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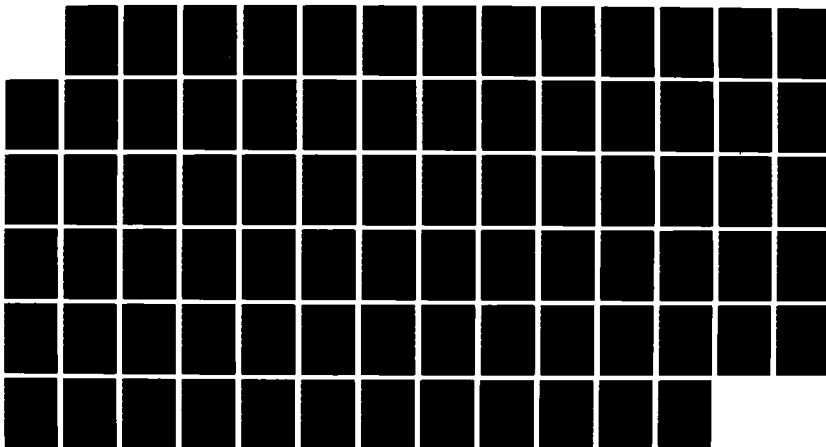
AN EMPIRICAL ANALYSIS OF JOB SATISFACTION FACTORS(U)
AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL
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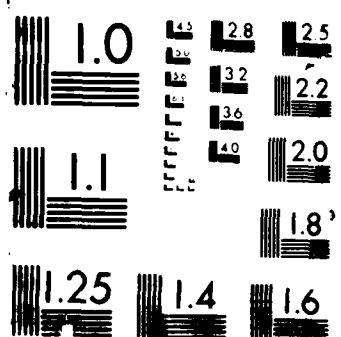
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SATISFACTION FACTORS

THESIS

JAMES H. THALMANN
Captain, USAF

AFIT/GLM/LSR/87S-76

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AN EMPIRICAL ANALYSIS OF JOB SATISFACTION FACTORS

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
Requirements for the Degree of
Master of Science in Logistics Management

James H. Thalmann
Captain, USAF

September 1987

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Special thanks to Dr. Bruce Christenson, who singlehandedly brought me back into the numbers game after a long slump (6 years), and to my Dad who kept me going that one night in the seventh grade when I was having problems with integers.

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Abstract

Two empirical models were developed using stepwise multiple regression techniques to identify significant factors contributing to job satisfaction. A cursory literature review formed the basis for the hypothetical model I, which resulted in the explanation of 49.4 percent of variation in job satisfaction. All variables in the existing data set (formulated using the AFIT Survey of Work Attitudes) were then regressed against job satisfaction with a resulting R-square of .587. Difference in results were attributed to the lack of current comprehensive literature on job satisfaction and the lack of measurement in the survey instrument of items intuitively related to job satisfaction such as pay and promotion. Assumptions that relevant factors contributing to job satisfaction must have been identified in the past few decades were obviously left in question. Future research was suggested in the area of meta-analysis using job satisfaction as a criterion rather than in its traditional role as a predictor variable.

AN EMPIRICAL ANALYSIS OF JOB SATISFACTION FACTORS

I. Introduction

General Issue

Manpower cutbacks, and increasing workloads have made Air Force leaders increasingly aware of the need to compete for personnel resources. According to Pace (1986), top Air Force leaders have acknowledged the importance of factors which make the Air Force attractive to its members or conversely, make other employees consider separation.

Both Department of Defense (DOD) and private sector organizations realize the importance of job satisfaction and other attitudinal factors in affecting productivity and associated organizational outcomes (Parasuraman, 1981; Mahr 1982). Implicit in this realization, is the precept that certain attitudes and behaviors are related. It seems intuitive therefore, that Department of Defense organizations should seek methods and tools enabling them to make much more effective use of their existing personnel resources by analyzing the variations in behavioral attitudes.

The field of organizational development is concerned with facilitating leadership and management practices to impact areas such as performance and retention. Tools such as survey feedback are used to assist in the development of

change in people, organizational processes, and organizational structure (Lloyd, 1977).

The process of positive development of organizations, people and structure, is often referred to as organization self-renewal. To facilitate self-renewal, DOD organizations should consider the use of organizational development methods to identify processes which might yield positive change and personnel development to cope with pressures stemming from shrinking manpower reserves.

One factor of major importance in organizations is the job satisfaction of organizational members. The attitudinal factor of job satisfaction may be defined as an "affective response to a person's feelings about his or her job environment" (Ballard, 1986). This attitude has been widely studied by behavioral theorists in an attempt to integrate research results into management tools for assessing organizational effectiveness (Steers, 1984).

Specific Problem

With the importance of effective personnel resource management established and recognized throughout the public and private sector and with an enormous body of professional job satisfaction literature, one would think that the relationship of such things as work, pay, and supervision to job satisfaction might have been consolidated into a model that managers could use as a tool in renewing their

organizations. Although there are many studies on various job satisfaction related factors, "we have yet to attain a comprehensive, empirically validated model of job satisfaction" (Steers, 1984). If managers had such a model, they could focus on the predictors in their organizations that significantly contribute to, or conversely, detract from overall job satisfaction. In view of the great deal of research dedicated to the study of relationships between certain attitudes and associated behavioral outcomes it is important to study job satisfaction as a criterion, rather than a predictor variable. Job satisfaction has traditionally been analyzed as a predictor variable which contributes in some degree to outcomes such as employee turnover (Steel and Ovalle, 1984).

There may however, be relationships which exist between other predictor variables and job satisfaction itself. Hence, the ability to explain variations in job satisfaction might enable managers to better control some of the consequences of job satisfaction, such as turnover and absenteeism, both significant outcomes of attitudes influenced by low job satisfaction (Mobley, 1979; Bluedorn, 1982). This thesis therefore attempts to develop an empirically validated job satisfaction model to ultimately provide managers with a tool to assist them in better understanding what variables are most significant in

explaining variations in job satisfaction in their organization.

Research Objectives

The objectives of this research were:

1. Identify principal factors that contribute to job satisfaction.
2. Use the factors from the analysis above to develop an empirical model of job satisfaction.

Approach to the Problem

To accomplish the research objectives, a literature review of applied psychological and management journals, periodicals, organizational development and job satisfaction texts, and AFIT theses was conducted. This was done to trace the history of job satisfaction and identify principal factors shown to contribute to job satisfaction.

An available database developed by AFIT/LSR served for the development and validation of the empirical model. This database was created by AFIT organizational consultants through administration of the AFIT Survey of Work Attitudes (Bergeron, 1987) to a variety of government agencies.

While the intent of this research was to provide some insight into the nature in job satisfaction, it is important to note the pilot nature of this research. It is hoped that this research will be an impetus to enhanced job satisfaction models that will benefit Air Force leadership.

II. Literature Review

Introduction

This chapter examines pertinent literature concerning job satisfaction. It begins with some basic definitions of job satisfaction, then discusses factors believed to affect job satisfaction. Some models of job satisfaction are then discussed, followed by a consideration of job-satisfaction related factors in relation to those factors measured by the AFIT Survey of Work Attitudes (See Appendix A). Finally, a tentative model is posed to provide a framework for the procedures applied in the methodology in Chapter 3.

What is Job Satisfaction?

The wide body of literature dealing with job satisfaction yields many definitions. Edwin Locke (1976), described job satisfaction as the resultant of

the appraisal of one's job values, providing the attainment of one's important job values, providing these values are congruent with or help to fulfill one's basic needs. These needs are of two separable but interdependent types: bodily or psychological needs, especially the need for growth. Growth is made possible mainly by the nature of the work itself [p. 1319].

Because of the seminal nature of Locke's review, his ideas on job satisfaction have been used widely (e.g. Steers, 1984:439). Osborn, Hunt and Jauch, (1980) refer to a similar, more basic Locke definition of job satisfaction as,

"a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (p. 80).

