.36	0.21	1.08	1.17

* p < .05
** p < .01

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TABLE 13

STEPWISE LINEAR REGRESSION FOR THE TIME IN ORGANIZATION SUBGROUPS

Under 1 Year

Variables	R^2	$\triangle R^2$	F
Feedback	0.295	0.295	62.46***
Task Variety	0.448	0.153	60.08***
Task Significance	0.485	0.037	46.20***
Task Autonomy	0.509	0.024	37.80***

1-3 Years

Variables	R^2	$\triangle R^2$	F
Task Variety	0.293	0.293	89.88***
Feedback	0.371	0.078	63.59***
Task Autonomy	0.418	0.047	51.46***
Task Significance	0.451	0.033	43.91***
Task Identity	0.473	0.022	38.25***

Over 3 Years

Variables	R^2	$\triangle R^2$	F
Task Autonomy	0.207	0.207	144.98***
Feedback	0.309	0.102	124.34***
Task Significance	0.345	0.036	97.43***
Task Identity	0.350	0.005	74.50***

* $p < .05$

** $p < .01$

*** $p < .001$

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over three years tenure group. However, task variety did enter the model for the one year to three year tenure group. These results are consistent with the test of correlation coefficient differences where a statistically significant difference was found between the task variety-job satisfaction relationship correlation coefficient for the two groups. We conclude that time in the organization is a possible moderator of the task variety-job satisfaction relationship.

Hypothesis 2 stated that the core job dimensions-job satisfaction relationship is stronger for junior employees (in terms of tenure) than for senior employees. The results of the test of correlation coefficient differences indicated that tenure did moderate the task variety-job satisfaction relationship between the middle group (one to three years tenure) and the senior group (over three years tenure). The moderating effect was in the predicted direction with the middle group demonstrating a stronger task variety-job satisfaction relationship than the senior group. This finding was supported by the stepwise regression results in that task variety entered the model for the middle tenure group but did not enter the model for the senior tenure group. No other cases of tenure functioning as a moderator could be supported by the findings. There is minimal support for this hypothesis based on the findings in this study.

Military Versus Civilian Status

This section discusses the statistical analysis results used to evaluate Hypothesis 3: the core job dimensions-job satisfaction relationship is stronger for military employees than for civilian employees. First, the subgroup means, standard deviations, and simple correlation coefficients for the core job dimensions-job satisfaction relationship were computed. All coefficients were tested and found to be statistically significant. These results are presented in Table 14. The test for correlation coefficient differences between subpopulations provided two cases where a statistical difference was observed. This occurred for task significance and task variety. The military group shows a stronger relationship between task significance and job satisfaction ($r = .58$) than the civilian group ($r = .39$). The military group also shows a stronger relationship between task variety and job satisfaction ($r = .57$) than the civilian group ($r = .40$). These results are summarized in Table 15.

The stepwise regression results presented in Table 16 show that task significance entered both the military and civilian regression models. Since this is not consistent with the test of correlation coefficient differences, we conclude that military versus civilian status is not a consistent moderator between military and civilian groups.

TABLE 14

SUBGROUP DESCRIPTIVE STATISTICS AND CORRELATIONS
WITH JOB SATISFACTION BASED ON THE
MILITARY VERSUS CIVILIAN STATUS VARIABLE

	Military			Civilian		
	M	S.D.	r	M	S.D.	r
Task Characteristics						
Task Autonomy	5.22	1.38	0.55**	5.38	1.36	0.46**
Feedback	2.96	1.02	0.49**	3.17	1.11	0.44**
Task Significance	4.93	1.56	0.58**	5.13	1.39	0.39**
Task Variety	4.79	1.58	0.57**	5.26	1.36	0.40**
Task Identity	4.93	1.48	0.43**	5.17	1.37	0.35**
Job Satisfaction	4.80	1.04	--	4.92	0.94	--

NOTE: Sample size was 267 Military and 661 Civilian personnel.

