

PERSON-ENVIRONMENT FIT ON THE DIMENSION OF
CREATIVITY: RELATIONSHIPS WITH STRAIN,
JOB SATISFACTION AND PERFORMANCE

By

LINDA PARRACK LIVINGSTONE

Bachelor of Science in Business Administration
Oklahoma State University
Stillwater, Oklahoma
1982

Master of Business Administration
Oklahoma State University
Stillwater, Oklahoma
1983

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
DOCTOR OF PHILOSOPHY
May, 1992

Thesis
1992
L788p

PERSON-ENVIRONMENT FIT ON THE DIMENSION OF
CREATIVITY: RELATIONSHIPS WITH STRAIN,
JOB SATISFACTION AND PERFORMANCE

Thesis Approved:

Debra F. Nelson

Thesis Advisor

Steve H. Barr

Margaret A. White

Robert J. Weber

Thomas C. Collins

Dean of the Graduate College

ACKNOWLEDGEMENTS

I would like to express my deepest appreciation to Debra Nelson, Margaret White, Steve Barr and Bob Weber for their willingness to serve on my graduate committee. Their wisdom, insight and experience was invaluable to this project. Special thanks go to Debra Nelson who served as chair of my committee. Her unique ability to provide guidance and encouragement was always a source of reassurance when times were difficult. I hope I can be the type of mentor to my students that Debra was to me.

I also received valuable assistance from my new colleagues at Baylor University. Sam Seaman, Dean Young, Dovalee Dorsett and Robert Spurlin were more than willing to share their statistical and computer expertise. Duane Ireland has also been a source of support for me as a friend and department chair. Thanks for believing in me and supporting my efforts.

I am indebted to my parents, Doyle and Charlotte Parrack. Throughout my life they have loved me and supported me in whatever I attempted. They taught me that I could accomplish anything if I set my mind to it. Thanks for your constant love and for believing in me.

To my best friend and husband, Brad, I dedicate this paper. You helped me maintain my sanity by encouraging me to enjoy myself and by teaching me not to take life too seriously. Thanks for always being there to listen and help. I could never have done it without you.

TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION	1
The Research Problem	1
Implications for Theory	3
Implications for Practice	4
Dissertation Objectives	5
Overview of the Literature	6
Interactional Psychology	6
Person-Environment Fit Model of Stress	9
Componential Model of Organizational Innovation	10
Model of Creative Fit	11
Summary	12
II. LITERATURE REVIEW	13
Person-Environment Fit Theory of Stress	14
Stress	14
Strain	15
Components of P-E Fit Model	16
Objective Environment	16
Subjective Environment	16
Objective Person	17
Subjective Person	17
Objective Person-Environment Fit	17
Subjective Person-Environment Fit	18
Relationship Between P-E Fit and Stress	18
Relationship Between P-E Fit and Strain	19
Measuring Person-Environment Fit	21
Research on the P-E Fit Model of Stress	22
Limitations of Person-Environment Fit Theory	26
Theoretical Issues	26
P-E Fit Version	27
P-E Fit Form	27
Selection of P and E Characteristics	28
Problems in Operationalizing and Measuring the Constructs	29
Objective Versus Subjective Assessment	29
Use of Commensurate Units	30
Framing or Reference Criteria	30
Selecting Response Units	31
Number of Fit Dimensions	32

Chapter	Page
Problems With the Calculation of P-E Fit Scores	32
Creativity	34
Creativity Definition	34
Personal Elements in Creativity	36
Individual Cognitive Processes	37
Individual Differences	40
Creativity and the Environment	42
Componential Model of Organizational Innovation	45
Model of Individual Creativity	46
Factors Influencing Individual Creativity	46
Stages in the Individual Creative Process	48
Model of Organizational Innovation	49
Factors Influencing Organization Innovation	49
Stages in the Organizational Innovation Process	50
Intersection of Individual and Organizational Components	51
Strengths and Limitations of the Model	52
Model Strengths	52
Model Limitations	52
Model of Creative Fit	53
Environment Factors	53
Person Factors	54
Person-Environment Fit/Job Stress	54
Outcomes	55
Strain	55
Job Satisfaction	56
Performance	56
Addressing Limitations of the P-E Fit and Componential Models	56
P-E Fit Limitations Addressed	57
Componential Model Limitations Addressed	59
Hypotheses and Research Questions	60
Hypothesis 1	61
Hypothesis 2	62
Hypothesis 3	63
Research Question	65
Summary	66
III. METHOD	67
The Research Setting	67
The Sample	67
Operationalizations of the Constructs	68
Independent Variables	68
Subjective Values	68
Objective Values	71
Subjective Abilities	72

Chapter	Page
Objective Abilities	74
Subjective Supplies	74
Objective Supplies	74
Subjective Demands	76
Objective Demands	76
Dependent Variables	77
Strain	77
Job Satisfaction	77
Performance	78
Pilot Study	79
Data Collection Procedures	81
Data Analysis Techniques	83
Data Analysis Plan	83
Multivariate P-E Fit	84
Overcoming Deficiencies in Difference Scores	87
Power Analysis	88
IV. RESULTS	89
Preliminary Data Analysis	89
Relationships Between Person-Environment Fit and Strain	98
Relationships Between Person-Environment Fit and Job Satisfaction	99
Relationships Between Person-Environment Fit and Performance	103
Relationships Between Subjective and Objective Measures and Outcome Variables	105
V. CONCLUSIONS AND IMPLICATIONS	110
Discussion and Conclusions	110
Contributions to Management Practice	119
Organization Level Guidelines	119
Individual Level Guidelines	121
Study Limitations and Directions for Future Research	123
ENDNOTES	129
BIBLIOGRAPHY	130
APPENDIXES	150
APPENDIX A - HUMAN SUBJECTS CERTIFICATION	151
APPENDIX B - SURVEY QUESTIONS BY SCALE	153
APPENDIX C - PRETEST SURVEY AND CODING SHEET	159
APPENDIX D - EMPLOYEE SURVEY AND CODING SHEET	165

APPENDIX E - SUPERVISOR SURVEYS AND CODING SHEET 174
APPENDIX F - EXPERT SURVEY AND CODING SHEET 182
APPENDIX G - TABLES 186
APPENDIX H - FIGURES 217

LIST OF TABLES

Table	Page
I. Pilot Study Factor Analysis Summary: Supply Variables . .	187
II. Pilot Study Factor Analysis Summary: Value Variables . .	189
III. Pilot Study Factor Analysis Summary: Demand Variables . .	191
IV. Pilot Study Factor Analysis Summary: Ability Variables .	192
V. Pilot Study Reliabilities and Summary Statistics	193
VI. Pattern of Coefficients for Relationships Between P-E Fit and Outcomes	194
VII. Factor Analysis Summary: Subjective Supplies, Subjective Values and Objective Values	195
VIII. Factor Analysis Summary: Subjective Demands, Subjective Abilities and Objective Abilities	197
IX. Means, Standard Deviations and Coefficient Alphas for Study Variables	198
X. Pearson Product-Moment Correlations for Study Variables .	199
XI. Factor Analysis Summary: Objective Supplies	204
XII. Factor Analysis Summary: Objective Demands	205
XIII. T-Tests Between the Manufacturing and Support Services Areas for Objective Supplies and Objective Demands . . .	206
XIV. Simple Regression Analysis and Type Three Sums of Squares	207
XV. Results of Hierarchical Regression Analysis	210
XVI. Correlations and Paired Comparisons Between Objective and Subjective Measures	213
XVII. Results of Forward Stepwise Regression Comparing Objective and Subjective Measures	214

LIST OF FIGURES

Figure	Page
1. Model of Creative Fit	218
2. Person-Environment Fit Model of Stress	219
3. Measurement Dimensions	220
4. Hypothetical Shapes of P-E Fit	221
5. Influences on Creativity	222
6. Model of Organizational Innovation	223
7. Summary of Measures: Person and Environment Components . . .	224
8. Summary of Measures: Dependent Variables	225
9. Intrinsic Motivation Demand-Ability Fit and Strain	226
10. Innovativeness Demand-Ability Fit and Strain	227
11. Supply-Value Fit and General Job Satisfaction	228
12. Supply-Value Fit and Satisfaction With Promotion	229
13. Innovativeness Demand-Ability Fit and General Job Satisfaction	230
14. Innovativeness Demand-Ability Fit and Satisfaction With Promotion	231
15. Innovativeness Demand-Ability Fit and Satisfaction With Supervisor	232
16. Innovativeness Demand-Ability Fit and Satisfaction With Pay .	233
17. Innovativeness Demand-Ability Fit and Satisfaction With Coworkers	234
18. Supply-Value Fit and Creative Performance	235

CHAPTER I

INTRODUCTION

This chapter outlines a dissertation that integrated the creativity and person-environment fit literatures into a new theoretical framework. The framework provides needed insight into the role of creativity in employee well-being and effectiveness. From this integration, a model was developed that will facilitate the examination of the relationship between individual and organizational "fit" along the dimension of creativity and the outcomes of strain, job satisfaction, and performance. This introductory chapter will begin with a summary of the research problem. Theoretical and practical implications of the project will then be described. Following an outline of the dissertation objectives, the theoretical background for the dissertation will be presented and the new model introduced.

The Research Problem

Modern organizations face a wide variety of problems. One of these problems is that organizations must learn to deal with the many social and technological changes that require creative and innovative responses (West & Farr, 1990). As Gareth Morgan said in his book Riding the Waves of Change,

We live in times of change. And the complexity of this change is as likely to increase as to decrease in the years ahead.

Numerous technological, social, and information revolutions are combining to create a degree of flux that often challenges the fundamental assumptions on which organizations and their managers have learned to operate. Managers of the future will have to ride this turbulence with increasing skill, and many important competencies will be required. (Morgan, 1988, p. 1)

One of the competencies outlined by Morgan to deal with change is the need to promote creativity. Other writers have pointed out that American government and industry may be becoming too inflexible and too risk averse. To garner the benefits of economic growth it will be necessary to manage creatively and innovatively (Kozmetsky, 1988). Creativity is one resource that will help organizations gain a competitive advantage (Albrecht & Albrecht, 1987).

A second problem facing organizations is that they must manage and encourage creativity and innovation without detriment to individual well-being and effectiveness (West & Farr, 1990). The cost of dysfunctions associated with role-based job stress are estimated at between seventy-five and ninety billion dollars annually (Kemery, Mossholder, & Bedeian, 1987). Not only is stress at work critical in terms of employee health and well-being, but it is also related to productivity, employee satisfaction, and performance (Ganster, Mayes, Sime & Tharp, 1982; Quick & Quick, 1984). According to Bhagat, McQuaid, Lindholm and Segovis (1985), employees are averse to high levels of job stress; therefore, they will try to avoid it either psychologically or physically. High levels of work stress have been demonstrated to be associated with lower job satisfaction, reduced productivity, increased physical illness, and increased psychological impairments such as depression, sleep disturbances, and anxiety (Cooper & Marshall, 1976; French & Caplan, 1972; Margolis, Kroas, & Quinn, 1974).

One factor of importance in organizations' attempts to manage these two problems is an understanding of the "fit" (i.e., congruence between person and environment components) between individual's creative preferences and abilities and creative characteristics and demands of the environment. In a study of members of the British Institute of Management, when managers' work preferences for creativity were compared with opportunities from the environment to "fit" those preferences, a misfit discouraged creativity and created a stressful situation (Nicholson & West, 1988).