An examination of Locke's basic definition suggests the following components of job satisfaction: (1) pleasurable, (2) positive, (3) emotional state, (4) results of job or job experiences. Locke indicates that some emotional state (positive, negative, pleasurable or unpleasant) results from the job or job experiences. It can be argued that the resultant state is not necessarily one of emotion, but rather affect.

Rychlak (1977) distinguishes between affect and emotion. Rychlak's definition of emotions is: "Bodily feelings that can act as physiological grounds for the appraisal of an organism's circumstances at any given point in time. Emotions are never arbitrary ..." (p. 501). In contrast to emotion, "affections are purely mental phenomena, ultimately arbitrary, and up to the person ..." (p. 499). Given the perspective of Rychlakean theory and the literature on job satisfaction, job satisfaction may then be defined as "a positive affective assessment of one's job or job experiences" (Ballard, 1986).

This definition, is the one that will be used throughout this thesis. It is consistent with the body of research on job satisfaction and is grounded in psychologically meaningful theory.

Factors Affecting Job Satisfaction

With a definition established, a search was necessary to identify those factors that influence how a person feels about their job. Indeed, thousands of articles have been published over the past fifty years on the topic of job satisfaction (Locke, 1976:1297-1298). For years, researchers have sought to determine factors that affect or cause job satisfaction (Steers, 1984:439).

According to Locke (1976:1302), an understanding of job attitudes involves typically an attempt to analyze the elements of a job namely: the work, pay, promotions, recognition, benefits, working conditions, supervision, co-workers, company and management.

The elements may be grouped into two separate categories: 1) Events or conditions which are caused by someone to happen and 2) Agents who are people liked and disliked because they have done something, or are perceived as having done something, be it positive or negative; for example supervisors, co-workers, etc. (Locke, 1976:1302). Locke suggests these groupings are advantageous because they further causal attribution understanding and may point the way to understanding the motivations behind people's attitudes toward job agents.

Locke further groups the events into work, rewards and context. Work is described as being comprised of task activity, amount, smoothness, achievement, variety, etc.

Rewards include promotions, responsibility, money and verbal recognition. Context is described as including social, and physical working conditions, benefits, etc. (Locke, 1976:1302).

Another approach is offered by Steers (1984). He breaks out what he calls "influences" or job satisfaction into four levels:

- 1) those influences which are organization wide
- 2) those influences pertaining to the immediate work environment
- 3) job content influences
- 4) personal influences

Items such as pay, promotion opportunities, company policy and procedure, and organization structure fall under the organization-wide grouping. Immediate work environment influences are characterized by supervisory style, participation in decision making, work group size, co-worker relations, and working conditions. Job content influences include job scope, and role clarity/conflict, while personal influences include age, tenure, and personality.

This review sought to find more current summary literature on job satisfaction than that provided by Locke in 1976. It is a reasonable assumption, given the major work on job satisfaction over the years prior to 1976, that the major components or factors contributing to job satisfaction have

been identified. A cursory review of job satisfaction literature from 1976 to 1986 supported this assumption.

If one is to understand job satisfaction as a dependent variable as opposed to an independent variable, then, in discussing factors relevant to job satisfaction, it is relevant to discuss how those factors contribute to overall job satisfaction. As Steers (1984) notes, there is a lack of models in this area. The body of theory most relevant are institutionlized theories such as Maslow and Hertzberg.

Since the early 1900's, management has been interested in the study of worker productivity. The scientific management community believed that job satisfaction could be achieved by increasing pay which would then motivate workers to greater productivity. The study of worker motivation and job satisfaction gradually evolved into the Human Relations movement predicated by Mayo and the Hawthorne Studies in the late 1920's. These theorists brought individual management into focus, (Donnelly, 1984:291), as opposed to the scientific management crowd who were concerned mainly with the physical environment.

The Human Relations School sought to study how factors such as rest breaks influenced productivity. As a result of the Hawthorne studies, the Human Relations emphasis shifted to worker attitudes and how their affective responses (attitudes) toward work affected their actions or reactions to it (Locke, 1976:1299).

There have been many theories attempting to specify the types of variables considered to be related to or cause job satisfaction. Such theories analyze the needs, values, expectations, perceptions, and need value conflicts. Some theories suggest that if one's needs are met on the job, then that person should be more satisfied than one whose values are not met sufficiently on the job.

Just what needs must be satisfied for the physiological and psychological requirements of a particular person to be satisfied? This is what the content theories of job satisfaction attempt to answer. Although there have been numerous contributions, there are two major theories which dominate the literature in this area: Maslow's Need Hierarchy Theory and Herzberg's Motivator-Hygiene theory (Locke, 1976:1307).

Maslow's need hierarchy theory attempts to show that man has five basic categories of needs: physiological, safety, belongingness, esteem, and self actualization. He argues that these needs motivate behavior in a pyramid sense. According to Maslow, higher need levels are not sought and may not be fully attained until lower-level basic needs are attained. This implies a sort of growth process where optional job environments for given employees are those which correspond most closely to their position on the need hierarchy (Locke, 1976:1308). Critics of Maslow rally around his unsubstantiated theory saying that it mixes up both needs

and values (Locke, 1976:1309). They tend also to argue that his theory is difficult to measure or quantify.

Hertzberg looked at work itself in terms of motivation, attempted to identify key incidents leading to job satisfaction and job dissatisfaction. His conclusions were that motivators such as the job itself contributed to job satisfaction and hygiene needs such as pay, while not contributing to job satisfaction, were closely related to dissatisfaction with the job. Therefore, the theory promotes the idea that satisfactions and dissatisfaction result from different causes (Donnelly, Gibson, Ivancevich, 1984:315). His findings indicated that motivational factors were mainly job related: achievement, recognition, advancement, the work itself, personal growth opportunities and responsibility. On the other hand, factors such as company and policy administration, technical supervision, interpersonal relations with supervisors, peers and subordinates, salary, job security, personal life, work conditions, and status although found by Hertzberg to be causes of dissatisfaction, did not increase motivation to work when they increased in magnitude (Donnelly, Gibson, Ivancevich, 1984:316.)

Hertzberg's theory has been criticized on many grounds ranging from his failure to consider individual psychological differences to unsuccessful replication (Locke, 1976:1314). Some replications even led to positive and negative responses

from both motivators and hygiene effects (Cortese, cited in Locke, 1976).

Toward a Model of Job Satisfaction

Job Satisfaction as a Dependant Variable. The review of the literature found that job satisfaction has been studied extensively but virtually always as an independant variable used in predicting some other variable. For example, job satisfaction might be used in conjunction with other variables to predict absenteeism or turnover (Mobley, 1982). This review found only one study that examined job satisfaction as a dependent variable (Bledsoe and Haywood, 1981), although such research is highly appropriate, and needed (i.e., Steers, 1984).

Approach. To build a model of job satisfaction, one might proceed in several ways. One approach is to develop an instrument specifically designed to measure job satisfaction, validate the instrument, and proceed with model development. Another approach is to use an existing organizational survey feedback instrument which includes major components of job satisfaction as suggested by the literature and existing database.

This thesis took the latter approach and used an existing survey instrument, the AFIT Survey of Work Attitudes.

The purpose of the AFIT survey is to provide feedback to commanders and functional managers by highlighting factors where organizational development efforts may be directed. Data obtained by the survey is systematically fed back to managers, so they may better understand the organization they are charged with managing.

Job satisfaction is one of the variables measured by the AFIT survey. It measures the respondents feelings about their job, co-workers, the work itself, the physical surroundings, and resources available to do the job.

The other factors measured by the AFIT survey are similar to those mentioned by Locke and Steers. Table I shows how factors identified by the literature match corresponding AFIT survey variables.