   * $p < .05$

   **$p < .01$

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TABLE 15

DIFFERENCES BETWEEN TASK CHARACTERISTICS-JOB SATISFACTION
CORRELATORS YIELDED BY MILITARY VERSUS CIVILIAN SUBGROUPS

	(1) Military r_z	(2) Civilian r_z	$\frac{Z}{(1-2)}$
Task Characteristics			
Task Autonomy	0.62	0.50	1.65
Feedback	0.53	0.48	0.74
Task Significance	0.66	0.41	3.46**
Task Variety	0.65	0.43	3.07**
Task Identity	0.46	0.36	1.36

* $p < .05$

** $p < .01$

TABLE 16

STEPWISE LINEAR REGRESSION FOR THE
MILITARY AND CIVILIAN SUBGROUPS

Military

Variables	R^2	ΔR^2	F
Task Significance	0.336	0.336	134.08***
Task Autonomy	0.479	0.143	121.14***
Feedback	0.525	0.046	97.01***
Task Variety	0.559	0.034	82.98***

Civilian

Variables	R^2	ΔR^2	F
Task Autonomy	0.214	0.214	177.70***
Feedback	0.308	0.094	146.13***
Task Significance	0.333	0.025	109.38***
Task Identity	0.341	0.008	84.82***

* $p < .05$

** $p < .01$

***$p < .001$

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However, task variety entered the military regression model but did not enter the civilian model. This is consistent with the test of correlation coefficient differences, and we conclude that military or civilian status is a possible moderator for the task variety-job satisfaction relationship.

Hypothesis 3 stated that the core job dimensions-job satisfaction relationship is stronger for military employees than for civilian employees. The test of correlation coefficient differences indicated that military-civilian status did moderate the task variety-job satisfaction relationship. The moderating effect was in the predicted direction with the military group demonstrating a stronger task variety-job satisfaction relationship than the civilian group. This finding was supported by stepwise regression results in that task variety entered the model for the military group but did not enter for the civilian group. No other cases of military-civilian status functioning as a moderator could be supported by the findings.

Supervisory Characteristics

This section discusses the results used to evaluate Hypothesis 4: employees who rate their supervisor higher on key supervisory characteristics will perceive a stronger core job dimensions-job satisfaction relationship than employees who rate their supervisor low in these supervisory

characteristics. First, subgroup means, standard deviations, and simple correlation coefficients for the job dimensions-job satisfaction relationship were computed. All coefficients were tested and found to be statistically significant. These results are presented in Table 17. The subgroup test for correlation coefficient differences provided one case where a statistical difference was observed. This occurred for task significance. For the employees that rated their supervisor higher (above the mean), a stronger relationship between task significance and job satisfaction was observed ($r = .46$) than for those who rated their supervisor lower ($r = .33$). These results are summarized in Table 18.

The stepwise regression results presented in Table 19 show that task significance entered both subgroup regression models. Since this is not consistent with the test of correlation coefficient differences, we conclude that supervisory characteristics were not a consistent moderator of the task significance-job satisfaction relationship for this sample.

Hypothesis 4 stated that employees who rate their supervisors higher on key supervisory characteristics will perceive a stronger core job dimensions-job satisfaction relationship than employees who rate their supervisors low on these supervisory characteristics. No support was obtained for this hypothesis.

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TABLE 17

SUBGROUP DESCRIPTIVE STATISTICS AND CORRELATIONS
WITH JOB SATISFACTION BASED ON THE
SUPERVISORY CHARACTERISTICS VARIABLE

	Below Mean			Above Mean		
	M	S.D.	r	M	S.D.	r
Task Characteristics						
Task Autonomy	4.95	1.49	0.49**	5.61	1.21	0.40**
Feedback	2.49	0.87	0.33**	3.55	1.00	0.33**
Task Significance	4.64	1.51	0.33**	5.38	1.31	0.46**
Task Variety	4.82	1.54	0.47**	5.34	1.33	0.40**
Task Identity	4.81	1.47	0.36**	5.30	1.32	0.32**
Job Satisfaction	4.42	0.96	--	5.22	0.84	--

NOTE: Sample size was 382 personnel below the mean and 546 personnel above the mean.