Interestingly, there has been a lack of theory to guide the examination of the association between person-environment fit (along the dimension of creativity) and individual outcomes. Interactional psychology models that examine the interactions between personal characteristics and situational characteristics have been developed to explain the relationship between individual and environmental influences on creative behavior and on individual stress in organizations; yet no single model has integrated these two concepts. The purpose of this dissertation is to develop and test a model integrating the literature on creativity and the person-environment fit literature. This endeavor has important theoretical and practical implications for the relationship between creativity and employee well-being and effectiveness.

Implications for Theory

Development of a model integrating the work from person-environment fit and creativity has important theoretical implications. A number of studies have examined the impact of strain on creativity and

found that high levels of strain had a negative affect on creative performance (Belcher, 1975; Fleisher, 1964; Hadley, 1967; Martindale & Greenough, 1973; Suedfeld & Vernon, 1965). However, theory and research have not addressed the relationship between creative fit and strain or more specifically, the influence of the "fit" between the creative climate of the organization and the creativity of the individual on the outcomes of strain, performance and job satisfaction. The model developed for this study is a framework for examining the relationship between creative "fit" and these outcomes.

A study will be conducted to empirically test the hypotheses derived from the model in order to clarify the relationship between creative "fit" and strain, job satisfaction, and performance. In addition, the study will rectify some of the methodological problems with past creativity and person-environment fit studies.

Implications for Practice

In addition to the theoretical importance of this study, there are also a number of practical benefits that can be derived. A clearer understanding of the individual and organizational components of creativity and how they interact will give insight into how to encourage creative behaviors. Enhanced creativity is important because of the role creativity plays in economic growth; advances in knowledge in education, medicine, science, and psychology; and bringing about institutional change that can deal with problems of societal inequality (Farr & West, 1990). According to Zaltman, Duncan, and Holbek (1973) "the importance of new ideas cannot be overstated. Ideas and their manifestations as practices or products are at the core of social

change." Thus, there is an important social implication for the study's results.

Knowledge about the role of creative "fit" in the outcomes of strain, performance and job satisfaction has important implications for organizations as well. Results of this study can help in the development of guidelines for organizational selection and job design practices that will improve employee well-being and reduce strain through improved person-environment fit.

Selection guidelines can improve P-E fit by providing information on how best to match the person's creative abilities to the job requirements as well as how best to match an individual's creative needs with a job that meets those needs. A study of person-environment fit also has implications for job design because P-E fit can be improved by changing the environment to fit the person. If a "misfit" occurs between components of the individual's creativity and the creative components of their environment, it may be necessary to redesign components of the environment to improve "fit". The current research can help provide guidelines for job redesign that improve "fit".

Dissertation Objectives

This study will examine creativity within the framework of a person-environment fit model. The new model derived from the theoretical integration will address the relationship between individual and organizational "fit" regarding creativity and the outcome variables of individual strain, job satisfaction, and performance. Specific objectives include determining if the "fit" between components of the creative climate and components of individual creativity is related to

individual strain, job satisfaction and performance, determining which version of fit (supply-value or demand-ability) is most important in explaining outcomes, and determining the relative importance of subjective versus objective "fit" of creative components in explaining strain, job satisfaction and performance.

Overview of the Literature

The model developed for this project has its theoretical roots in the interactional psychology literature. More specifically, it uses a person-environment fit paradigm in a domain setting of creativity. In this section, each of these three literatures will be briefly reviewed in order to provide a framework for the Model of Creative Fit to be outlined subsequently. Detailed analysis of the component models and the newly developed model will be presented in the next chapter.

Interactional Psychology

"Interactional psychology is an approach to the study and explanation of behavior that emphasizes a continuous and multidirectional interaction between person characteristics and situation characteristics" (Terborg, 1981, p. 569). The interactional approach to studying human behavior has a long history. Lewin (1936) stated, "Every scientific psychology must take into account whole situations, i.e., the state of both person and environment" (p.12). Murray (1938) also stressed the need to examine behavior as an outcome of the relationship between the person and the environment.

Recent approaches to interactional psychology were summarized by Terborg (1981). Terborg indicated that individual and situational factors have continuous and multidirectional influences on each other and must both be considered in theories of behavior. As part of the interactional viewpoint, the person is seen as fitting into and interacting with the environment rather than acting independently of the environment. In other words, the person can influence the environment and the environment can influence the person (Davis-Blake & Pfeffer, 1989; Mitchell & James, 1989).

This approach, commonly referred to as person-environment fit, has been utilized in a wide variety of theories over the years. "Fit" theories have been developed to study careers (Holland, 1985; Super, 1957), job characteristics theory (Hackman & Oldham, 1980; Kulik, Oldham & Hackman, 1987), organizational climate (Joyce & Slocum, 1984), work adjustment (Lofquist & Davis, 1969), personnel selection (Schneider, 1978; Smith & Robertson, 1989), and organizational design (Nadler & Tushman, 1988). Researchers on stress and creativity have also emphasized the need to develop an approach that takes an interactional perspective (Amabile, 1988; Endler & Edwards, 1982; Mumford & Gustafson, 1988; Staw, 1984).

Several researchers indicate that individual characteristics related to stress cannot be understood without also examining the work environment in which the behavior occurs (Kahn, Hein, House, Kasl, & McLean, 1982; Magnusson, 1982; Staw, 1984). Of particular interest in the study of stress is the "fit" between characteristics of the person and characteristics of the environment. It was suggested that the ability of environmental stressors to predict strain is improved when

goodness of fit with individual characteristics is considered (Kahn et al., 1982) and that strain is reduced when there is a good fit between the individual and his/her environment (Caplan, Cobb, French, Harrison, & Pinneau, 1980). The study of stress from an interactional, person-environment fit perspective provides a better understanding of the contribution of individual and organizational factors to strain as well as the contribution to strain that occurs due to the interaction between those components.

Similar concerns about the need to integrate individual and organizational components have been expressed in regard to the study of creativity. According to Amabile (1983a), research is needed on the interaction of environmental factors, personality characteristics, and cognitive ability in explaining creativity. Staw (1984) also expressed the need for theory and research to examine how individual, group, and organizational level factors interact to influence creativity. Further, it has been suggested that the ability to translate creative ideas into action requires an understanding of both individual and situational attributes (Mumford & Gustafson, 1988).

"Fit" between the individual and the environment has been mentioned as an important component of creativity. The Center for Creative Leadership proposed that organizations can improve their employees' creativity by shaping a work climate that increases the employee's intrinsic motivation to engage in a task (Burnside, 1990). Research indicated that a match between characteristics of the individual and characteristics of the work environments are factors necessary in promoting creativity (Amabile, 1983a) and that individuals who are encouraged to be creative at work have higher levels of job

satisfaction and are more satisfied and more fulfilled than individuals with fewer opportunities for creativity (Broadbent, 1987; Nicholson & West, 1988). Studying creativity within a person-environment framework allows the examination of the relative contribution of the organizational context (situation) and the person to the prediction of individual performance, attitudes, and well-being. Interactional models developed in the stress and creativity literatures will serve as the cornerstones of the Model of Creative Fit developed for this study.

Person-Environment Fit Model of Stress

A model was developed by French and his colleagues at the University of Michigan's Institute for Social Research that predicts strain based on a person-environment fit framework. According to this framework, measures of the person's characteristics (e.g. needs, values, and abilities relevant to the work place) predict strain based on the individual's preferences and measures of the environment (e.g. physical, family, and social environments) predict strain stemming from environmental characteristics. Measures of person-environment fit predict strain based on the differences found between characteristics in an individual's environment and the individual's preferences for those characteristics (Caplan et al., 1980). Fit is determined by examining differences in person and environment components measured on the same conceptual dimension. The model proposes that any difference in person and environment scores will lead to strain (French et al., 1974).

A person-environment approach to stress is important because it examines the interactive effect of person and environment components as well as the independent contributions of the person and the environment

to strain as suggested by the interactional psychology perspective. The utility of person-environment fit theory is its ability to account for variance in strain that cannot be predicted by linear relationships with solely the person or environment component measures (Harrison, 1978).

Componential Model of Organizational Innovation

A model was developed by Amabile that utilizes a person-situation interaction approach to the study of creativity and innovation in organizations. According to this untested model, the organizational innovation process consists of an individual element and an organizational element. The individual component of creativity parallels the organizational component of innovation. The model indicates that individual creativity is enhanced by self-motivation and that an organization needs a basic orientation toward innovation. In addition, the individual must have knowledge and technical skill relevant to their specific work environment and the organization must provide resources for work in that environment. Finally, an individual needs skills in creative thinking such as cognitive styles favoring new perspectives, the ability to apply heuristics, and skill in breaking perceptual sets while the organization needs to utilize management skills and styles conducive to individual creativity. Creativity is proposed to be greatest when individual and organizational elements conducive to creativity are present (Amabile, 1988). Amabile's model is significant because it is one of the first to outline parallel components at the individual and organizational levels that are related to creativity.

Model of Creative Fit

The model designed for this study to explain the relationship between creative "fit" and the outcomes of strain, job satisfaction and performance takes an interactional psychology approach and is based on integration of the Person-Environment Fit Model of Stress and the Componential Model of Organizational Innovation reviewed above. This model is outlined in Figure 1. The basic premise of the Model of Creative Fit is that the better the "fit" between the individual and the creative climate of the organization, the lower strain will be and the higher performance and job satisfaction will be.

Insert figure 1 about here

Amabile's (1988) conceptualization of individual and organizational elements of creativity will be utilized as the basis for developing person and environment components that explain the outcome variables. Interactions occur between components of the environment and components of the person. These interactions indicate the level of person-environment fit and are derived from the person-environment fit model of stress developed by French and his colleagues (Caplan et al., 1980; French, Rogers, & Cobb, 1974; Harrison, 1976). The level of person-environment fit is related to the outcomes of interest: strain, job satisfaction, and performance.

Summary

This chapter briefly described a Model of Creative Fit that will be used as the mechanism for examining the relationships between "fit" at work and the outcomes of performance, job satisfaction, and strain, with creativity serving as the dimension on which fit may differ. A detailed description of the model and hypotheses derived from the model will be presented in Chapter II. Chapter III will outline the study methodology while Chapter IV will present the results of the study conducted to test the model. Finally, Chapter V will present a discussion of the results as well as conclusions drawn from that discussion.

CHAPTER II

LITERATURE REVIEW

This chapter presents the conceptual framework to be used in the dissertation. The framework integrates the models of creativity and person-environment fit that were briefly reviewed in Chapter I into a novel framework. The new Model of Creative Fit defines the relationship between individual and organizational "fit" regarding creativity and the outcome variables of individual strain, job satisfaction and performance. Following a review of the literature underlying the new framework, research hypotheses are developed based on the model.

The literature review begins with a summary of the research on the Person-Environment Fit Model of Stress developed by French and his colleagues, which is one cornerstone of the new model. Components of the P-E fit model are outlined, research evidence regarding the model is reviewed, and criticisms of the theory, the model, and its operationalization are presented. Second, a brief review of the literature on creativity is presented to illustrate the need to take an interactional approach to the study of creativity. Amabile's Componential Model of Organizational Innovation, which is the second cornerstone of the new model, is then outlined and critiqued as a method for examining individual and organizational components of creativity.

Finally, the Model of Creative Fit will be described and hypotheses based on the newly developed model is presented.