Summarily speaking, Table I illustrates the difficulty of matching existing survey constructs with identified relevant factors demonstrated to have some effect on job satisfaction. Some of the important factors identified by Locke and Steers appear to not be considered in the AFIT survey (i.e., task activity, promotion, responsibility, and personality to name a few). Generally speaking however, if those factors identified by the literature as having a positive effect on job satisfaction are measured by the AFIT survey, then one should expect some sort of relationship to exist between the variable measured called job satisfaction,

and other variables measured purportedly related to job satisfaction.

TABLE I

Comparison of Factors Highlighted by Literature and those Measured by AFIT Survey

Literature Factors	AFIT Survey Construct Measured
task activity	none
task amount	job and organizational stress/task autonomy
task variety	task variety
task achievement	need for achievement
promotion	none
responsibility	none
pay	none
verbal recognition	none
social/physical working conditions	none
benefits	none
self	perceived ability, self reported effort, self appraised job performance
supervisors	task-oriented supervision/relationship oriented
co-workers	group cohesiveness
company and mgt	need for affiliation, organization communication climate
company policies	none
organization structure	organizational communication climate
participation in decision making	participation in decision making
job scope	none
role clarity	goal clarity
role conflict	goal difficulty
age	age
tenure	tenure
personality	none

Considering those variables which the literature has identified as contributing to job satisfaction, and the

extent to which they overlap the constructs measured by the existing AFIT Survey of Work Attitudes, a tentative model is suggested in Figure 1. Definitions of the AFIT Survey variables are provided in Chapter Three.

Factors Measured by AFIT Survey	Criterion Variable
job/organizational stress task variety task autonomy need for achievement perceived ability self reported effort self appraised job performance supervision orientation (task & relationship) group cohesiveness need for affiliation organization communication climate participation in decision making goal clarity goal difficulty age tenure	Job Satisfaction

Figure 1. Proposed model.

Using this tentative model based on the literature and the AFIT Survey of Work Attitudes, correlation and regression analyses were employed to refine and extend a determination of principle factors affecting job satisfaction.

The methodology used in employing these analyses is the subject of Chapter Three.

III. Method

The purpose of this chapter is to describe the methods and procedures used in this research effort. The sample data is discussed along with a description of the survey instrument. Finally, the regression model building technique and analysis methods are discussed.

Sample/Data Collection Procedures

A total of 689 surveys were administered as part of AFIT/LSR's role as an organizational consultant to various DOD activities. The resultant attitudinal data from these surveys served as the basis for the models. The sample data was obtained from various job centers located at an Air Force base in the western United States.

The Survey Instrument

The AFIT Survey of Work Attitudes is a 130 item survey questionnaire designed by the Department of Communication and Organizational Sciences at the Air Force Institute of Technology. The AFIT survey is used to support research assessing employee attitudes toward different aspects of their work environment. The survey instrument is Appendix A of this study. Definitions of survey variables follow as Appendix B and the key to survey variables is Appendix C.

Multiple Linear Regression

Multiple regression analysis is a method of analyzing the explanatory power of two or more independent variables

(predictors) in the analysis of variation of one dependent variable (criterion). Multiple regression allows for the simultaneous examination of the effects of two or more independent variables on the dependent variable in attempts to predict that criterion.

Important in the analysis of multiple regression models is the percent of criterion variance explained (R square) and the Beta coefficients of the predictor variables. R square is the proportion of variance in the criterion variable explained by the particular group of predictors in the model. Higher R square values generally imply better models, however the principles of parsimony and common sense are critical in their application to building multiple regression models (Cody and Smith, 1985). Parsimony considerations search for a tradeoff between the costs and confusion of models with many regressors to obtain an incremental increase in R square values. Logically, a model with fewer predictors and only a slight difference in R square is preferable over a model with many more variables that contribute very little to R square. Common sense also implies "the regressors must bear a logical relationship to the dependent variable in addition to a statistical one" (Cody and Smith, 1985).

Stepwise Multiple Regression Routine

In non-experimental data, predictors, should be somewhat correlated due to the influences some predictors have on

others. If these correlations are significant, then beta values are greatly affected by which particular subset of predictors is in the regression model. Stepwise regression was developed to assist researches at arriving at the optimal set of predictor variables. The method of stepwise regression involves taking a set of predictors (in this study, the survey variables) and adding them in a regression model one at a time until a specified significance level is achieved, or incremental increase in R square is too small to bother with (Cody and Smith, 1985).

In this study, after each new variable was entered, all variables were checked again to see whether or not they remained significant. Software containing this analysis technique was available on the AFIT computer system with SAS software. All tests for significance were conducted at the default alpha level of .15.

Regression Assumptions

Both models were tested for the standard residual assumptions. These assumptions are: a) that the residuals are distributed normally with a mean of 0 and constant variance, and b) that the residuals are independent.

Plots of residuals versus predicted values were used to determine the constancy of variance. The Durbin Watson (DW) statistic was calculated to test for independence of individual residual terms. In addition, univariate

statistics were calculated to determine the mean of the residuals, along with a histogram to determine their distribution.

Model Bias

Although each of the variables entered in the models might have been significant, bias might exist which could taint the explanatory value of either model. According to Neter, Wasserman, Kutner (1985), when there is no bias in a model with $p-1$ predictor variables, the expected value of C_p is approximately P (the number of variables including the intercept term). Thus when the C_p values are matched with P , the model with least bias will tend to fall near the $C_p = P$ value. Models with considerable bias will tend to have C_p values considerably greater than P . Since the number of parameters in the model at any step in the stepwise procedure is one greater than the number of predictor variables, then at any step in the procedure the C_p value generated should equal the number of independent variables plus one or P .

In each of the two models developed, the C_p criterion was used after the stepwise procedure had run, to determine the optimal number of model variables in order to minimize bias. In each model, if the optimum number of variables indicated by the C_p vs P comparison was less than that resulting from the stepwise procedure, then the least significant variables were discarded.

Summary

The technique of stepwise multiple linear regression was used to develop two models which predicted job satisfaction (the criterion variable) from two different groups of predictor variables comprised of demographic, job characteristics, work experiences and personal psychological variables. Data collected from previously administered AFIT surveys was used in both of the models formulated and manipulated via use of SAS statistical software employing stepwise multiple linear regression techniques.

IV. Results

This chapter details the results of the model building process outlined in Chapter Three. Two models are discussed in terms of assumption tests and model building process results. Variable names were abbreviated throughout the procedure for obvious reasons. A key is provided in Appendix B for translation.

Model I (Hypothesized Model)

Assumptions (final model). Independence, normality, and constant variance of residual values were analyzed to insure randomness.

Plots of residual values against predicted values yielded no distinguishable patterns, therefore constant variance was assumed.

A univariate analysis of residuals was conducted to analyze the distribution of the error terms. The resulting frequency histogram and descriptive statistics appeared to meet the criteria of normality with a mean of 0. The studentized residuals had a mean of -7.433×10^{-16} which is sufficiently close to 0, and the frequency histogram plot of the studentized residuals appeared normal and was validated through use of a normal probability plot.

Residual independence was tested via use of the Durbin Watson statistic, and plot of residuals versus observation

number. The Durbin Watson test indicated independence with a statistic of 1.76 and the residual plot yielded no noticeable patterns.

The normality assumptions of the final model being met, thus rendered the effects of residuals on the model as completely random.

Correlation Analysis

The variables hypothesized in Chapter Two as having some relationship with job satisfaction were analyzed in a correlation matrix to determine which were significantly correlated with job satisfaction. Significantly related variables were then entered into the stepwise regression procedure. Results are displayed in Table II.

TABLE II

Simple Correlations Between Predictor
Variables and Job Satisfaction (Model I)

Variable	Correlation Value	Significance Level
STRES	.359	.0001
VARY	.358	.0001
AUTO	.431	.0001
NACH	.212	.0001
ABLE	.026	.4837
EFFORT	.174	.0001
BOSDO	.219	.0001
SUPC	.397	.0001
SUPS	.091	.0001
TEAM	.505	.0166
NAFF	.210	.0001
COMM	.519	.0001
PART	.462	.0001
GOALC	.453	.0001

TABLE II continued

Variable	Correlation Value	Significance Level
GOALD	.195	.0001
AGE	.080	.0349
TENURE	.021	.5690

All variables were considered for inclusion in the stepwise procedure except for Tenure and Able, which had very low correlation values (.021 and .026 respectively) with job satisfaction.