* $p < .05$

**$p < .01$

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TABLE 18

DIFFERENCES BETWEEN TASK CHARACTERISTICS-JOB
SATISFACTION CORRELATORS YIELDED BY
SUPERVISORY CHARACTERISTICS SUBGROUPS

	(1) Below Mean r_Z	(2) Above Mean r_Z	$\dfrac{Z}{(1-2)}$
Task Characteristics			
Task Autonomy	0.53	0.43	1.55
Feedback	0.35	0.34	0.08
Task Significance	0.35	0.49	2.24*
Task Variety	0.51	0.43	1.31
Task Identity	0.38	0.33	0.64

* $p < 05$

** $p < .01$

TABLE 19

STEPWISE LINEAR REGRESSION FOR
THE SUPERVISORY CHARACTERISTICS SUBGROUPS

Below Mean

Variables	R^2	ΔR^2	F
Task Autonomy	0.237	0.237	118.15***
Task Variety	0.287	0.050	76.40***
Feedback	0.323	0.036	60.10***
Task Significance	0.334	0.011	47.26***

Above Mean

Variables	R^2	ΔR^2	F
Task Significance	0.210	0.210	144.83***
Task Autonomy	0.270	0.060	100.34***
Feedback	0.299	0.029	76.96***
Task Identity	0.310	0.011	60.81***
Task Variety	0.315	0.005	49.76***

* $p < .05$

** $p < .01$

***$p < .001$

CHAPTER 5

DISCUSSION

Zedeck (1971) points out that various classifica-
tions of moderating concepts are commonly referred to as
moderator variables: population control variables, sub-
grouping variables, referrent variables, predictability
variables, modifier variables, and homologizer variables.
Although each of these terms generally describes a variable
that influences the correlation between a predictor and
criterion variable, subtle mathematical and methodological
differences do exist among them. To minimize any confu-
sion about the operational definition of the term "modera-
tor variable" as used in this study, a brief explanation of
the criteria used in this study to identify a moderator
variable is provided.

The criteria established for identification of
moderators described in Chapter 3 is best viewed as a mani-
festation of differential predictability. A moderator
identified under this concept is proposed to influence the
predictor-criterion relationship within subgroups to the
degree that the predictor variable is particularly appro-
priate for one subgroup, yet inappropriate for the other
subgroup.

Hypothesis 1 stated that the core job dimensions-job satisfaction relationship displays a stronger correlation for younger workers than for older workers. Age was identified as moderating the task identity-job satisfaction relationship in the comparison of the middle age subgroup versus the senior age subgroup. The test results clearly indicated that, in terms of job satisfaction, task identity was an appropriate predictor variable for the middle age subgroup, but was not an appropriate predictor variable for the senior age subgroup. The moderating effect identified was in the hypothesized direction.

Hypothesis 2 stated that the core job dimensions-job satisfaction relationship displays a stronger correlation for junior employees (in terms of tenure) than for senior employees. Tenure was identified as moderating the task variety-job satisfaction relationship in the comparison of the middle tenured subgroup versus the senior tenured subgroup. Task variety was an appropriate predictor variable for the job satisfaction of the employees in the middle tenured subgroup, but was not an appropriate predictor of job satisfaction for the employees in the senior tenured subgroup. The moderating effect was in the hypothesized direction.

Viewed in isolation, these findings generally support the earlier work of Katz (1978). Katz found that employees who had been on the same job for an extended

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period of time appeared to occupy an unresponsive stage, for their satisfaction scores were unrelated to the different task dimensions. Although these two instances of support for the hypothesized moderators of age and tenure are encouraging, the pattern of results in terms of the overall study must also be considered. The lack of support for either age or tenure in terms of the stated hypotheses in the overwhelming majority of relationships evaluated clouds the limited positive findings and logically leads to the rejection of Hypotheses 1 and 2 in this study.

Hypothesis 3 stated that the core job dimensions-job satisfaction relationship is stronger for military employees than for civilian employees. Military versus civilian status was identified as moderating the task variety-job satisfaction relationship in that task variety was an appropriate predictor variable of job satisfaction for the military subgroup, but was not an appropriate predictor variable of job satisfaction for the civilian subgroup. The moderating effect was in the hypothesized direction. We are unaware of any prior research efforts focusing on military versus civilian status as a moderator variable in terms of the core job dimensions-job satisfaction relationship and therefore view these findings as exploratory in nature. Military employees generally are reassigned to a new duty location every three or four years; and although the jobs performed are generally within the

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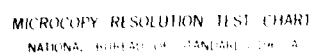
same broad occupational field, most jobs differ in the exact skills required to perform the duties assigned. Perhaps this continual exposure to new skills enhances the military members' sense of job satisfaction.

Although this phenomenon may in fact be at play, the positive findings that military versus civilian status moderated the task variety-job satisfaction relationship were the only positive findings for the five core job dimensions evaluated. Therefore, H_3 cannot be supported on a categorical basis.