Person-Environment Fit Theory of Stress

The P-E Fit Model of Stress is based on the early work of Lewin (1936) and Murray (1938). The model predicts strain from the discrepancy between characteristics in a person's environment and his/her preferences for those characteristics. The present study uses the model, developed by French and his colleagues (Caplan et al, 1980; French et al., 1974; Harrison, 1976), as a framework for examining creativity. Therefore, an understanding of this model is necessary to understand the Model of Creative Fit. Prior to a review of this model, however, definitions of stress and strain are presented.

Stress

A wide variety of definitions of stress have been proposed over the years. Early definitions of stress include Cannon's (1935) work which describes stress as stimuli that disrupt an individual's normal internal environment and Selye's (1956) work which proposes that stress is the nonspecific response of the body to any demand placed upon it. More recent definitions of stress include stress as an external force operating on a system, be it an organization or a person (Hall & Mansfield, 1971); stress as anything that causes an alteration of psychological homeostatic processes (Burchfield, 1979); and stress as a result of change, uncertainty, or imbalance between the demands made on individuals and their ability to respond to them (Matteson & Ivancevich, 1987).

Of particular interest for this study is the concept of job or occupational stress. Beehr and Newman (1978) defined job stress as a situation in which job-related factors interact with the individual to change his/her psychological or physiological condition in a way that requires the person to deviate from normal levels of functioning. Cooper and Marshall (1976) indicated that occupational stress involves negative environmental forces that are associated with a particular job while Caplan et al. (1980) defined job stress as "any characteristics of the job environment which pose a threat to the individual. Two types of job stress may threaten the person: either demands which he may not be able to meet or insufficient supplies to meet his needs" (Caplan et al., 1980, p. 3). Each of these definitions of job stress includes components of the individual interacting with components of the environment to produce stress. This interactional perspective on stress was clearly articulated by French et al. (1974) in the definition of stress that will be utilized in this study. They define stress as a misfit between a person's skills and abilities and demands of the job and a misfit in terms of a person's needs being met by the job environment. This definition was chosen because it includes both individual and organizational qualities as elements of stress. In addition, it provides a basis for understanding why person and environment factors are related to stress (i.e., because of a misfit between them).

Strain

Strain has been defined as the degree of physiological,

psychological, and/or behavioral deviation from an individual's normal functioning resulting from a stressful event or series of events (Caplan et al., 1980; Quick & Quick, 1984; Taylor & Cangemi, 1988). Strain can be manifested in psychological (e.g., anxiety, depression, low self-esteem), physiological (e.g., cardiovascular disease, headaches, fatigue), or behavioral disorders (e.g., drug abuse, eating disorders, aggression) (Brief, Schuler & Van Sell, 1981).

Components of P-E Fit Model

Figure 2 outlines the primary components of the P-E Fit Model of Stress. In examining these components, it is important to differentiate between the person and the environment and between objective and subjective views of the person and the environment, and to describe the relationship between P-E fit and strain.

 Insert figure 2 about here

Objective Environment. The objective environment exists independent of biases introduced by the person's perception of it (Caplan, 1983). Included in the objective environment are the family, physical, and social worlds to which the individual is exposed (Harrison, 1978). Objective measures of the environment might include organizational records on work load and job complexity.

Subjective Environment. The subjective environment is the person's perception of the objective environment and includes the biases inherent in those perceptions (Caplan, 1983). The perceptions are

inferred, and exist within the person as a result of their appraisal of the objective environment (Caplan et al., 1980). The environment, both objective and subjective, of interest in this study is the individual's work environment.

Objective Person. The objective person refers to characteristics of the person as he/she really is (i.e., free of the individual's self-perceptions). These characteristics are viewed as relatively enduring and include the person's needs, values and abilities (Harrison, 1978). Measures of the objective person often consist of intelligence and/or abilities tests (French et al., 1982).

Subjective Person. The subjective person represents the individual's perceptions of his/her own objective characteristics (i.e. perceptions of their needs, values, and abilities). The subjective person is represented by the individual's self-concept or self-identity (Harrison, 1978). This study is concerned with objective and subjective characteristics of the person related to creativity in the workplace.

Fit refers to the degree of similarity or compatibility between individual and situational characteristics (Harrison, 1976). Based on these four components of the P-E fit model, fit can be determined objectively or subjectively.

Objective Person-Environment Fit. Objective person-environment fit is the fit between the objective person and the objective environment (Harrison, 1978). It is the fit between components of the person and the environment free from the biases of the individual's perceptions of self or environment.

Subjective Person-Environment Fit. Subjective person-environment fit is the fit between the subjective environment and the subjective person (Harrison, 1978). Therefore, subjective P-E fit includes the biases inherent in the individual's perceptions of self and environment.

Within objective or subjective person-environment fit, two subsets of fit exist between the individual and the environment. Demand-ability fit exists to the extent that a person's skills and abilities meet the demands of the environment. Supply-value fit exists to the extent that the person's values are supplied by the environment (Cox & Mackay, 1981). For example, an individual with a high need for autonomy would experience supply-value fit if the organization gave him/her freedom to do his/her job without strict supervision. When either type of misfit occurs, the individual is threatened and stress results (Harrison, 1978). Figure 3 outlines the dimensions along which P-E fit should be examined.

 Insert figure 3 about here

Relationship Between P-E Fit and Stress. Many stress researchers indicate that arousal or stimulation is a factor in stress and subsequent health strain (Lazarus, 1966; Mason, 1975; Quick & Quick, 1984). In addition, the motivational impact of the relationship between the person and the environment has been emphasized by Lewin (1951) and Murray (1938). Motivational theory normally identifies goals (individual and/or organizational) that the person attempts to attain. If those goals are not attained, individual well-being may be

threatened. The concept of "fit" between person and environment factors underlies these perspectives. Stress can be conceived of as the tension that exists when the environment does not facilitate the achievement of goals that the individual seeks (Harrison, 1978). Therefore, the concepts of stress and person-environment fit can be conceptualized and operationalized in comparable terms as they are in the P-E Fit Model.

Relationship Between P-E Fit and Strain. As articulated above, job stress results from a misfit between a person's skills and abilities and demands of the job and/or a misfit in terms of a person's needs being met by the job environment. Therefore, when there is poor P-E fit and related job stress, strain can occur. According to the P-E fit model, strain should increase as P-E fit reflects increased inability of supplies to meet values or individual abilities to meet environmental demands (Harrison, 1978), or vice versa.

Figure 4 illustrates the three basic relationships that may occur in P-E fit. The horizontal axis represents P-E fit. The numbers on the scale represent discrepancies between environment (supplies, demands) and person (values, abilities) scores on a dimension. The vertical axis represents any strain resulting from sustained motive arousal. The zero point indicates the point at which person and environment scores are equal. Negative scores indicate that the person score is greater than the environment score and positive scores indicate that the environment score is larger than the person score (Harrison, 1985).

 Insert figure 4 about here

The solid line in the figure indicates the reduction in strain that occurs as supplies or demands of the environment increase to the point that they match the individual's values or ability level. Curve A illustrates a U-shaped relationship. A U-shaped relationship between strain and P-E fit occurs when excesses or deficits of environmental characteristics produce more strain than when person and environment components are equal (Harrison, 1985). For example, when considering the dimension of autonomy, strain should be high when an individual has less autonomy than desired. Strain will decrease as opportunities for autonomy increase to the desired level. Individuals experiencing more autonomy than is desired, may feel a lack of direction resulting in an increase in strain.

Curve B represents an asymptotic relationship between P-E fit and strain. An asymptotic relationship occurs when an excess of personal characteristics, but not a deficit, or an excess of environmental characteristics, but not a deficit, leads to strain (Caplan, 1983). Individuals with a high need for self-control may experience strain if given too few opportunities to participate in decision-making. Strain is reduced if the deficit is reduced. There may, however, be little additional reduction in the level of strain once the acceptable level of participation is achieved.

Curve C represents a linear relationship between P-E fit and strain. In this case, the amount of one P-E fit element relative to the other has a linear impact on strain (Caplan, 1983). For example, an individual receiving a lower income than needed and valued will experience strain. Additional income above the expected level allows the individual to purchase more than expected, thus reducing strain

below its perfect fit level. Other relationships are possible, but the three presented here are the most frequently occurring.

The U-shaped and asymptotic relationships outlined above cannot be predicted by measures of the person or the environment alone or by additive combinations of the two components. Therefore, P-E fit theory is supported if curvilinear relationships are found between P-E fit and strain because curvilinear relationships indicate that P-E fit accounts for variance in strain which cannot be predicted by linear combinations of P and E components alone (Harrison, 1978). In order to fully understand the relationship between P-E fit and strain it is also important to have an understanding of the method normally used to measure P-E fit.

Measuring Person-Environment Fit

The most common method for determining P-E fit scores is to calculate the difference between the environment score and the person score by subtracting one score from the other. To utilize this method and to make an accurate comparison between person and environment factors, it is essential that both objective and subjective components of the environment and the person be measured commensurately (French et al., 1974).

In order to have commensurate measures, pairs of items are utilized to test for P-E fit. One item in the pair is a person item and the other is an environment item. Individuals are asked to rate the extent to which a characteristic is present on the job and the amount of that characteristics they would prefer to have on the job (Caplan, 1983; Caplan et al., 1980). The difference score between the person and

environment components is then calculated. A value of zero indicates a perfect fit; a negative discrepancy between the scores indicates that the environment provides less of the characteristic than the person wants; and a positive discrepancy indicates that the environment requires more of the characteristic than the person wants to give. Strain should increase when positive or negative discrepancies occur (Caplan et al., 1980).

A number of criticisms of this method for measuring P-E fit have been articulated. They will be outlined with other criticisms of the model following a review of research testing the Person-Environment Fit Model of Stress.

Research on the P-E Fit Model of Stress

Several studies have been conducted to test the Person-Environment Fit Model of Stress. Most of these studies have been conducted by researchers at the Institute for Social Research at the University of Michigan. Two of the earliest studies were conducted by French (1973) and House (1972) with similar results. French (1973), in studies conducted at Goddard Space Flight Center and Kennedy Space Center, found that P-E fit measured along dimensions of job stress (role ambiguity, subjective work load, participation, responsibility, underload, etc.) showed significant relationships between P-E fit and job satisfaction and that poor fit was associated with high job-related threat. Many of the relationships between goodness of fit along the job stress dimensions and psychological strain (job satisfaction, anxiety, depression, job-related threat, etc.) were curvilinear and the lowest strain occurred where P-E fit was perfect.

House (1972) examined fit in relationship to job satisfaction. Of the eighteen motivational fit dimensions (these included both extrinsic and intrinsic motivations such as motivation to approach money and to avoid lack/loss of money, motivation to approach prestige and to avoid lack/loss of prestige, motivation for affiliation, motivation for authority, motivation to approach self-development, etc.) examined in the study, sixteen were related to job satisfaction. Five of the sixteen accounted for variance in job satisfaction above that accounted for by person and environment components alone. The increase in variance was small (1.2%-2.7%), but this was due to the fact that the relationships were asymptotic in shape (e.g. an excess of a characteristic, but not a deficit, leads to strain).

A number of additional studies were conducted on a group of respondents from 23 different occupations by Harrison and his colleagues (Caplan et al., 1980; French et al., 1982; Harrison, 1976, 1978). Relatively strong correlations were found between measures of "work role fit" and various affective outcomes such as job dissatisfaction, workload dissatisfaction, and boredom. In particular, French et al. (1982) attempted to test the causal path predicted by P-E fit theory. They used more than fifty factors including environmental and personal characteristics and P-E fit dimensions to predict eighteen strains. P-E fit measures were found to be significant, independent predictors of strains. French et al. (1974) and Harrison (1978) also found that the degree of fit between characteristics of the person and demands of their work environment predicted physical and mental health. These results indicate that the ability to predict strain was improved when the "fit" between the individual and the environment was considered.