The intercorrelation matrix for all variables is at Appendix D. Summarily speaking, most all predictors had a certain degree of intercorrelation. These intercorrelations ranged from .404 between EFFORT and NACH, to values such as .098 between TEAM and NACH. Most intercorrelations appeared significant at the $\alpha = .0001$ level due to the large sample size.

Stepwise Regression Results

Those variables which correlated significantly with job satisfaction were then included in the stepwise procedure. The default level of significance ($\alpha = .15$) was used as the SLENTY (significance level for entry into the model) and SLSTAY (significance level for remaining in the model once a new variable is entered).

Variables were added one by one to the model, and the F statistic for each was required to be significant (at $\alpha =$

.15), in order for that variable to be included. After each variable was added however, all variables in the model were checked again for F statistic significance, and if one was found to have lost its significance, it was removed. The procedure was ended when none of the variables left outside the model had an F statistic significant at the default SLENTRY level, and every variable in the model was significant at the SLSTAY default level.

The resultant model was in the form:

$$Y_i = 4.318 + .201X_1 + .191X_2 + .146X_3 + .046X_4 + .076X_5 + .188X_6 + .125X_7 + .181X_8 + .081X_9 + E_i$$

where Y_i = JSAT, X_1 = STRES, X_2 = VARY, X_3 = AUTO, X_4 = BOSDO, X_5 = SUPC, X_6 = TEAM, X_7 = NAFF, X_8 = COMM, X_9 = GOALC, and E = residual or error.

No other variables met the .15 significance level for entry into the model.

Table III summarizes the stepwise regression procedure for the hypothesized model using job satisfaction as a dependent variable.

TABLE III

Model I - Summary of Stepwise Regression Procedure

=====		
Step	Variable Entered	Variable Removal
=====		
1	TEAM	None
2	AUTO	None
3	COMM	None
4	STRES	None
5	VARY	None
6	GOALC	None
7	NAFF	None

TABLE III continued

Step	Variable Entered	Variable Removal
8	BOSDO	None
9	SUPC	None

None of the other original hypothesized group of variables: NACH, Effort, SUPS, PART, GOALD, Age or Tenure, ever entered the model.

Partial R square values were also computed to display the incremented increase in explanatory power of the model attributed to the inclusion of each variable during the procedure. Table IV summarizes these results.

TABLE IV

Stepwise R Square Values (Model I)

Step	Var Entered	Partial R Square	Model R Square
1	TEAM	.284	.284
2	AUTO	.076	.360
3	COMM	.053	.413
4	STRES	.037	.451
5	VARY	.025	.476
6	GOALC	.011	.487
7	NAFF	.067	.494
8	BOSDO	.003	.497
9	SUPC	.002	.499

From Table IV, it was evident that from the variable entered, some had a more significant impact on the R square value than the others. Obviously, TEAM had the greatest incremental increase to R square, with a partial value of

.284. The incremental contributions to R square tend to decrease for the remaining model variables downward to a low value of .0019 for the variable SUPC.

Optimum Number of Variables (Model I)

Although each of the variables entered was significant in terms of F value, a look at the Mallows Cp statistics, yielded an optimum number of variables of seven instead of nine. Table V displays the number of variables entered and their resultant Cp values.

TABLE V
Cp vs P Results (Model I)

Step	Final Vars	P	Cp
1	1	2	224.85
2	2	3	143.31
3	3	4	86.98
4	4	5	48.01
5	5	6	22.21
6	6	7	12.28
7	7	8	7.03
8	8	9	5.56
9	9	10	5.47

It appeared that the model with the least bias was one in which the variables BOSDO and SUPC were not entered. Steps 1-6 yielded Cp values greater than their associated P values which indicated bias. Three falling below their Cp indicated some bias also. The model generated at step 7 however, yielded the closest match of Cp and P without

exceeding P. Therefore in an attempt to develop the model with least bias, it was decided to delete the variables BCSDC and SUPC.

To further justify the deletion of BOSDO and SUPC, their incremented contributions to R square were analyzed in relation to overall R square values. Their combined effect was .0051 out of the total model R square value of .4991. This very low incremental contribution to R square further justified their removal, considering parsimony requirements of the model building process.

The final model for the hypothesized variables therefore was reduced to the following form:

$$Y = 5.26 + .195X_1 + .197X_2 + .163X_3 + .197X_4 + .123X_5 + .191X_6 + .099X_7 + E$$

where Y = JSAT, X1 = STRES, X2 = VARY, X3 = AUTO, X4 = TEAM, X5 = NAFF, X6 = COMM, X7 = GOALC, and E = error or residual.

Model II (All variables in AFIT Survey)

Assumptions (Final Model). Plots of residual values against predicted values yielded no distinguishable pattern, therefore constant variance as assumed.

A univariate analysis of residuals generated a mean studentized residual value of .000118 which was sufficiently close to 0. The normal probability plot and frequency histogram indicated a normal distribution, and plots of residuals over observation number showed no noticeable

trends. Based on the above tests, the assumption that the residuals were completely random, was met.

Correlation Analysis

The variables in the AFIT Survey were analyzed in a correlation matrix. All variables except ABLE, SCHOOL, TENURE and BOSS were significantly correlated with JSAT and subsequently entered in the Stepwise routine using the default alpha level of .15 for consistency with the model I development.

Stepwise Regression Results

Table VI summarizes the Stepwise regression procedure for the second model.

TABLE VI
Summary of Stepwise Regression Procedure

Step	Variable Entered	Variable Removed
1	OC	None
2	FEED	None
3	TEAM	None
4	STRES	None
5	JIX	None
6	GOALR	None
7	VARY	None
8	SUPRT	None
9	QUIT	None
10	COMM	None
11	NAFF	None
12	SUBTLE	None
13	EFFORT	None
14	JIY	None

As in the hypothesized model, only significant variables were added to the model. If a variable was not significant it was therefore not considered. The procedure ended when none of the remaining variables had a significant SLENTRY F value.

Partial R square values are displayed in Table VII.

TABLE VII
Stepwise R Square Values (Model II)

Step	Var Entered	Partial R Square	Model R Square
1	OC	.414	.414
2	FEED	.076	.489
3	TEAM	.035	.525
4	STRES	.025	.550
5	JIX	.011	.561
6	GOALR	.009	.570
7	VARY	.007	.576
8	SUPRT	.005	.581
9	QUIT	.003	.584
10	COMM	.003	.587
11	NAFF	.003	.590
12	SUBTLE	.002	.592
13	EFFORT	.002	.594
14	JIY	.002	.596

From Table VII it was evident that from the list of variables entered, that some had a more significant impact on the overall R square value than others. The greatest contribution to the model came from OC. As in model I, the incremental contributions tend to decrease after OC.

Optimum Number of Variables (Model II)

The Cp vs P comparison for unbiasedness had the closest match at P = 11. Table VIII displays the number of variables entered and the resultant Cp values.

Variables NAFF, SUBTLE, EFFORT, JIY were entered in the stepwise regression at steps 11-14 respectively. Although significantly related, they were not entered in the final model to prevent bias in the final model.

TABLE VIII
Cp vs P - Results

Step	P	Cp
1	2	217.64
2	3	122.19
3	4	78.78
4	5	47.99
5	6	36.27
6	7	26.30
7	8	19.87
8	9	16.11
9	10	13.92
10	11	11.96
11	12	10.20
12	13	9.70
13	14	9.02
14	15	8.25

Incremental increases to R square for the deleted variables was very small:

NAFF	-	.003
SUBTLE	-	.002
JIY	-	.002

Their combined effect on the model was .007 of the total model R square value of .597. This very low incremental

contribution to R square further justified their removal based on parsimony requirements.