Hypothesis 4 stated that employees who rate their supervisors high on key supervisory characteristics will perceive a stronger job dimensions-job satisfaction relationship than employees who rate their supervisors low on these supervisory characteristics. No support for the hypothesized moderator of supervisor's management style was found in the study's results. This finding is contrary to a considerable amount of prior research that has found that a supervisor's attitudes and actions are a strong influence on their subordinates' job satisfaction. A possible explanation for these unexpected results may relate to the nature of the organization evaluated in this study. Subjects for this study work in a large Department of Defense organization, and a high percentage of the employees can be classified as professionals. Due to the nature of the work done in this organization, a majority of these profes-

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sional employees enjoy a high degree of independence in their daily work activities and are seldom exposed to the traditional supervisor-subordinate relationship commonly found in many organizations. It is therefore suggested that the supervisor's style of management in such areas as planning and explaining work procedures may be of minimal importance to the employees evaluated in this study.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

The findings of this study should be considered on two levels. First, the limited positive findings regarding the hypothesized moderators of age, tenure, and military versus civilian status add credence to the growing body of research that has identified a variety of personal and environmental factors as potential moderators to the basic predictor-criterion relationships proposed by the JCM. Second, the absence of any consistent pattern of moderating influences for the four hypothesized moderators highlights the need to closely examine universal statements regarding moderator variables in general.

If a moderator is evaluated in many relationships and only supported in one specific case, the accuracy of stating that the hypothesized moderator is supported in the one case stands alone and should not be diminished by the negative findings. However, if the one positive case is generalized to claim support for the general hypothesis that encompassed the many relationships--a serious error in accurately reporting findings has occurred! A clear understanding of this distinction is essential to the reading of this, and any other, study.

If future moderator variable research based on the sample used in this study is undertaken, the following recommendations should be considered:

1. The variable of job longevity should be used rather than the variables of age or tenure. We support Katz' contention that if employees reactions to the core job dimensions-job satisfaction relationship are moderated by a factor based on time, the most feasible moderator is the length of time spent on a particular job. The measurement tool used to gather data for this study should be expanded to include a measurement of this variable.

2. The military versus civilian variable used in this study should be expanded to investigate the influence of such factors as officer versus enlisted personnel and a similar subgrouping of the civilian employees.

3. The organization evaluated in this study has been undergoing the organizational development intervention of survey feedback for the past year. A general evaluation of the overall JCM developed in this study, compared to a model based on the data from the follow-on survey, could serve as an interesting subject for future research.

Summary

This study sought to evaluate the variables of age, tenure, military versus civilian status, and supervisor's management style as possible moderators of the core job dimensions-job satisfaction relationships proposed by the JCM. Using the criteria of differential predictability, limited support was obtained for the hypothesized moderators of age, tenure, and military versus civilian status. No support was found for the hypothesized moderator of supervisor's management style. A consistent pattern of positive findings was not obtained for any of the hypothesized moderators. Although not the central issue of the study, the general predictor-criterion relationships depicted in the JCM were supported by the study's results.

APPENDICES

APPENDIX A

QUESTIONNAIRE

SUPERVISORY INVENTORY

The statements below describe characteristics of managers or supervisors. Indicate your agreement by choosing the statement below which best represents your attitude concerning your supervisor.

>   1 = Strongly disagree
>   2 = Moderately disagree
>   3 = Slightly disagree
>   4 = Neither agree nor disagree
>   5 = Slightly agree
>   6 = Moderately agree
>   7 = Strongly agree

001. My supervisor is a good planner.

002. My supervisor sets high performance standards.

003. My supervisor encourages teamwork.

004. My supervisor represents the group at all times.

005. My supervisor establishes good work procedures.

006. My supervisor has made his responsibilities clear to the group.

007. My supervisor fully explains procedures to each group member.

008. My supervisor performs well under pressure.

NOTE: Supervisor is the person to whom you report to directly.

SECTION ONE OF JOB CHARACTERISTICS

PLEASE PLACE ALL ANSWERS ON COMPUTER-SCORED ANSWER SHEET!

011. How much <u>autonomy</u> is there in your job? That is, to what extent does your job permit you to decide <u>on your own</u> how to go about doing the work?

     1-----2-----3-----4-----5-----6-----7

Very little, the job gives me almost no personal "say" about how and when the work is done.	Moderate autonomy; many things are standardized and not under my control, but I can make some decisions about the work.	Very much; the job gives almost complete responsibility for deciding how and when the work is done.