Specifically, Harrison (1976) found twenty-seven significant relationships between strain (defined as deviation from normal psychological, physiological or behavioral responses in the person) and measures of the person, the environment or P-E fit on the dimensions of work load, responsibility for other people, and role ambiguity. In eighteen of the twenty-seven relationships, P-E fit accounted for variance in strain above that accounted for by linear relationships with person and environment components.

More recent studies by Harrison, Moss, Dielman, Horvath and Harlan (1987) and Caplan et al. (1985) also provide support for the ability of P-E fit theory to explain additional variance in strain. Harrison et al. (1987) examined the relationship between P-E fit theory and strain in a random sample of residents of a county in Michigan. Measures of poor fit on work demands had stronger relationships with strain than did levels of preferences concerning work demands and actual levels of the demands. Specifically, poor fits on work load, job complexity, and job competition were related to job dissatisfaction ($r=.24$, $p<.01$; $r=.26$, $p<.01$; $r=.10$, $p<.05$, respectively) while increased misfit on job complexity was associated with higher levels of irritation ($r=.13$; $p<.01$) and depression ($r=.14$; $p<.01$). Including the interaction due to poor fit to the measures of environment and person components generally doubled the explained variation in strain over that explained by the linear relationship between person and environment measures. However, the pattern was not consistent across all dimensions of job demands and strains. Thus, measures of P-E fit had additional explanatory power over measures of the person or the environment alone.

The Caplan et al. (1985) study examined P-E fit over time in a sample of university students. The study included cognitive fit (e.g., meeting demands for intelligence, good memory) and motivational fit (e.g., being able to muster the effort) and found both to be strong predictors of strain. Cognitive fit was the strongest predictor of strain.

Other studies have applied the P-E fit theory to Holland's model of career choice (Furnham & Schaeffer, 1984); to the Contingency Model of Leadership (Chemers, Hayes, Rhodewalt, & Wysocki, 1985); and to political action in organizations (Mayes & Ganster, 1988). These studies provided clear support for the P-E fit model of job stress. A better match between individual and environmental components was related to lower levels of job strain, fewer health problems and less political action. In addition, an extensive review of person-environment fit studies indicated that across a multiplicity of measures, samples, job content areas, and operationalizations, P-E fit demonstrated the anticipated relationship with outcomes (Edwards, 1991).

Another study was less supportive of the P-E fit model. Blau (1981) found limited justification for the hypothesized relationships between job stress and job strains (job dissatisfaction and ineffective job performance) within the French P-E fit model. Blau's sample consisted of bus operators within a midwestern transit authority who were administered questionnaires at their bus station. Misfit was measured along three stress factor dimensions: 1) physical danger 2) passenger/intracompany concerns 3) scheduling/assistance concerns. Only the passenger/intracompany stress factor was significantly related to poor job performance ($r=.20$; $p<.01$). Stronger support was found for

the relationship between job stress and job dissatisfaction. The passenger/intracompany stress factor ($r=.50$; $p<.01$) and the scheduling/assistance stress factor ($r=.39$; $p<.01$) were both significantly related to job dissatisfaction. Based on the results of this study, Blau (1981) called into question the validity of P-E fit theory, but suggested that these results may have been due to common method variance. He recommended that future research utilize objective measures of P-E fit job stress such as archival records or observational ratings.

These findings indicate non-linear relationships between dimensions of P-E fit and strain as predicted by P-E fit theory. P-E fit measures can account for variance in strain beyond that predicted by person or environment factors alone. However, the amount of additional variance explained is small (between three and six percent) and a number of other theoretical and methodological problems with person-environment fit have been suggested.

Limitations of Person-Environment Fit Theory

A number of limitations to the P-E fit model have been expressed over the years as the model has been developed and tested. The criticisms fall into three primary categories: 1) theoretical issues 2) operationalization and measurement of the constructs and 3) calculation of fit scores. Specific concerns within each of these areas will be reviewed.

Theoretical Issues

Three basic theoretical issues related to person-environment fit

theory have arisen. First, there is debate over the version of P-E fit to measure. The second issue concerns the appropriate form of P-E fit to use and the third issue relates to the selection of person and environment characteristics to study.

P-E Fit Version. Two versions of fit were outlined above: supply-value (S-V) fit and demand-ability (D-A) fit. Supply-value fit refers to the fit between environmental supplies and individual values and needs, while demand-ability fit is the fit between individual abilities and environmental demands for those abilities. These two types of fit are distinct versions of P-E fit; however, most studies of P-E fit ignore or minimize this difference (Edwards, 1991; Edwards & Cooper, 1990). In many cases, S-V fit is assumed to be dependent on D-A fit, but this dependence has received little empirical scrutiny. In fact, theoretical and empirical evidence seems to suggest that relationships with outcomes may be different depending on whether S-V or D-A fit is measured. S-V fit appears to be related to dissatisfaction (Locke, 1969, 1976) and negative affect (Diener & Emmons, 1984). D-A fit, in contrast, seems to be more closely related to changes in performance (Hackman & Oldham, 1980; Naylor, Pritchard & Ilgen, 1980; Porter & Lawler, 1968). A clear understanding of the relationship between S-V and D-A fit requires the simultaneous measurement of both concepts.

P-E Fit Form. Edwards and Cooper (1990) outlined three primary forms of fit that have been used to examine P-E fit. The discrepancy form indicates that strain increases as the difference between environment and individual characteristics increases. It is typically

operationalized as the difference between commensurate P and E components. This is the most common operationalization of fit. In the interaction form, strain occurs when environment and person characteristics are combined. The interaction form is operationalized as the product of commensurate P and E components. Finally, the proportional form indicates that strain increases as the proportion of person requirements fulfilled by the environment becomes lower. This final form is operationalized by examining P-E fit as the ratio of commensurate P and E measures.

A review of P-E fit studies indicated that researchers have assumed these three forms to be compatible with each other; however, they represent different theoretical positions and should not be considered equivalent (Edwards & Cooper, 1990). Thus, the form of P-E fit to utilize in a study should depend on the theoretical assumptions underlying the relationship between person and environment components in the study.

Selection of P and E Characteristics. A final theoretical issue related to P-E fit theory is the method for selecting person and environment characteristics to study. P-E fit theory does not identify specific job demands or motives to be studied (Harrison, 1987). Because of this, little uniformity exists as to the person and environment components to be investigated. However, this does broaden the spectrum of topics to which the theory can be applied and forces the investigator to select demands or motives that appear to be most relevant to the situation being studied.

Problems in Operationalizing and
Measuring the Constructs

At least five issues arise when discussing the operationalization and measurement of components of the P-E fit model: 1) objective versus subjective assessment; 2) use of commensurate units; 3) framing or reference criteria; 4) selecting response units, and; 5) number of dimensions to study.

Objective Versus Subjective Assessment. Few examinations of P-E fit have used measures of the objective environment and even fewer have tried to measure characteristics of the person objectively. French et al. (1974) attempted to measure objective and subjective components of the person and the environment in a study of fit along ten dimensions expected to be important to high school boys. Objective measures included standardized tests and teacher ratings while subjective measures were derived from questionnaires filled out by the subjects. Results indicated that the objective measures were only weakly related to subjective measures. Several other studies (French and Caplan, 1972; Hackman & Lawler, 1971; Kraut, 1966) suggested that the subjective environment has a stronger relationship with strain than the objective environment, but the issue has not been examined in enough studies to draw definite conclusions.

As early as 1968, Pervin recommended collecting both objective and subjective data when possible in order to determine which type of data was more useful. Until researchers know conclusively how subjective and objective measures are related, it is critical to distinguish between them and measure both concepts (Caplan, 1987). It is possible that many

of the inconsistencies found in person-environment fit models could be explained by the differences in objective and subjective measurement (Blau, 1981; Kulka, 1979).

Use of Commensurate Units. P-E fit theory, as developed by French and his colleagues, is designed to use commensurate measures of person and environment components. Commensurate measures have been used because fit emphasizes the match between individual and environmental variables reflecting the same theoretical dimension (Edwards & Cooper, 1990). Chatman (1989) stressed the importance of conceptualizing and measuring persons and situations in commensurate terms. In particular, this technique allows the quantitative comparison of person and environment factors. Chatman (1990) also indicated that a failure to use commensurate measures limits the development of a coherent theory of P-E interactions and makes it difficult to determine the real impact of P-E effects. Edwards (1991) suggested that commensurate outcome measures be used because fit regarding specific job content dimensions should only influence outcomes associated with that dimension.

Framing or Reference Criteria. The framing or reference criteria problem results from a lack of clarity on how to frame the questions about person and environment components to best assess P-E fit. In other words, when referring to the environmental component, should the statement ask how much opportunity there is to participate or how much participation is required? For the person component, the question is whether to assess preferences, needs, ideal desires or minimally acceptable desires (Caplan, 1983). Measures of environmental supplies normally ask how much of an attribute is present, while environmental

demand questions ask for the level of demand associated with the attribute. Two approaches are often used for studying individual values: if the discrepancy form of fit is of interest, desired levels of attributes are elicited while the importance of attributes is measured for interactive forms of fit. Personal abilities are measured most directly by requesting self-assessments of ability. Indirect indicators of ability such as education level may also be used as less explicit assessments of the construct (Edwards & Cooper, 1990). Because of the lack of research comparing alternative frames, most researchers depend on theory to specify the appropriate frame that will represent the point at which the individual will not encounter strain (Harrison, 1976).

Selecting Response Units. The selection of response units is a problem in the operationalization and measurement of P-E fit because scales often involve relative judgments (Caplan, 1983). What is considered "high" by one person may not be viewed as "high" by someone else. Even when a Likert-type scale is used, the intervals between scale points may not be considered the same by different respondents. Therefore, methods should be used that capture the relevance of individual differences (Chatman, 1989).

In addition, contamination may occur when a person's environment response affects their person response or when their person response affects their environment response (Harrison, 1976, 1985). This problem exists when a scale taps more than one construct. The best method for avoiding the problem of contamination is to use specific rather than relative response scales (Caplan, 1983).

Number of Fit Dimensions. Edwards and Cooper (1990) reviewed studies utilizing a person-environment fit approach to stress and found that most researchers measured fit along a limited number of dimensions (i.e., one to eight dimensions). This examination of a limited number of fit dimensions may omit relevant precursors of strain and limit information about P-E fit as a general construct. Edwards and Cooper (1990) recommend that comprehensive measures of the person and the environment be utilized to examine fit to deal with this limitation of previous studies. Specifically, they indicate that the Work Values Inventory (Super, 1970) has been used to derive fit along fifteen dimensions of job satisfaction and that other studies have effectively utilized interviews with employees to identify dimensions along which comprehensive fit indices can be developed.

Problems With The Calculation of P-E Fit Scores

The majority of studies testing the P-E fit model calculate P-E fit scores by computing the difference between the person score and the environmental score. This approach is intuitively appealing and has been used in a myriad of studies relating fit scores to outcome variables (Kulka, 1975). However, the use of discrepancy scores for operationalizing P-E fit has been criticized.