The final model for the AFIT survey variables therefore was reduced to the following form:

$$Y = 5.74 + .067X_1 + .064X_2 + .140X_3 + .097X_4 + .078X_5 + .086X_6 + .106X_7 + .137X_8 + .084X_9 + .246X_{10} + .216X_{11} + E$$

where $Y = X_1 = OC$, $X_2 = JIX$, $X_3 = STRES$, $X_4 = TEAM$, $X_5 = COMM$, $X_6 = GOALR$, $X_7 = VARY$, $X_8 = VARY$, $X_9 = FEED$, $X_{10} = NAFF$, $X_4 = QUIT$, $X_5 = SUPRT$, and E = error or residual term.

V. Discussion

This chapter analyzes the Chapter Four results through a comparison of the two resulting models. Reasons are postulated for any similarities that exist between the two final models along with hypotheses for resultant differences. Finally, comments on the utility of the present research and suggestions for future research in this area are provided.

Comparison of Final Models

Generally speaking, neither of the two final models do very well in explaining variations in job satisfaction. Especially surprising, was the .59 R square for model II. Assuming survey validity, and considering the cursory nature of the literature review, it was expected that the R square value for model II would have been much greater since it contained more variables.

This apparent shortcoming of the final model may, however, be of some value, in that it did not, in the current data, indicate that many of the variables in the survey were useful in explaining variations in job satisfaction. Although increases in R square should have, and in fact did result between model I and model II by inclusion of additional variables, it was clear that the remaining variables left out of the two models, were not useful in

explaining variations in job satisfaction. Table IX displays the composition of both models.

TABLE IX
Comparison of Significant Variables

Model I	Model II
STRES	STRES
VARY	VARY
TEAM	TEAM
COMM	COMM
NAFF	QUIT
AUTO	OC
GOALC	GOALR
	JIX
	FEED
	SUPRT

It is apparent from Table IX, that some variables were common to each final model: STRES, VARY, TEAM and COMM. A closer look at the remaining model II final variables yields no originally hypothesized variables relating to job satisfaction. The remaining variables in model II, although not supported in the present literature review, appear intuitively logical, and in fact a negative coefficient appeared with the QUIT variable which confirms the intuitive feeling that intentions to quit most probably will be related to job satisfaction in an inverse fashion.

A comparison of the relative contribution of each variable to its respective model is displayed in Table X.

TABLE X
Comparison of Variable Contributions

Model I		Model II	
<u>var</u>	<u>Partial R square</u>	<u>var</u>	<u>Partial R square</u>
STRES	.037	STRES	.025
VARY	.025	VARY	.007
TEAM	.284	TEAM	.035
COMM	.053	COMM	.003
NAFF	.007	QUIT	.003
AUTO	.076	OC	.414
GOALC	.011	GOALR	.009
		JIX	.010
		FEED	.076
		SUPRT	.005

Differences in values for common variables is most probably due to the naturally occurring correlations between variables. Hence, one would not ideally expect partial R square values for the same variable to change between models if correlations did not exist. However in dealing with this set of behavioral data, these correlations will almost certainly always be present. Consequently any hypotheses regarding variations in job satisfaction, must carry the stigma of existing relationships between the independent variables. This is especially true when a sample size as great as 689 is considered.

Sample size here also may be discussed in terms of the significance it lends to the discounting of variables not included in the final model(s) as not being of use in explaining variations in job satisfaction. With a small

sample size, indeed there would be more doubt cast on the content of the final models; however, with the large sample size of the present research data, one can be more assured that insignificant variable are indeed insignificant in the present data set.

The naturally occurring relationships among variables also renders a discussion of individual Beta coefficients useless, since by definition, any serious discussion of Beta values must assume no interrelationships between the variables.

What then can be surmized from this analysis through R square values and variable content of the final model(s)?

Utilites of Present Research

The present research suggested two plausible utilities, the first being the use of this research as a benchmark test for adequacy of literature reviews. It was hypothesized that certain variables according to the literature should appear in the data to be significantly related to job satisfaction. Perhaps, a more comprehensive literature review would have precipitated more accurately the variables contained in the final model.

Perhaps also, the converse is true. It seems logical that due to naturally occurring relationships between variables, prediction of the best subset of variables would be nearly impossible given changing interrelationships

between predictor variables due to differences in individual perceptions, locations, etc. This particular viewpoint might support the "radical empiricist" viewpoint that a comprehensive literature review, although interesting and informative, may do little more than validate the variables included in a survey designed to gather attitudinal data. Consequently, the use of a meta-analysis might have been more useful in terms of a functional literature review designed to empirically predict the final outcome of a model.

The second utility of this research applies directly to the results, specifically the identification in model II of the variable OC as having the greatest contribution to the explanatory power of the model. A concerned organizational commander might now focus on renewing activities designed to foster the development of organizational commitment, with the objective of curbing turnover, absenteeism, and other consequences of low job satisfaction levels.

Important to realize here, is the notion that intercorrelation of variables might logically change from organization to organization, therefore the best use of this model would seem to be at the work center level where employees attitudes may reflect similar perceptions thus generating more significant and dramatic results. In essence, the use of this particular methodology might very well be situational.

The R square values for each model hovering around fifty percent is not entirely without merit. The ability to account for any variation in job satisfaction due to relative contributions of significant variables such as teamwork and organizational commitment is necessary if managers are constrained by factors such as time and money in their renewal efforts.

Suggestions for Future Research

As noted in Chapter Two, it is important to note the pilot nature of this research in developing a comprehensive empirically validated model for explaining variations in job satisfaction.

Considering a long term objective of a comprehensive model, it would seem that in due respect to researchers such as Hertzberg, there needs to be an addition of certain need variables such as pay and promotional opportunities to future research efforts of this nature. Recognizing that the AFIT survey does not contain these sort of variables, it would certainly be logical for future researchers to include measurements of these variables to perhaps significantly increase R square values for future models.

Future research might also include analysis of variance techniques to determine if significant differences exist between various work centers in terms of variables included in final models.

Although not used in this thesis, an effort involving the use of cross validation methods might add to find model validity, enabling future managers to be more confident that their renewal focus is more on target.

To better hypothesize the outcome and magnitude of variables in the final model, the use of meta-analysis is highly recommended to take full advantage of previous empirical studies accomplished on similar topics. This method might better predict final model content, and relative contribution of variables.

Finally, future research might investigate the possibility of heuristic methodologies enabling managers to sample attitudes, extract relevant information, and identify attitudinal problems quickly and inexpensively. The consequences might benefit managers who are not behavioral scholars to more easily carry out their responsibilities in planning, organizing, directing and controlling their organizations.

APPENDIX A: AFIT Survey of Work Attitudes

PART I

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."

1. 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

2. Your highest educational level obtained was:

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

3. Your sex is:

1. Male
2. Female

4. Total months in this organization are:

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.

5. 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

6. You are a (an):

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

7. Your grade level is:

1. 1-2
2. 3-4
3. 5-6
4. 7-8
5. 9-10
6. 11-12
7. 13-15
8. Senior Executive Service

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

- 8. How do you feel about your job?
- 9. How do you feel about the people you work with--your co-workers?
- 10. How do you feel about the work you do on your job--the work itself?
- 11. What is it like where you work--the physical surroundings, the hours, the amount of work you are asked to do?
- 12. 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

- 13. Compared with other employees doing similar work, your supervisor considers the quantity of the work you produce to be:
- 14. Compared with other employees doing similar work, your supervisor considers the quality of the work you produce to be:
- 15. 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:
- 16. Compared with other employees performing similar work, your supervisor considers your ability in anticipating problems and either preventing or minimizing their effects to be:
- 17. 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:

JOB EFFORT RATING

18. As fairly and objectively as you can, rate the typical amount of effort you normally put into doing your work.

- 1 = Very little effort
- 2 = Enough effort to get by
- 3 = Moderate effort
- 4 = More effort than most
- 5 = Very much effort

FUTURE WORK PLANS

Use the rating scale given below to indicate your future work plans with respect to the Air Force or whatever equivalent service/company to which you belong.