012. To what extent does your job involve doing a "<u>whole</u>" <u>and</u> <u>identifiable</u> <u>piece</u> <u>of</u> <u>work</u>? That is, is the job a complete piece of work that has an obvious beginning and end? Or, is it only a small <u>part</u> of the overall piece of work which is finished by other people or by automatic machines?

     1-----2-----3-----4-----5-----6-----7

My job is only a tiny part of the overall piece of work; the results of my activities cannot be seen in the final product or service.	My job is a moderate-sized "chunk" of the overall piece of work; my own contribution can be seen in the final outcome.	My job involves doing the whole piece of work; from start to finish; the results of my activities are easily seen in the final product or service.

013. How much <u>variety</u> is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?

     1-----2-----3-----4-----5-----6-----7

Very little; the job requires me to do the same routine things over and over again.	Moderate variety.	Very much; the job requires me to do many different things, using a number of different skills and talents.

014. In general, how <u>significant</u> <u>or</u> <u>important</u> is your job? That is, are the results of <u>your</u> work likely to significantly affect the lives or well-being of other people?

1-----2-----3-----4-----5-----6-----7

Not very significant; the outcomes of my work are <u>not</u> likely to have important effects on other people.

Moderately significant.

Highly significant; the outcomes of my work can affect other people in very important ways.

SECTION TWO OF JOB CHARACTERISTICS

Listed below are a number of statements which could be used to describe a job. You are to indicate whether each statement is an <u>accurate</u> or an <u>inaccurate</u> description of <u>your</u> job. Once again, please try to be as objective as you can in deciding how accurately each statement describes your job--regardless of whether you like or dislike your job.

<u>How accurate is the statement in describing your job?</u>

1	2	3	4
Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain

5	6	7
Slightly Accurate	Mostly Accurate	Very Accurate

015. The job requires me to use a number of complex or high-level skills.

016. The job is arranged so that I do <u>not</u> have the chance to do an entire piece of work from beginning to end.

017. The job is quite simple and repetitive.

018. This job is one where a lot of other people can be affected by how well the work gets done.

019. The job denies me any chance to use my personal initiative or judgment in carrying out the work.

020. The job provides me the chance to completely finish the pieces of work I begin.

021. The job gives me considerable opportunity for independence and freedom in how I do the work.

022. The job itself is not very significant or important in the broader scheme of things.

JOB FEEDBACK

Use the rating scale below to indicate how you feel about
the following two questions.

> 1 = Very little
> 2 = Little
> 3 = A moderate amount
> 4 = Much
> 5 = Very much

023.   To what extent do you find out how well you are doing
       on the job as you are working?

024.   To what extent do you receive information from your
       superior on your job performance?

       Use the same rating scale to indicate how much job
       feedback is present in your job.

025.   The feedback from my supervisor on how well I am doing.

026.   The opportunity to find out how well I am doing in my
       job.

027.   The feeling that I know whether I am performing my
       job well or poorly.

JOB SATISFACTION

Below are 5 items which relate to the degree to which you
are satisfied with various aspects of your job. Read each
item carefully and choose the statement below which best
represents your opinion.

> 1 = Delighted
> 2 = Pleased
> 3 = Mostly satisfied
> 4 = Mixed (about equally satisfied and dissatisfied)
> 5 = Mostly dissatisfied
> 6 = Unhappy
> 7 = Terrible

028.   How do you feel about your job?

029.   How do you feel about the people you work with--your
       co-workers?

030. How do you feel about the work you do on your job--the work itself?

031. What is it like where you work--the physical surroundings, the hours, the amount of work you are asked to do?

032. How do you feel about what you have available for doing your job--I mean equipment, information, good supervision, and so on?

SUPERVISOR'S ASSESSMENT OF YOUR PERFORMANCE

The following statements deal with feedback you receive from your supervisor concerning your performance. Your frame of reference should be your supervisor's evaluation of your performance in terms of formal feedback (i.e., periodic, written performance appraisals) and informal feedback (i.e., verbal communication on a day-to-day basis). Please think carefully about his/her evaluations of you over the past six months or so.

Based upon the feedback you have received from your supervisor, use the rating scale below to indicate how your job performance would compare with other employees doing similar work.