Most critics argue that difference scores have limitations that can lead to erroneous conclusions. Among these limitations are scaling problems such as the assumption of interval scaling (Cronbach, 1958; French, Rodgers, & Cobb, 1974), problems in determining similarities in profiles based on difference scores (Nunnally, 1978), and attenuation of the relationship between the difference score and the dependent variable

(Edwards & Cooper, 1990). Difference scores also discard information on the absolute level of person and environment measures that could help in understanding the effects of fit (Edwards, 1991).

Other criticisms focus on statistical weaknesses of difference scores. It has been pointed out that there are concerns with unreliability, regression toward the mean and a variety of other artifacts because the relationships comprising the difference scores can be depicted as exact mathematical functions of the correlations and variances of their components (Blau & Duncan, 1967; Bohrnstedt, 1969; Rice, McFarlin, & Bennet, 1989). In particular, Cronbach & Furby (1970) indicate that difference scores can magnify unreliability of the score's components, thus reducing the predictive power of P-E fit. In addition, difference scores are simply a linear combination of their components. Therefore, they can never have more predictive power than the combined effect of those components. In fact, most cases will provide less predictive power (Edwards, 1991; Edwards & Cooper, 1990). According to Harrison (1976), in order to avoid some of these problems, it is important for researchers to examine their data to determine if 1) scores on one dimension are consistently higher than scores on the other dimension; 2) either component has a small variance; and 3) the component scores are highly correlated.

Because of these criticisms, it has been recommended that the use of difference scores be discontinued in favor of a multivariate approach that uses person and environment variables separately in the analysis (Cronbach & Furby, 1970; Edwards, 1991; Edwards & Cooper, 1990). This multivariate method permits the examination of complex relationships between the two variables and allows hypotheses about the discrepancy

form of fit to be tested by entering component scores together into a regression equation and examining their joint contribution to predicting strain.

The person-environment fit model serves as one cornerstone for the Model of Creative Fit. The ability of the Model of Creative Fit to deal with the limitations of P-E Fit Theory will be discussed later in this chapter. First, however, the literature on creativity will be reviewed since creativity is the dimension along which person-environment fit will be examined in this study.

Creativity

One deficiency of P-E fit theory is that it provides no guidelines for selecting characteristics of the person and the environment to measure. This study examines the role of creative "fit" in strain, job satisfaction, and performance. The purpose of this section is to define creativity and to outline the person and environment components of creativity.

Creativity Definition

Creativity, like stress, is a term that has been defined in a wide variety of ways over the years. Definitions of creativity have generally taken one of four approaches. Creativity has been viewed (1) in terms of the environment which stimulates and sustains the creative process; (2) in terms of the products or outputs of the creative process; (3) in terms of the internal, unobservable process of creativity itself, and (4) in terms of the characteristics of the individual that relate to creativity (Taylor, 1988).

Specific definitions include creativity as "the constellation of personality and intellect shown by individuals who, when given a measure of free rein, spend significant amounts of time engaged in the creative process" (Findlay & Lumsden, 1988); creativity as "the process of bringing something new into being" (Hausman, 1979); creativity as the "emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life on the other" (Rogers, 1954); creativity as "novelty that is useful" (Stein, 1974); and creativity as "the production of novel and useful ideas by an individual or small group of individuals working together" (Amabile, 1988). These last three definitions support the view of most theorists and researchers that creativity is the development of a product or idea. According to Bailin (1984), the only reliable indicator of creativity is the production of a valuable product.

These product/idea definitions of creativity are based on the ultimate outcome of the creative process, but do not include influences upon that creative process. Understanding the process is important because it is only through knowledge of the creative process and the factors influencing that process that we learn how to facilitate creativity. Various factors have been proposed that can influence the creative process including an individual's ability to develop understandings, identify facts, apply multiple understandings and reorganize facts. In addition, it has been proposed that the organizational climate can inhibit or enhance creativity (Mumford & Gustafson, 1988; Woodman & Schoenfeldt, 1990). Amabile (1988) presented individual and organizational influences on the creative process that

include most of these factors. These variables are presented in Figure 5. At both the individual and organizational levels, Amabile proposed a resources component that includes the organization's task domain resources and the individual's domain-relevant skills; a techniques component which includes individual creativity-relevant skills and organizational skills in innovation management; and a motivation component that includes the organization's motivation to innovate and the individual's intrinsic motivation to do the task.

 Insert figure 5 about here

Based on the product definitions of creativity and this summary of influences on the creative process, the following definition has been developed for this research project. Creativity is a process influenced by individual and organizational level factors that results in the production of novel and useful ideas and/or products. This definition was chosen because it is a comprehensive definition of creativity. It includes influences on the creative process which must be understood in order to encourage creativity as well as the outcomes of the process which are essential in determining the success of the creative process.

Personal Elements in Creativity

Over the years, a vast array of studies have focused on the role of individual characteristics in creativity. Most of this research has examined individual characteristics from one of two perspectives: 1) the role of individual cognitive processes in

creativity, or 2) the role of individual difference variables in creativity.

Individual Cognitive Processes. According to Mumford and Gustafson, "the individual's ability to integrate, reorganize, or restructure existing understandings may play an important role in generating major contributions or new schemata of use in solving a variety of problems" (Mumford & Gustafson, 1988, p. 30). Albrecht and Albrecht (1987) referred to this as mental flexibility, option thinking, big-picture thinking, or intellectual courage. The individual's ability to reorganize cognitive structures has been studied in relationship to intelligence, divergent thinking, associational processes and unconscious processes.

Much of the research relating creativity to intelligence has been based on Guilford's Structure of Intellect Model (Guilford, 1967) and Cattell's alternative model of fluid and crystallized intelligence (Cattell, 1971). Guilford's model has been criticized on both technical and conceptual grounds, but has inspired a variety of other tests such as an auditory abilities test to relate creativity to intelligence (Barron & Harrington, 1981). A study of Cattell's model found moderate positive relations between indexes of intelligence and creativity among professionals, artists, and scientists (Cattell, 1971). Other studies have also found support for a relationship between intelligence and creativity in those same occupations (Bachtold & Werner, 1973; Gough, 1976; Helson & Crutchfield, 1970).

Studies of non-professional samples have found results different from those reported above. Most relationships found in these studies between intelligence and creative achievement were nonsignificant or weakly positive (Friederickson & Ward, 1978; Hocevar, 1980; Milgram, Yitzhak, & Milgram, 1977). These findings would be expected based on Guilford's (1967) triangularity hypothesis that creativity and intelligence are correlated most highly in the lower two thirds of the population in terms of intelligence.

An individual's capacity for divergent thinking has also been widely studied as an important factor in creativity. Divergent thinking involves the individual's ability to generate multiple potential solutions to a problem and is normally measured by asking an individual to generate as many solutions as possible to an open-ended stimulus problem (Mumford & Gustafson, 1988).

In a review of the literature on divergent thinking, Barron & Harrington (1981) found over seventy studies with positive and statistically significant relationships between scores on divergent thinking tests and creativity indexes. In spite of these findings, a number of criticisms have been voiced over the use of divergent thinking tests (Mumford & Gustafson, 1988). First, performance on divergent thinking measures has been found to be influenced by instructional set, suggesting that it may be a situationally specific construct (Owen & Baum, 1985). In addition, divergent thinking scores may be biased by test anxiety, response set, and weak reliability of procedures for scoring (Romaniuk & Romaniuk, 1981). Also, divergent thinking tests may not capture the intended construct because they focus on a solution to which a problem must be attached. In reality, most individuals are

faced with a problem to solve rather than with a solution (Owen & Baum, 1985). A final criticism of divergent thinking relates to the role of intelligence in divergent thinking (Barron & Harrington, 1981). Few studies have gathered data appropriate to determining whether divergent thinking measures explain any variance in creativity beyond that measured by intelligence. Until studies of this nature are conducted, it will be difficult to fully understand the relationship between divergent thinking and creativity.

In addition to divergent-thinking abilities, associational or analogical abilities have been studied as important components of creativity. Several studies have found moderate positive relationships between associational abilities and creative achievement (Mednick & Mednick, 1967; Mendelsohn, 1976; Sobel, 1978). However, there has been disagreement over the role of remote associations in creativity.

Perkins (1983) examined experimental and archival data and concluded that analogies or remote associations seldom led to discovery and were used infrequently in problem solving. Poze (1983), on the other hand, stresses the utility of analogy or association in problem solving. He indicates that associations work best on problems in which information cannot be obtained from an analysis of the problem. Poze (1988) also argues that the connection between the subject and the analogue must be evaluated and it must be done within the context intended for analogy to be useful to creativity.

Closely related to the idea of remote associations is the use of metaphors and imagery in creative acts. Several researchers have examined the relationship between images and metaphors in problem solving, but no definite relationships have been found (Harrington,

1981; Kogan, Connor, Gross, & Fava, 1980). It does appear, however, that images and metaphors have potential for improving creativity because they provide unique ways to apply understandings (Mumford & Gustafson, 1988).

A final cognitive process related to creativity involves unconscious processes such as dreams, insight or intuition. The use of unconscious material may provide information that can help redefine conscious understandings in a way that can contribute to creativity (Mumford & Gustafson, 1988). Much of the research on unconscious processes has focused on dreams. In a study of high school students, Domino (1982) found that creative students were more likely to view their dreams as significant than non-creative students. A later study compared dream content of individuals in professions presumed to be creative (e.g. architects, writers, musicians, sculptors, & research scientists) with those in professions presumed to be low in creativity (e.g. police officers & accountants) (Sladeczek & Domino, 1985). Dreams of individuals from the creative professions were more unrealistic, more visual, and less plausible than those from members of less creative professions. Sladeczek and Domino (1985) concluded that the primary process involved in dreaming is essential to creative thinking because it allows one to restructure understandings.

Individual Differences. A wide variety of studies have examined the association of personality characteristics with creative achievement in a number of occupational fields. Studies have been conducted in art (Amos, 1978; Bachtold & Werner, 1973; Barron, 1972; Gotz & Gotz, 1979), music (Khatena, 1971), science and technology

(Chambers, 1964; MacKinnon, 1962; Gough, 1979), and literature (Helson, 1977; Korb & Frankiewicz, 1979; Schaefer & Anastasi, 1968). In general, these occupational studies found a set of relatively stable personality characteristics that were related to creativity across fields. These characteristics include intellectual and artistic values, breadth of interests, attraction to complexity, high energy, a concern with work and achievement, independence of judgement, autonomy, intuition, self-confidence, ability to tolerate and resolve conflict, and a creative self-image (Barron & Harrington, 1981). Other studies have found additional personality variables related to creativity including capacity for status, social presence, self-acceptance, flexibility (Parloff, 1966), high ego strength, aggressiveness, independence, poise (Alderfer, 1976), empathy (Weiss, 1981), tolerance for ambiguity, intrinsic motivation, risk-taking, and desire for recognition (Sternberg, 1988).

Mumford and Gustafson (1988) indicate that these individual characteristics contribute to creativity because they allow the individual 1) to have multiple understandings (i.e., different methods of examining issues) available, 2) to be willing to use a variety of understandings, 3) to be sensitive to inconsistent information, and 4) to be willing to resolve facts that conflict. In addition, characteristics such as autonomy, risk-taking, self-confidence, and aggressiveness may provide individuals with a greater ability to translate their ideas into action (Mumford & Gustafson, 1988).

This brief review of the literature provides insight into the person component of creativity. The component includes both cognitive process variables and individual difference variables. A model designed

to examine creative person-environment fit should, therefore, include individual characteristics such as those described above.