19. Within the coming year, if I have my own way:

- 1 = I definitely intend to remain with the Air Force.
- 2 = I probably will remain with the Air Force.
- 3 = I have not decided whether I will remain with the Air Force.
- 4 = I probably will not remain with the Air Force.
- 5 = I definitely intend to separate from the Air Force.

ORGANIZATIONAL INFORMATION

Listed below are a series of statements that represent possible feelings that individuals might have about the company or organization for which they work. Use the following rating scale to indicate your own feelings about the particular organization for which you are now working.

- 1 = Means you strongly disagree with the statement.
- 2 = Means you moderately disagree with the statement.
- 3 = Means you slightly disagree with the statement.
- 4 = Means you neither agree nor disagree with the statement.
- 5 = Means you slightly agree with the statement.
- 6 = Means you moderately agree with the statement.
- 7 = Means you strongly agree with the statement.

20. I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful.

- 1 = Means you strongly disagree with the statement.
- 2 = Means you moderately disagree with the statement.
- 3 = Means you slightly disagree with the statement.
- 4 = Means you neither agree nor disagree with the statement.
- 5 = Means you slightly agree with the statement.
- 6 = Means you moderately agree with the statement.
- 7 = Means you strongly agree with the statement.

- 21. I talk up this organization to my friends as a great organization to work for.
- 22. I feel very little loyalty to this organization.
- 23. I would accept almost any type job assignment in order to keep working for this organization.
- 24. I find that my values and the organization's values are very similar.
- 25. I am proud to tell others that I am part of this organization.
- 26. I could just as well be working for a different organization as long as the type of work was similar.
- 27. This organization really inspires the very best in me in the way of job performance.
- 28. It would take very little change in my present circumstances to cause me to leave this organization.
- 29. I am extremely glad that I chose this organization to work for over others I was considering at the time I joined.
- 30. There's not too much to be gained by sticking with this organization indefinitely.
- 31. Often, I find it difficult to agree with this organization's policies on important matters relating to its employees.
- 32. I really care about the fate of this organization.
- 33. For me this is the best of all possible organizations for which to work.
- 34. Deciding to work for this organization was a definite mistake on my part.

JOB INFORMATION

Use the following rating scale for the 15 statements to express your own feelings about your present job or work.

1. Means you strongly disagree with the statement
 2. Means you moderately disagree with the statement
 3. Means you slightly disagree with the statement
 4. Means you neither disagree nor agree with the statement.
 5. Means you slightly agree with the statement.
 6. Means you moderately agree with the statement.
 7. Means you strongly agree with the statement.
-
35. I often have to use the skills I have learned for my job.
 36. I often have a chance to try out my own ideas.
 37. I often have a chance to do things my own way.
 38. I often have a chance to do the kinds of things that I am best at.
 39. I often feel at the end of the day that I've accomplished something.
 40. The most important things that happen to me involve my work.
 41. The most important things I do involve my work.
 42. The major satisfaction in my life comes from my job.
 43. The activities which give me the greatest pleasure and personal satisfaction involve my job.
 44. I live, eat, and breathe my job.
 45. I would rather get a job promotion than be a more important member of my club, church, or lodge.
 46. How well I perform on my job is extremely important to me.
 47. I feel badly if I don't perform well on my job.
 48. I am very personally involved in my work.
 49. I avoid taking on extra duties and responsibilities.

WORK ROLE ATTITUDES

This section of the questionnaire contains a number of statements that relate to feelings about your work group, the demands of your job, and the supervision you receive. Use the following rating scale to indicate the extent to which you agree or disagree with the statements shown below.

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

- 50. Within my work-group the people most affected by decisions frequently participate in making the decisions.
- 51. In my work-group there is a great deal of opportunity to be involved in resolving problems which affect the group.
- 52. I am allowed to participate in decisions regarding my job.
- 53. I am allowed a significant degree of influence in decisions regarding my work.
- 54. My supervisor usually asks for my opinions and thoughts in decisions affecting my work.
- 55. My job (e.g., the type of work, amount of responsibility, etc.) causes me a great deal of personal stress and anxiety.
- 56. Relations with the people I work with (e.g., co-workers, supervisor, subordinates) cause me a great deal of stress and anxiety.
- 57. General aspects of the organization I work for (e.g., policies and procedures, general working conditions) tend to cause me a great deal of stress and anxiety.
- 58. Most people are not always straightforward and honest when their own interests are involved.
- 59. In these competitive times one has to be alert or someone is likely to take advantage of you.
- 60. It is safe to believe that in spite of what people say, most people are primarily interested in their own welfare.
- 61. There is a high spirit of teamwork among my co-workers.
- 62. Members of my work group take a personal interest in one another.

63. If I had a chance to do the same kind of work for the same pay in another work group, I would still stay here in this work group.
64. My immediate supervisor makes an effort to help people in the work group with their personal problems.
65. My immediate supervisor insists that members of our work group follow to the letter all policies and procedures handed down to him.
66. My immediate supervisor seeks the advice of our work group on important matters before going ahead.
67. My immediate supervisor pushes the people under him (or her) to insure they are working up to capacity.
68. My organization provides all the necessary information for me to do my job effectively.
69. My work group is usually aware of important events and situations.
70. The people I work with make my job easier by sharing their ideas and opinions with me.
71. People in my work group are never afraid to speak their minds about issues and problems that affect them.

WORK GOALS

The following statements deal with your perceptions of the nature of goals and objectives that guide your work. Use the rating scale given below to indicate the extent to which your work goals have the characteristics described.

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

- 72. I know exactly what is expected of me in performing my job.
- 73. I understand clearly what my supervisor expects me to accomplish on the job.
- 74. What I am expected to do at work is clear and unambiguous.
- 75. I understand the priorities associated with what I am expected accomplish on the job.
- 76. It takes a high degree of skill on my part to attain the results expected for my work.
- 77. Results expected in my job are very difficult to achieve.
- 78. It takes a lot of effort on my part to attain the results expected for my work.
- 79. I must work hard to accomplish what is expected of me for my work.
- 80. I must exert a significant amount of effort to attain the results expected of me in my job.

Your first answer sheet should now be completely filled. If it is not completely filled, go back and check the sequencing of your answers. You may have skipped an item. Use the second answer sheet (the survey control number ends in "2") to respond to the remaining items in the questionnaire (those in Part II).

PART II

WORK GOALS (continued)

1. Means you strongly disagree with the statement
 2. Means you moderately disagree with the statement
 3. Means you slightly disagree with the statement
 4. Means you neither disagree nor agree with the statement.
 5. Means you slightly agree with the statement.
 6. Means you moderately agree with the statement.
 7. Means you strongly agree with the statement.
-
1. The amount of work I am expected to accomplish on the job is realistic.
 2. The results I am expected to attain in my work are realistic.
 3. What my supervisor expects me to accomplish on my job is not impossible.
 4. I find that the results that I am expected to attain in my work are achievable.

JOB CHARACTERISTICS

This part of the questionnaire asks you to describe your job, as objectively as you can.

Please do NOT use this part of the questionnaire to show how much you like or dislike your job. Questions about that will come later. Instead, try to make your descriptions as accurate and as objective as you possibly can.

A sample question is given below:

- A. To what extent does your job require you to work with mechanical equipment?

1-----	2-----	3-----	4-----	5-----	6-----	7
Very little; the job requires almost no contact with mechanical equipment of any kind.			Moderately			Very much; the job requires almost constant work with mechanical equipment.

Indicate on the answer sheet the number which is the most accurate description of your job. If, for example, your job requires you to work with mechanical equipment a good deal of the time, but also requires some paperwork, you might choose the number six, so you would blacken "6" in on the answered sheet.

If you do not understand these instructions, please ask for assistance. If you do understand them, turn the page and begin.