1 = Far worse
2 = Much worse
3 = Slightly worse
4 = About average
5 = Slightly better
6 = Much better
7 = Far better

033. Compared with other employees doing similar work, your supervisor considers the quantity of the work you produce to be:

034. Compared with other employees doing similar work, your supervisor considers the quality of the work you produce to be:

035. Compared with other employees performing similar work, your supervisor believes the efficiency of your use of available resources (money, materials, personnel) in producing a work product is:

036. Compared with other employees performing similar work, your supervisor considers your ability in anticipating problems and either preventing or minimizing their effects to be:

037. Compared with other employees performing similar work, your supervisor believes your adaptability/flexibility in handling high-priority work (e.g., "crash projects" and sudden schedule changes) is:

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BACKGROUND INFORMATION

This section of the survey contains several items dealing with personal characteristics. This information will be used to obtain a picture of the background of the "typical employee".

132. Your age is:

1. Less than 20
2. 20 to 25
3. 26 to 30
4. 31 to 40
5. 41 to 50
6. 51 to 60
7. More than 60

133. Your highest educational level obtained was:

1. Non high school graduate
2. High school graduate or GED
3. Some college work
4. Bachelor's degree
5. Some graduate work
6. Master's degree
7. Doctoral degree

134. Your sex is:

1. Male
2. Female

135. Total months in this organization is:

1. Less than 1 month
2. More than 1 month, less than 6 months
3. More than 6 months, less than 12 months
4. More than 12 months, less than 18 months
5. More than 18 months, less than 24 months
6. More than 24 months, less than 36 months
7. More than 36 months

136. How many people do you directly supervise (i.e., those for which you write performance reports)?

1. None
2. 1 to 2
3. 3 to 5
4. 6 to 8
5. 9 to 12
6. 13 to 20
7. 21 or more

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137. You are a(an):

    1. Officer
    2. Airman
    3. Civilian (GS or GM)
    4. Civilian (WG)
    5. Non-appropriated Fund (NAF employee)
    6. Other

138. Your grade level is:

    1. 1-2
    2. 3-4
    3. 5-6
    4. 7-8
    5. 9-10
    6. 11-12
    7. 13 and above

APPENDIX B

DEFINITION OF FACTORS

DEFINITION OF FACTORS

1. ## SUPERVISION

   A. **Supervisory Characteristics** - The degree to which
   the immediate supervisor is perceived as an ef-
   fective planner, encouraging teamwork, represent-
   ing the group at all times, establishing good
   work procedures, making his/her responsibilities
   clear, fully explaining procedures, and perform-
   ing well under pressure.

   (Range of scores: 1 - 7)

   (Factor composition: Q001, Q002, Q003, Q004,
   Q005, Q006, Q007, Q008)

2. ## TASK CHARACTERISTICS

   A. **Task Autonomy** - The degree to which an employee
   perceives his/her job as providing an opportunity
   for freedom, independence, and discretion in
   scheduling the work and choosing the methods of
   task accomplishment.

   (Range of scores: 1 - 7)

   (Factor composition: Q011, Q019, Q021)

   B. **Task Identity** - The extent to which a job is per-
   ceived as providing an opportunity to perform a
   whole identifiable module of work; that is, doing
   a job from beginning to end with a visible out-
   come.

   (Range of scores: 1 - 7)

   (Factor composition: Q012, Q016, Q020)

   C. **Task Variety** - The degree to which a job requires
   a variety of different activities in carrying out
   the work, involving the use of a number of dif-
   ferent skills and talents of the person.

   (Range of scores: 1 - 7)

   (Factor composition: Q013, Q015, Q017)

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D. Task Significance - The degree to which the job has a substantial impact on the lives of other people, whether those people are in the immediate organization (e.g., co-workers) or in the world at large (e.g., clients).

(Range of scores: 1 - 7)

(Factor composition: Q014, Q018, Q022)

E. Job Feedback - The degree to which performing the work or interacting with one's supervisor provides direct and clear information regarding the effectiveness of the employee's job performance.

(Range of scores: 1 - 5)

(Factor composition: Q023, Q024, Q025, Q026, Q027)

3. JOB SATISFACTION

A. General Job Satisfaction - The extent to which an employee is satisfied with his/her job including satisfaction with the job itself, co-workers, the general task environment, and resources available.

(Range of scores: 1 - 7)

(Factor composition: Q028, Q029, Q030, Q031, Q032)

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