Creativity and the Environment

Another approach to the study of creativity has focused on conditions of the environment that are related to creativity. One of the most critical factors in the environment is the level of support for individual's innovative actions (West, 1989; West & Farr, 1989). This support involves not only clear communication and affective support, but also the distribution of valued outcomes.

The importance of organizational support and communication in innovation and creativity has been noted by a number of researchers. Thistlewaite (1963) and Knapp (1963), in studies of university research environments, both found that a warm, supportive and flexible but demanding environment was related to scientific productivity. Pelz (1956) found that climates which encouraged autonomy, interaction and production of knowledge enhanced the creative acts of scientists. High correlations between individuals' perceptions of support, trust, communication, freedom, and goal clarity and scientific achievement have also been found in a number of studies (Ellison, James, & Carron, 1970; Ellison, James, McDonald, Fox & Taylor, 1968). In addition, research has shown that social support from superiors was predictive of innovation (attempts to introduce better ways of doing things) among nurses (West, 1989).

Also suggested as important to innovation and creativity is supportive and constructive feedback from peers and superiors in the workplace (Amabile, 1984). Supportive feedback builds efficacy

regarding innovation (Farr & Ford, 1990). These findings indicate that an organization can encourage innovation and creativity by supporting activities required for the development and implementation of new ideas and by accepting and recognizing creative efforts (Mumford & Gustafson, 1988).

Rewards or incentives have also been found to influence creative behavior. Research by Torrance (1965) and Harrington (1981) found that monetary incentives improved performance on divergent thinking tests. However, other studies have found detrimental effects of rewards on creativity.

Cox, Nash, and Ash (1976) examined the effect of a promise for extra credit on the creativity of a task in college students. Rewards, in the form of grade incentives, were found to be associated with deflated scores on the creative task. Other studies have found that extrinsic rewards and motivators may reduce risk taking, set breaking, and exploration (Amabile, 1983a) and that predefined reward contracts can decrease creativity while unexpected rewards do not affect creativity (Amabile, Hennessey, & Grossman, 1986). Specifically, Amabile et al. (1986) found that explicitly contracting to do an activity to obtain a reward led to lower levels of creativity than contracting to do the activity for no reward, just being presented with the task, or being presented with the task and receiving the reward subsequently. In addition, Kanter (1983) found that traditional, material rewards were not major influences on innovative activity in her study of innovative companies.

Therefore, formal organizational rewards should not be contingent only on the generation of creative ideas or outcomes. This type of reward contingency may actually be detrimental to creative behavior (Amabile, 1988). Rather, a reward system should be characterized by recognition and equitable reward for creative behaviors (regardless of the outcomes) particularly in the exploration stages of the creative process (Abbey & Dickson, 1983; Lind & Mumford, 1987).

In addition to organizational support, communication and reward systems, other organizational factors have been suggested as influences on the creative process. Participative decision-making has been found to encourage innovation by increasing the belief that the new idea will be accepted (Kanter, 1983; King & West, 1987; Peters & Waterman, 1982). The structure of the organization may also affect innovation and creativity. Rigidly hierarchial organizations tend to stifle creativity, while more flexible structures that encourage autonomy and interdependence also encourage creativity (Kanter, 1983; Lovelace, 1986).

In summary, the studies reviewed indicate that individual creativity can be enhanced through the use of organizational support, open communication, appropriate reward systems, participative decision-making, and a flexible structure. These factors provide support for including an environmental component of creativity in a model of creative person-environment fit.

It is tempting to examine creativity based on individual or environmental factors alone because of simplicity. To focus on one approach over the other; however, it would be necessary to assume that the other approach made no contribution to understanding creativity.

The previous review has indicated that both person and environment characteristics have been found to be significantly associated with creativity. According to Woodman and Schoenfeldt (1989, p. 80) "combining personality, cognitive, and social psychology explanations of individual differences in creative behavior could serve to improve our ability to understand creative persons, processes and products." Therefore, creative behavior is likely to be determined by an interaction between characteristics of the individual and characteristics of the environment (Mumford & Gustafson, 1988). One model designed to take an interactional approach innovation is Amabile's Componential Model of Organizational Innovation (Amabile, 1988). This model is presented in Figure 6.

Insert figure 6 about here

Componential Model of Organizational Innovation

Because the focus of research on creativity has examined personality characteristics, cognitive abilities or the social environment independent of the other factors, there has been fragmentation in the development of creativity theory (Amabile, 1983b). The purpose of this section is to outline a model of organizational innovation developed by Amabile that integrates the dispositional, cognitive and social factors that determine creativity. A review of each component of the model and how they interact, a review of research related to the model, and a discussion of the model's strengths and

weaknesses will be followed by an outline of how the model will be utilized in the Model of Creative Fit.

Model of Individual Creativity

The lower half of the Model of Organizational Innovation outlined in Figure 6 is actually a model of individual creativity. Amabile developed this portion of the model initially and then integrated it into the overall model of organizational innovation. Following a review of individual factors that influence creativity, the steps in the individual creative process will be outlined.

Factors Influencing Individual Creativity. The components of the model of individual creativity were developed from several qualitative studies done by Amabile and her colleagues. More rigorous research has been conducted on an inventory designed to measure the work climate as outlined in this model. Research on the inventory will be reviewed during the discussion of the methodology for the current project in Chapter III.

Interview studies were conducted with R&D scientists from over twenty corporations, marketing and development employees of a large bank, and marketing and sales employees of a major railroad (Amabile, 1988; Amabile & Gyskiewicz, 1987). The studies were designed to determine personal and environmental influences on creativity.

Interviewees were asked to describe two events from their work experience. One event was to be an example of high creativity. The individual did not have to be a key figure in the story, but they were asked for as many details as they could remember about the event and the

environment surrounding the event. The second event was to be an example of low creativity. It was hoped that the critical incident method would limit statements about personal beliefs related to creativity (Amabile & Gyskiewicz, 1987).

A content analysis was done on transcripts of the tape-recorded interviews. Personal factors related to creativity fell into two major categories that were ordered by frequency: 1) personal qualities promoting creativity, and 2) personal qualities inhibiting creativity.

In all three occupational groups, ten factors emerged as individual qualities promoting creativity and five factors emerged as inhibiting creativity. The individual qualities promoting creativity included: 1) various personality traits: persistence, curiosity, energy, intellectual honesty; 2) self-motivation: being self-driven, enthusiastic, attracted by challenge; 3) special cognitive abilities: talents in problem solving, general problem solving abilities; 4) risk-orientation: oriented toward taking risks and doing things differently; 5) expertise in the area: talent, experience, acquired knowledge in the field; 6) qualities of the group: synergy from intellectual, personal, and social qualities of group members; 7) diverse experience: broad general knowledge, experience in many domains; 8) social skill: good rapport with others, being a good listener and team player, broadminded; 9) brilliance: high level of general intelligence; and 10) naivete: not biased by preconception or old ways of doing things (Amabile, 1988).

Qualities of individuals that inhibit creativity included:

1) unmotivation: lack of motivation for work; 2) unskilled: lack of ability or experience; 3) inflexible: set in one's ways, opinionated;

4) externally motivated: motivated by money, recognition or other factors outside of the work itself; and 5) socially unskilled: lack of social skills, poor team player. These qualities were merged into the individual components influencing creativity outlined in the Componential Model of Organizational Innovation and described in Figure 5 (i.e., domain relevant skills, creativity-relevant skills and task motivation).

Stages in the Individual Creative Process. The process of individual creativity is outlined as a five stage sequence. Although the present study will not examine the stages in the creative process, they are important in order to fully understand Amabile's work and intent. The first stage is presentation of the task or problem. The second stage involves gathering information relevant to the problem. During the third stage of the creative process, ideas or products are produced. Ideas are checked against task criteria during the fourth step. The final step of the individual creativity process involves the decision that must be made based on step four. The process is terminated if there is complete success or complete failure in accomplishing the original goal. If there is some progress toward the goal then the process returns to stage one and the steps are repeated (Amabile, 1988).

According to the model outlined above, the level of creative production depends on the levels of the individual factors related to creativity. The greater the presence of the individual factors, the more creative the person is proposed to be. This model of individual creativity in turn influences innovation at the organizational level.

Model of Organizational Innovation

The Componential Model of Organizational Innovation is a model of the innovation process within an organization. It includes the model of individual creativity as an influence on the innovation process. This section will outline the factors influencing organizational innovation, the stages in the organizational innovation process, and the intersection between individual creativity and organizational innovation.

Factors Influencing Organizational Innovation. Qualities of the environment that influence creativity were also derived from the qualitative studies done by Amabile and her colleagues which were described above. As with the individual characteristics, two major categories of environment factors were found to influence the innovation process: 1) environmental qualities promoting creativity, and 2) environmental qualities inhibiting creativity.

Nine qualities promoting creativity and nine qualities inhibiting creativity were found. Those factors promoting creativity were: 1) freedom: a sense of control over one's work, operational autonomy; 2) good project management: a manager who is a good role model, is enthusiastic, communicates well; 3) sufficient resources: access to needed resources; 4) encouragement: enthusiasm for ideas from management, lack of threatening evaluations; 5) various organizational characteristics: climate of cooperation and collaboration, atmosphere where innovation is prized; 6) recognition: sense that creative work will be recognized and rewarded; 7) sufficient time: time to think creatively and to explore different perspective; 8) challenge:

intriguing and important task; and 9) pressure: sense of urgency due to competition from other organizations.

Environmental characteristics inhibiting creativity included:

1) various organizational characteristics: red tape, inappropriate reward system, lack of cooperation; 2) constraint: lack of freedom, lack of control over work; 3) organizational disinterest: lack of organizational support and interest; 4) poor project management: manager with poor technical and communication skills; 5) evaluation: unrealistic expectations, inequitable evaluation and feedback; 6) insufficient resources: lack of facilities, equipment, materials, funds, or people; 7) time pressure: insufficient time to think creatively, too great a work load; 8) overemphasis on status quo: unwillingness to take risks; and 9) competition: interpersonal or intergroup competition. These characteristics comprise the components outlined to influence organizational innovation in the Componential Model of Organizational Innovation that are described in Figure 5 (i.e., resources in the task domain, skills in innovation management and motivation to innovate).

Stages in the Organizational Innovation Process. As in the model of individual creativity, there are five stages in the organizational innovation process. Again, this sequence does not have direct application to the present study but is important in understanding Amabile's model. During stage one, the mission statement for the organization is developed that sets the agenda for the process. Stage two involves gathering resources to meet the goals stated in step one, establishing a work context, and carrying out market research. Ideas

are produced in stage three. It is in this stage that the influence of the model of individual creativity occurs. This intersection between individual and organizational components will be discussed in the next section. During stage four ideas are tested and implemented. Outcomes are assessed during stage five of the organizational innovation process. As in the individual creative process, complete success or failure in the process normally leads to termination of the process. Limited progress will probably return the process to stage two in an attempt to completely resolve the issue of concern (Amabile, 1983b).

Intersection of Individual and Organizational Components. It should be noted that the components of individual creativity parallel the components of organizational innovation. For both the organization and the individual, a minimum level of the individual and organizational factors outlined above are necessary for innovation or creativity. The higher the level of the factors, the greater will be potential individual creativity or organizational innovation (Amabile, 1988).

As illustrated in Figure 6, individual creativity has its influence on organizational innovation during the idea production stage. Not only do individual factors influence organizational innovation at this stage, but organizational factors influence individual creativity. For example, an individual's skills can be developed through training or information from the organization's resources. Skills in creativity can also be enhanced by acceptance and encouragement from the organization. Finally, an individual's intrinsic motivation can be influenced by the organization. Anything an organization can do to encourage an individual's interest in a task or project can improve intrinsic

motivation, be it encouragement from the overall mission of the organization or encouragement from lower level management.