PLACE ALL ANSWERS ON ANSWER SHEET!

5. How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own 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.

6. To what extent does your job involve doing a "whole" and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part 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.

7. How much variety 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.

8. In general, how significant or important is your job? That is, are the results of your 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 not 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

Listed below are a number of statements which could be used to describe a job. You are to indicate whether each statement is an accurate or an inaccurate description of your 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.

How accurate is the statement in describing your job?

1	2	3	4	5	6	7
Very	Mostly	Slightly	Uncertain	Slightly	Mostly	Very
Inaccurate	Inaccurate	Inaccurate		Accurate	Accurate	Accurate

9. The job requires me to use a number of complex or high-level skills.
10. The job is arranged so that I do not have the chance to do an entire piece of work from beginning to end.
11. The job is quite simple and repetitive.
12. This job is one where a lot of other people can be affected by how well the work gets done.
13. The job denies me any chance to use my personal initiative or judgment in carrying out the work.
14. The job provides me the chance to completely finish the pieces of work I begin.
15. The job gives me considerable opportunity for independence and freedom in how I do the work.
16. 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

- 17. To what extent do you find out how well you are doing on the job as you are working?
- 18. 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.

- 19. The feedback from my supervisor on how well I am doing.
- 20. The opportunity to find out how well I am doing in my job.
- 21. The feeling that I know whether I am performing my job well or poorly.

TASK PREFERENCES

Below are listed ten statements that describe various things people do or try to do on their jobs. We would like to know which of the statements you feel most accurately describe your own behavior when you are at work. Please use the following scale to indicate the word (or phrase) which best describes your own actions. Remember, there are no right or wrong answers. Please answer all questions frankly.

- 1 = Never
- 2 = Almost never
- 3 = Seldom
- 4 = Sometimes
- 5 = Usually
- 6 = Almost always
- 7 = Always

- 22. I do my best work when my job assignments are fairly difficult.
- 23. I try very hard to improve on my past performance at work.
- 24. I take moderate risks and stick my neck out to get ahead at work.
- 25. I try to avoid any added responsibilities on my job.

26. I try to perform better than my co-workers.
27. When I have a choice, I try to work in a group instead of by myself.
28. I pay a good deal of attention to the feelings of others at work.
29. I prefer to do my own work and let others do theirs.
30. I express my disagreements with others openly.
31. I find myself talking to others around me about non-business related matters.

TASK DEMANDS

This section of the questionnaire contains a number of statements about your job. Use the following rating scale to indicate the extent to which you agree or disagree with the statements shown below.

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

- 32. The job offers me a chance to test myself and my abilities.
- 33. Doing this job well is a reward in itself.
- 34. If the work were only more interesting I would be motivated to perform better.
- 35. Mastering the job meant a lot to me.
- 36. My talents, or where I can concentrate my attention best, are found in areas not related to this job.
- 37. This job is valuable to me for no other reason than I like to do it.
- 38. At times I can get so involved in my work that I forget what time it is.
- 39. Even though the work here could be rewarding, I am frustrated and find motivation continuing only because of my paycheck.
- 40. I honestly believe I have all the skills necessary to perform this task well.
- 41. I would make a fine model for an apprentice to follow in order to learn the skills he/she would need to succeed.
- 42. No one knows this job better than I do.
- 43. If anyone here can find the answer, I'm the one.
- 44. I do not know as much as my predecessor did concerning this job.

SITUATIONAL ATTRIBUTES

These items deal with various attributes and characteristics of your job situation.

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

- 45. My supervisor knows his/her workers very well; that is, he/she can pinpoint personalities and thereby decides who works well with whom.
- 46. There is a great deal of support and unselfishness in our work group.
- 47. Members of our work group are treated equally in terms of their worth to the workgroup.

GOAL AGREEMENT

- 1 = Not at all
- 2 = To a very little extent
- 3 = To a little extent
- 4 = To a moderate extent
- 5 = To a fairly large extent
- 6 = To a great extent
- 7 = To a very great extent

- 48. To what extent are your organization's goals compatible with your own personal goals?

SELF PERCEIVED ABILITY

- 1 = Much less ability than others
- 2 = Less ability than others
- 3 = Typical or average ability
- 4 = More ability than others
- 5 = Much more ability than others

- 49. Compared to others whose job is similar to yours how would you rate your ability to perform the work?

PERFORMANCE OBSTACLES AND CONSTRAINTS

Instructions: The next four items represent obstacles and constraints that you may encounter in your work which inhibit good performance. For example, one salesperson might exceed the performance of another simply because he or she was lucky enough to get a lucrative territory. For the unlucky salesperson, the less desirable territory is an "obstacle" for him or her to overcome. Performance obstacles are often factors "beyond one's control" that inhibit(or enhance) maximum job performance. Use the rating scale immediately below to show how often a given type of obstacle poses a problem for you.

- 7 = Always
- 6 = Very often
- 5 = Often
- 4 = Sometimes
- 3 = Rarely
- 2 = Very rarely
- 1 = Never

- 50. Job Induced Constraints - [Definition: Factors in the make-up of the job itself (e.g., assembly line paced work) that determine levels of performance].
- 51. Interpersonal or Social Obstacles - [Definition: Represents the quality of interpersonal relationships (e.g., communication climate, cooperation) among individuals who interact with you in the course of your work].
- 52. Environmental Obstacles - [Definition - Factors in the physical job environment (e.g., excessive noise or heat) and in the geographical locale of the work (e.g., sales potential) that affect your job performance].
- 53. Administrative or Policy Constraints - [Definition: Rules, regulations, and requirements imposed upon you by the organization or by governmental agencies that impede your job performance].

Use the same rating scale to show how often the constraints cause frustration for you.

- 54. How often are constraints a source of frustration for you?

The remaining three items are used for administrative purposes. They indicate the type of survey (first, second, etc.) and the sponsoring organization involved.

- 55. Please fill in response choice Number "1" for this item.
- 56. Please fill in response choice Number "2" for this item.
- 57. Please fill in response choice Number " " for this item.

THANK YOU FOR YOUR COOPERATION

Appendix B: Definitions of Survey Variables

Personal Characteristics.

- A. Need for Achievement - This is defined as behavior toward competition with a standard.
- B. Need for Affiliation - This represents a attraction to another organism in order to feel reassured from the other that the self is acceptable.
- C. Sense of Competence - This refers to the ability to cope with one's environment and get what he/she wants from it.
- D. Perceived Ability - The ability to meet job demands and requirements.

Task and Role Variables.

- A. Skill 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 different skills and talents of the person.
- B. 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.
- C. 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).
- D. 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.
- 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.

- F. Goal Clarity - The extent to which work goals and priorities are perceived as clear, unambiguous, and specific.
- G. Goal Difficulty - Indicates the degree to which work goals are viewed as difficult, challenging, and demanding.
- H. Goal Realism - Reflects the extent to which work goals are perceived as realistic and attainable.

Theory Z Variables

- A. Goal Congruency - Perceived agreement between personal ends and organizational goals.
- B. Supervisory Subtlety - Supervisor's knowledge of capabilities of employees and his/her ability to mesh workers together.
- C. Intragroup Support - Support provided to a group member by his/her comembers.
- D. Egalitarianism - Equal and ununbiased treatment of all work group members by the supervisor.
- E. Interpersonal Trust - The degree to which an individual perceives his people in general as trustworthy and reliable.

Group Dynamics.

- A. Group Cohesiveness - Indicates the degree to which the immediate work group is viewed as a cohesive unit working in a cooperative manner.
- B. Participation in Decision Making - The degree to which employees perceive an opportunity to actively participate in making decisions which affect the work or the immediate work group.
- C. Communication Climate - The degree to which the employee perceives that there is an ample flow of information within the organization: e.g., ideas are readily accepted by management, information to do an effective job is provided, the employees are kept advised of important events and complaints are aired satisfactorily.