Strengths and Limitations of the Model

The Componential Model of Organizational Innovation is one of the first developed to integrate individual and environmental components in the study of creativity. There are a number of strengths and weaknesses associated with the model and underlying theory.

Model Strengths. The primary strength of this model is its attempt to unify creativity theory and research on cognitive processes, personal characteristics, and social influences into a comprehensive model of creativity. By doing this, the theory integrates the classes of factors that have previously been shown to be associated with creativity. In addition, the model outlines the steps in the creativity and innovation processes and presents the various influences the primary components of creativity and innovation will have on those steps. A final benefit of the componential framework is its proposal that the primary components will exert reciprocal influence (Amabile, 1988). This is one of the first models to suggest an interactional approach to the study of creativity.

Model Limitations. The primary limitation of this model is that it is an exploratory, descriptive model. Elements included in the components of the model were included based on theory and logic, but they must be clearly delineated and refined with extensive research. While preliminary research has been supportive of the components, it has been qualitative in nature and was limited to developing elements within

the model. At this time, no research has examined the reciprocal influence between the components or examined how these components influence stages in the processes of innovation and creativity. In addition, the components of creativity have not been examined for their potential influence on outcomes other than creative production. Before extensive research can be done on the model, however, it will be necessary to develop valid and reliable measures of the components.

The componential model of organizational innovation serves as the second cornerstone for the Model of Creative Fit. It provides the theoretical foundation for the person and environment dimensions of creativity that are of interest for this study. The next section outlines the integration of the Componential Model of Organizational Innovation and the Person-Environment Fit Model of Stress into the Model of Creative Fit.

Model of Creative Fit

The Model of Creative Fit was briefly outlined in Chapter I and is illustrated in Figure 1. A more detailed analysis of the model will now be presented which includes a description of each component of the model. Proposed relationships between the model's components will be outlined in the hypotheses section.

Environment Factors

The first component of the Model of Creative Fit consists of environmental factors proposed to be related to creativity. Included as components of the organizational environment are supplies for creativity and demands for creativity. This will allow the examination of creative

person-environment fit from both a supply-value perspective and a demand-ability perspective. Supplies for creativity include factors drawn from Amabile's Componential Model of Organizational Innovation that have been found to be related to creativity such as encouragement, support, and lack of impediments. Demands the organization places on the individual for creativity also originate from Amabile's model and include the demands that individuals be intrinsically motivated and that they be able to develop new ideas and products (Amabile, 1988). Both subjective and objective measures of these components will be utilized in order to explore the relationship between objective and subjective measures of the environment.

Person Factors

Person factors to be examined are also derived from Amabile's model of creativity. As indicated in the review of Amabile's model, the person factors correspond to the environment factors, thus allowing a comparison of person-environment fit along the dimension of creativity. Subjective and objective measures of the person factors will also be collected. In order to examine supply-value and demand-ability fit, person factors will also be examined from a values perspective (i.e., how much creativity a person desires) and an abilities perspective (i.e., how much creative ability the person brings to the workplace). Figure 3 summarizes the dimensions along which the person and the environment factors will be examined for this study.

Person-Environment Fit/Job Stress

Person-environment fit and job stress will be conceptualized and

operationalized in equivalent terms in the Model of Creative Fit as they were in the P-E Fit Model. Person-environment fit will be measured both objectively and subjectively in the Model of Creative Fit. Objective P-E fit refers to the fit between the objective person and the objective environment (i.e., fit independent of the person's perceptions) along the dimension of creativity. Subjective P-E fit refers to the fit between the subjective person and the subjective environment (i.e., fit subject to the person's perceptions) along the dimension of creativity. Supply-value fit and demand-ability fit will be examined as subsets of objective and subjective fit. Supply-value fit for this model refers to the extent to which the job environment provides supplies that match the individual's creative needs. Demand-ability fit examines the extent to which the person's creative abilities match the creative requirements of the job.

Outcomes

Three outcomes will be examined in this particular study: strain, job satisfaction and performance. Each of these organizationally relevant outcomes has been found to be associated with work-related stress (Brief et al., 1981; Eulberg, Weekley, & Bhagat, 1988; Quick & Quick, 1984).

Strain. As previously indicated, strain is the degree of physiological, psychological, and/or behavioral deviation from an individual's normal functioning resulting from a stressful event or series of events (Caplan, 1975; Quick & Quick, 1984; Taylor & Cangemi, 1988). Strain is of particular interest in this study because person-

environment fit theory predicts strain based on the degree of fit between individual and organizational characteristics.

Job Satisfaction. Job satisfaction is "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (Locke, 1976, p. 1300). According to Brief et al. (1981), job satisfaction is the best validated psychological outcome of job stress. Relatively strong associations between measures of "fit" and job satisfaction have also been found (French et al., 1982; Harrison, 1976; House, 1972).

Performance. Job performance refers to an individual's success at meeting existing role requirements (Miner & Brewer, 1976). These requirements may be set explicitly or implicitly and the variables that constitute performance differ from job to job. In most cases, poor performance occurs due to an interaction between characteristics of the person and aspects of the work environment (Miner & Brewer, 1976). One of the consequences of mismanaged stress in organizations is poor job performance (Quick & Quick, 1984). In addition, performance has been found to be positively related to "fit" (Hackman & Oldham, 1980; Naylor, Pritchard & Ilgen, 1980; Porter & Lawler, 1968). This particular study will examine overall job performance as well as creative performance on the job.

Addressing Limitations of the P-E Fit and Componential Models

By integrating the individual-level and organizational-level

influences on the creative process into the Model of Creative Fit, this study will address some of the concerns expressed previously with the P-E fit model of stress and the Componential Model of Organizational Innovation.

P-E Fit Limitations Addressed

A number of the limitations of the person-environment fit model that were outlined previously can be minimized in this study. One criticism of P-E fit theory is the poor distinction made between supply-value fit and demand-ability fit. This study is designed to examine both versions of fit as they relate to creativity. Examination of both concepts should increase understanding about the relationship between the two versions as well as their effects on well-being and performance. A second theoretical criticism has focused on unclear delineation in studies as to the form of fit being examined. Because of its basis in French's P-E fit theory of stress, the Model of Creative Fit will examine the discrepancy form of fit between the person and the environment. According to the discrepancy form, outcomes become more negative as environment characteristics deviate from person characteristics (Edwards & Cooper, 1990). Another criticism of P-E fit centers on the theory's lack of guidelines for selecting person and environment characteristics to measure. Because of the present study's focus on P-E creative fit, it is clear that the P and E components being examined should be derived from the creativity literature. Amabile (1988) has developed a theoretical framework that outlines person and organization factors influencing creativity. Therefore, her factors

were included as the person and environment components of the Model of Creative Fit.

Additional criticism of P-E fit theory focuses on operationalization and measurement of the constructs. As outlined above, the Model of Creative Fit is designed to examine both subjective and objective components of the individual and his/her creative environment. This study will collect both subjective and objective data in order to examine the relationship between the objective and subjective components as well as the impact of each of these components on the outcomes of interest.

Commensurate measures will be used to measure a subset of the components of interest in the Model of Creative Fit. This will facilitate direct comparisons between person and environment components. It is infeasible, however, to employ commensurate measures for all eight measurement dimensions outlined in Figure 3. In particular, subjective measures are necessary to tap personal values and abilities as well as organizational supplies and demands. Utilizing commensurate measures on all four factors would lead to high levels of respondent sensitization to the measures and common method variance. In some cases, the need to obtain objective measures overrides the ability to utilize commensurate measures. The advantages of commensurate measures have been clearly articulated; however, their emphasis in previous studies has prevented a complete examination of all components of the person-environment fit model. By combining commensurate and non-commensurate measures in this study, a better understanding of P-E fit theory as it relates to creativity can be developed which in turn will enhance the development of more precise measures of the constructs of interest in the future.

Problems with determining the correct reference criteria and with the selection of response units should be alleviated to some extent by the tools selected to measure elements in the Model of Creative Fit. In particular, an inventory for measuring the creative organizational environment will be outlined in Chapter III that will clarify the appropriate frame to use in operationalizing the Model of Creative Fit. Little research has examined person and environment components of creativity. Therefore, there are few well developed measurement tools for examining creative person-environment fit. This study should serve as a building block for the development of more extensive measures of creative person-environment fit.

A final criticism of P-E fit theory relates to the use of difference scores for operationalizing P-E fit. Because of the problems with difference score analysis, it has been proposed that the discrepancy form of fit can be studied by examining the joint contribution in predicting strain of component scores entered together (Edwards & Cooper, 1990). The precise method for doing this will be outlined in Chapter III.

Componential Model Limitations Addressed

Integrating the components influencing creative behavior into a person-environment fit framework also addresses some of the problems with the Componential Model that were outlined above. First, the person-environment fit framework is designed to examine the independent and joint influences of elements of the person and elements of the environment. It is proposed in the componential model of creativity that there is reciprocal influence between individual and organizational

components, but this proposal has never been examined. The new framework allows this issue to be addressed.

According to the Model of Creative Fit, the level of person-environment fit between the components of creativity is associated with the outcomes of strain, job satisfaction, and performance. Thus, the influence of the creative components is examined in regard to outcomes other than creative products or ideas.

The final limitation of the Componential Model to be addressed in this study relates to measurement of the components. Valid and reliable measures of all of the model's components need to be developed. An inventory has been generated for examining the organizational elements; however, limited work has been done on developing measures of the individual components. This study will investigate the available inventory further as well as develop measures for the individual components of creativity.

Hypotheses and Research Question

The Model of Creative Fit suggests that a fit on dimensions of creativity is related to the outcomes of strain, job satisfaction, and performance. The objective of this section is to develop a set of hypotheses and research questions specifying the relationship between creative P-E fit and the outcomes of interest.

The following three hypotheses examine the relationship between P-E fit and the outcomes of interest. As far back as Lewin (1936) and Murray (1938) it has been suggested that individual and situational components together explain human behavior better than either component alone. Interactional psychologists today also support this view

(Chatman, 1989; Davis-Blake & Pfeffer, 1989; Terborg, 1981). A number of studies have found that P-E fit measures explain significant additional variance (approximately 3-6%) in outcomes over that explained by the components individually (Caplan et al., 1980; Harrison, 1976; Harrison et al., 1987; House, 1972; Kulka, 1976).

Amabile (1983b, 1988) also indicated that creativity should be best understood by taking a social-psychology or person-environment perspective. According to her model, components influencing organizational innovation directly affect individual components of the creative process. Thus, outcomes of the creative process cannot be understood or predicted without examining the reciprocal influence of organizational and individual factors.

Hypothesis 1

Person-environment fit between individual creativity and the creative environment will be causally related to strain after controlling for person and environment components.

- a) Subjective supply-value fit will be causally related to strain after controlling for person and environment components.
- b) Subjective demand-ability fit will be causally related to strain after controlling for person and environment components.
- c) Objective supply-value fit will be causally related to strain after controlling for person and environment components.
- d) Objective demand-ability fit will be causally related to strain after controlling for person and environment components.