- D. Relationship-oriented Supervision - The degree to which workers see their supervisor are warm, considerate, responsive, etc.
- E. Task-oriented Supervision - The extent to which the supervisor is perceived as assigning work roles, pressing for production, emphasizing deadlines, etc.

Work Attitudes.

- 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.
- B. Organizational Commitment - The relative strength of an individual's identification with and involvement in a particular organization.
- C. Job Involvement (Factor 1) - Reflects the degree to which an employee's opportunity to actively perform the job provides the necessary preconditions to the development of a sense of involvement in one's job.
- D. Job Involvement (Factor 2) - Reflects the degree to which an employee actually feels a direct personal involvement in the work he/she performs.
- E. Job Involvement (Factor 3) - Reflects the extent to which outcomes of the work in terms of job performance accomplishments are consistent with job involved motivation.
- F. Impersonalness of Institutions - The degree to which the employing organization is viewed as mechanistic, uncaring, and impersonal.

Work Outcomes.

- A. Work Stress - Employee perceptions regarding the degree of stress experienced as a result of performing the job, dealing with the work group, or operating in the organizational environment.
- B. Self-rated Effort - The degree to which effort is expended in performing one's job.

- C. Self-rated Job Performance - An appraisal of the employee's job performance from his/her vantage point which is based upon feedback received from the immediate supervisor covering the areas of productivity, work quality, efficiency, problem solving, and adaptability/flexibility.
- D. Intent to Remain - The degree to which an employee plans to continue membership in his/her present organization.

Appendix C: Key to Survey Variables

<u>Variable</u>	<u>Construct Measured</u>	<u>Items from Survey</u>
JSAT	Job Satisfaction	8-12 (pg. 41)
BOSDO	Self-Appraised Job	
	Performance	13-17 (pg. 42)
ORGCOM	Organizational	
	Commitment	20-34 (pg. 43-44)
JIX	Job Involvement	
	(Factor I)	35-39 (pg. 45)
JIY	Job Involvement	
	(Factor II)	40-44 (pg. 45)
JIX	Job Involvement	
	(Factor III)	46-48 (pg. 45)
PART	Participation in	
	Decision Making	50-54 (pg. 46)
STRES	Job and Organizational	
	Stress	55-57 (pg. 46)
TRUST	Interpersonal Trust	58-60 (pg. 46)
TEAM	Group Cohesiveness	61-63 (pg. 46-47)
SUPC	Relationship-Oriented	
	Supervision	64, 66 (pg. 47)
SUPS	Task-Oriented	
	Supervision	65, 67 (pg. 47)
COMM	Organizational Com-	
	munication Climate	68-71 (pg. 47)
GOALC	Goal Clarity	72-75 (pg. 48)
GOALD	Goal Difficulty	76-80 (pg. 48)
GOALR	Goal Realism	1-4 (pg. 49)
SIGNIF	Task Significance	
	(Significance of job	
	for others)	8, 12, 16 (pg. 52)
AUTO	Task Autonomy	
	(Making decisions and	
	working alone)	5, 13, 15, (pg. 51-52)
VARY	Task Variety	
	(Skill variety used	
	in the job)	7, 9, 11 (pg. 51-52)
IDENT	Task Identity	
	(Doing a whole job)	6, 10, 14 (pg. 51-52)
FEED	Job Feedback	17-21 (pg. 53)
NACH	Need for Achievement	
	(Motive to strive for	
	success)	22-26 (pg. 53-54)
NAFF	Need for Affiliation	27-31 (pg. 54)
COMP	Sense of Competence	
	(Feelings of com-	
	petency over work)	32-44 (pg. 55)

NICE	Impersonalness of Institutions (Perceptions of or- ganizational imper- sonalness)	50-54 (pg. 57)
EFFORT	Self-Reported Effort	18 (pg. 43)
QUIT 1	Intentions to Quit	19 (pg. 43)
SUBTLE	Supervisory Subtlety (From Ouchi's Theory Z)	45 (pg. 56)
SUPPORT	Work Support (From Ouchi's Theory Z)	46 (pg. 56)
EGAL	Egalitarianism (From Ouchi's Theory Z)	47 (pg. 56)
GLCON	Goal Congruency (Organizational and personal goal con- gruency)	48 (pg. 56)
ABLE	Perceived Ability (Ability to do the work)	49 (pg. 56)
AGE	Age of Respondents	1 (pg. 39)
SCHOOL	Educational Level	2 (pg. 39)
TENURE	Length of Service	4 (pg. 39)
BOSS	Number of Employees Supervised	5 (pg. 40)

APPENDIX D: Correlation Matrix

	JSAT	STRES	VARY	AUTO	NACH	ABLE	EFFORT	BOSDO
JSAT	1							
STRES	.359	1						
VARY	.358	.077	1					
AUTO	.431	.242	.394	1				
NACH	.212	-.017	.196	.228	1			
ABLE	.027	-.064	.028	.138	.282	1		
EFFORT	.174	-.059	.166	.141	.404	.199	1	
BOSDO	.219	.033	.160	.248	.389	.271	.275	1
SUPC	.397	.180	.196	.366	.110	.061	.104	.259
SUPS	.092	-.071	.042	-.008	.082	.088	.072	.080
TEAM	.506	.263	.265	.364	.098	.008	.133	.114
NAFF	.211	.066	.058	.053	.160	.008	.061	.027
COMM	.519	.280	.167	.320	.157	.032	.132	.174
PART	.462	.200	.293	.549	.212	.103	.169	.259
GOALC	.153	.266	.144	.401	.178	.094	.132	.281
GOALD	.195	-.171	.447	.179	.204	.123	.250	.154
AGE	.080	.057	.170	.256	.147	.187	.096	.169
TENURE	.021	-.076	.062	.149	.033	.085	-.032	.133
	SUPC	SUPS	TEAM	NAFF	COMM	PART	GOALC	GOALD
SUPC	1							
SUPS	.176	1						
TEAM	.458	.164	1					
NAFF	.079	-.026	.185	1				
COMM	.474	.226	.602	.138	1			
PART	.605	.089	.500	.118	.495	1		
GOALC	.423	.124	.408	.103	.505	.485	1	
GOALD	.208	.196	.213	.009	.160	.252	.191	1
AGE	.064	.102	.085	-.060	.038	.128	.035	.113
TENURE	-.017	.031	.031	-.010	.023	.064	.047	.068
	AGE	TENURE						
AGE	1							
TENURE	.397	1						

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Captain James H. Thalmann was born on 15 August 1957 in Woburn, Massachusetts. He graduated from Palo Verde High School (Tucson, Arizona) in 1975 and attended the University of Arizona from 1975-1977 as an undergraduate engineering student. He then accepted an appointment to the United States Air Force Academy, graduating with a Bachelor of Science degree in Operations Research on May 27, 1981. His first assignment took him north to Eielson AFB, Alaska where he performed duties at Det 1, 5000 Contracting Squadron as Chief of the Services, Construction, and Contract Administration Branch as well as Chief of the Systems Management Branch. In 1984, Captain Thalmann assumed duties as Chief, Supplies Contracting Division, Headquarters Space Command/LKLC at Peterson AFB in Colorado Springs, Colorado, until entering the school of Systems and Logistics, Air Force Institute of Technology, in June 1986.

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Two empirical models were developed using stepwise multiple regression techniques to identify significant factors contributing to job satisfaction. A cursory literature review formed the basis for the hypothetical model I, which resulted in the explanation of 49.4 percent of variation in job satisfaction. All variables in the existing data set (formulated using the AFIT Survey of Work Attitudes) were then regressed against job satisfaction with a resulting R-square of .587. Difference in results were attributed to the lack of current comprehensive literature on job satisfaction and the lack of measurement in the survey instrument of items intuitively related to job satisfaction such as pay and promotion. Assumptions that relevant factors contributing to job satisfaction must have been identified in the past few decades were obviously left in question. Future research was suggested in the area of meta-analysis using job satisfaction as a criterion rather than in its traditional role as a predictor variable.

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