Hypothesis 1 is based on the premise of the person-environment fit theory of stress that measures of person-environment fit predict strain based on the differences found between characteristics in an individual's environment and the individual's preferences for those

characteristics (Caplan et al., 1980). As noted earlier, a number of studies have supported this basic premise (Caplan et al., 1980; Harrison, 1976; House, 1972; Kulka, 1976). In general, these studies have found that person-environment fit explains significant additional variance of three to six percent over the variance explained by the person or environment components independently.

In particular, when S-V discrepancies occur, negative affect and dissatisfaction have been found (Edwards & Cooper, 1990). D-A fit has not been found to be as closely associated with well-being; however, it may have an association when meeting environmental demands is valued by or is of importance to the individual (Edwards & Cooper, 1990).

Support for this hypothesis has also been found in a study of creativity at work. Nicholson and West (1988) found that lack of overall fit between an individual's work preferences for creativity and the creative climate of the organization was related to individuals' perceptions of the situation as stressful.

Hypothesis 2

Person-environment fit between individual creativity and the creative environment will be causally related to job satisfaction after controlling for person and environment components.

- a) Subjective supply-value fit will be causally related to job satisfaction after controlling for person and environment components.
- b) Subjective demand-ability fit will be causally related to job satisfaction after controlling for person and environment components.
- c) Objective supply-value fit will be causally related to job satisfaction after controlling for person and environment components.

d) Objective demand-ability fit will be causally related to job satisfaction after controlling for person and environment components.

Fit between the individual and the environment is associated with job satisfaction because the situation permits individuals to engage in tasks they enjoy and are capable of doing (Furnham & Schaeffer, 1984). Research has also found support for the ability of discrepancies between job experiences and desired levels of those experiences to explain and predict job satisfaction (Rice, Bennett, & McFarlin, 1989).

In addition, research on the person-environment fit model is supportive of this hypothesis. Studies conducted with space center employees, working adults from a variety of professions, blue collar and white collar workers, and workers from fifty-two companies in five countries all found P-E fit to be positively associated with job satisfaction (Caplan et al., 1980; French, 1973; Furnham & Schaeffer, 1984; Tannenbaum & Kuleck, 1978). Harrison et al. (1987) also found that poor fit on work demands related to increased job dissatisfaction. In regard to specific versions of fit, Locke (1969, 1976) found that S-V misfit was related to dissatisfaction and Edwards and Cooper (1990) indicated that D-A misfit may influence job satisfaction indirectly through its impact on S-V fit. Further, Nicholson & West (1988) established that individuals who utilized their creative abilities at work were more satisfied, happier, and more fulfilled than those with fewer opportunities for creativity.

Hypothesis 3

Person-environment fit between individual creativity and the

creative environment will be causally related to performance after controlling for person and environment components.

- a) Subjective supply-value fit will be causally related to performance after controlling for person and environment components.
- b) Subjective demand-ability fit will be causally related to performance after controlling for person and environment components.
- c) Objective supply-value fit will be causally related to performance after controlling for person and environment components.
- d) Objective demand-ability fit will be causally related to performance after controlling for person and environment components.

Research provides preliminary support for the relationship between performance and S-V and D-A fit. An excess of environmental demands over individual abilities was found to be associated with poorer performance (Hackman & Oldham, 1980; Naylor, Pritchard & Ilgen, 1980; Porter & Lawler, 1968), but there is little evidence in P-E fit research at this point to suggest a relationship between S-V fit and performance (Greene, 1972; Schwab & Cummings, 1970; Edwards & Cooper, 1990). However, Mumford & Gustafson (1988) indicated that the organizational environment facilitates creativity by encouraging actions required for creativity while accepting and recognizing creative efforts. This suggests that S-V fit should be related to creative performance. Amabile (1988) also indicated that the existence of organizational conditions that facilitate individual creativity and organizational innovation should improve creative performance and that a match between individual and organizational characteristics is a factor necessary for high creativity.

Research Question

Are subjective or objective measures of individual creativity and the creative environment more closely related to strain, job satisfaction, and performance?

It is often assumed that subjective measures of the environment and the person accurately reflect the objective person and environment because subjective measures are derived from people's perceptions of the objective environment or person. Previous research suggests that the subjective environment is a better predictor of stress than the objective environment (Frankenhauser, 1980; French & Caplan, 1972; Hackman & Lawler, 1971; Kraut, 1966). These studies indicate that individual's perceptions of stressors intervene between objective stressors and the outcomes of those stressors. Therefore, subjective components should be better predictors of outcomes than objective components. However, because only a limited number of studies have been done in this area, no definitive conclusions can be drawn about the relationship between objective and subjective measures of the person and the environment (Caplan et al., 1980).

Kulka (1979) has also suggested that by examining objective and subjective measures of environment and person components, many of the inconsistencies found in person-environment fit models can be explained. A comparison of the relationship between objective and subjective measures as well as an analysis of the relative explanatory power of objective and subjective components is a first step in that direction.

Summary

The Model of Creative Fit has been developed to explain the relationship between individual and organizational "fit" regarding creativity and individual strain, job satisfaction, and performance. The model remedies a number of the limitations associated with models developed in the person-environment fit literature and in the individual creativity literature. The following chapter will outline a study designed to test the hypotheses and research question derived from the Model of Creative Fit.

CHAPTER III

METHOD

The purpose of this chapter is to outline the research study that examined the relationship between individual and organizational "fit" along the dimensions of creativity and the outcomes of strain, job satisfaction, and performance as outlined in the Model of Creative Fit. Following a description of the organizational setting in which the research was conducted and the sample, operationalizations of the constructs will be presented. Finally, data collection procedures will be outlined and data analysis techniques explained.

The Research Setting

A medium-sized manufacturing company in the midwest was selected as the site for this study. The company employed approximately eight hundred individuals and manufactures boat and automobile engines. Employees from the manufacturing area and support services area (i.e., sales, human resources, engineering, etc.) were included in the study.

The Sample

The sample for this study consisted of one hundred forty three employees. Ninety-four of those surveyed were from manufacturing departments and forty-nine were from support services departments. Average age of the respondents was 38.3 years and their average tenure

with the organization was 9.75 years. The sample included ninety-five men and forty-eight women. A power analysis is presented in the Data Analysis section of this chapter and a copy of the human subjects research approval form is included in Appendix A.

Operationalizations of the Constructs

The independent variables that were operationalized to examine the Model of Creative Fit included subjective and objective person values and abilities and subjective and objective environment supplies and demands. Figure 7 summarizes the measures used to operationalize the independent variables. The three dependent variables included in this study were strain, job satisfaction, and performance. Figure 8 outlines the methods used to operationalize the dependent variables.

Insert figures 7 and 8 about here

Independent Variables

Subjective Values. Subjective values, which consist of an individual's self-assessment of his/her values, were measured by the Work Environment Inventory (WEI) developed by Amabile and her colleagues at the Center for Creative Leadership (Amabile, Gryskiewicz, Burnside, & Koester, 1990). The inventory was designed to examine factors in an individual's work environment most likely to influence the expression and development of creative ideas. Because of this, the WEI is valuable for examining the effects of the work environment on creativity (Woodman, Sawyer and Griffin, 1992). A pilot study examined eight of

the ten scales developed for the WEI for possible use in this study. The scales included in the pilot study measured freedom, challenging work, sufficient resources, supervisory encouragement, work group supports, organizational encouragement, organizational impediments, and workload pressure. The first six scales describe stimulants to creativity and included items such as "there is free and open communication within my work group" and "new ideas are encouraged in this organization." The last two scales describe obstacles to creativity and include items such as "people are too critical of new ideas in this organization" and "I have too much work to do in too little time." The 66 items that comprise the eight scales were originally scored on a four point response scale. The inventory was scored on a seven point scale anchored by "never true of my work environment" (1) and "always true of my work environment" (7) for this project in order to maintain consistency across scales (See Appendix B).

The WEI was chosen to measure subjective values because of its conceptual basis in Amabile's Componential Model of Organizational Innovation (Amabile, 1988), one of the cornerstones of the Model of Creative Fit. The WEI has been found to be internally consistent with acceptable levels of test-retest reliability. Psychometric analysis of the WEI has been conducted with a variety of professional and functional groups within fourteen different organizations. The total sample size for the psychometric analysis was 1,863. Cronbach's alpha for the eight scales ranged from .69 for Freedom to .92 for Supervisory Encouragement. These reliabilities are deemed acceptable for exploratory research according to Nunnally (1978), who suggests the criterion of .70 or greater for newly developed measures and for

exploratory research. Own scale/other scale correlational analyses were also performed. No single item correlated with another scale more highly than it did with its own scale. Factor analysis of the scale items indicated that no items loaded substantially onto more than one scale. A subset of the original sample was used to examine test-retest reliability. Each scale's test-retest reliability exceeded .70 (Amabile et al., 1990).

The WEI has also been examined for its ability to discriminate between work environments with respect to the presence of stimulants and obstacles to creativity. A univariate analysis of variance indicated overall group effects and significant differences between pairs of groups on each scale. All F-values were significant at the $p < .0001$ level, thus providing preliminary support for the discriminant validity of the WEI (Amabile, 1990).

There is also evidence for the concurrent validity of the WEI. The eight scales from the WEI were correlated with the creativity outcome scale from the WEI. Twenty of sixty-six single environment items correlated at least .40 (these were significant beyond the .0001 level) with creativity. In addition, a separate instrument designed to measure the creativity of specific projects was used in a subset of the overall sample. The independent measure of creativity correlated significantly with the Challenging Work and Supervisory Encouragement scales of the WEI, thereby providing preliminary support for the concurrent validity of these scales (Amabile et al., 1990).

According to Edwards and Cooper (1990), when measuring an individual's values using the discrepancy form of fit the questions should focus on the desired level of the attributes. The WEI was

originally designed to assess the current work environment of the organization rather than the desired or ideal work environment. However, a subset of the total sample of individuals examined by Amabile et al. (1990) completed the questionnaire under two different instructional sets (i.e., current vs. ideal environments). Means were significantly different on all eight scales between the two instructional sets (all differences were significant by 2-tailed t-tests at $p < .006$) (Amabile et al., 1990). These results indicate that the WEI can discriminate between perceptions of actual (i.e. organizational supplies) and ideal (i.e. individual values) work environments. Therefore, the WEI was utilized to measure subjective values by using an instructional set that requested a description of the individual's desired work environment for promoting creativity.

Objective Values. Unbiased, objective measures of a person's values are difficult to obtain; consequently, few person-environment fit studies have included objective measures. One study which attempted to compare objective and subjective evaluations examined fit along ten dimensions expected to be important to high school boys. Standardized tests and teacher ratings were used for objective measures and self-report questionnaires completed by high school boys were used for subjective measures. However, the objective and subjective measures were only weakly related (French et al., 1974).

In the current study, supervisors whose employees participated in the study completed a Work Environment Inventory for a "typical employee" in their department. The instructional set asked the supervisor to describe a "typical employee's" desired work environment

for fostering creativity. Supervisor ratings of a "typical employee's" values should be more efficient and effective than having every supervisor fill out the WEI on each employee. Some supervisors would be required to complete multiple questionnaires, presenting time problems. In addition, supervisors may not know each employee well enough to determine their individual values regarding a creative work environment. Finally, after completing the WEI several times, supervisors would become sensitized to the instrument, which could diminish their objectivity and bias their responses. The "typical employee" response strategy was used to overcome these potential problems.

Twenty-seven supervisors participated in the study. Sixteen represented the manufacturing area while eleven were from the support services area. All but one of the supervisors were men. The supervisors' average tenure with the organization was 11.94 years, their average tenure as a supervisor was 3.20 years and their average age was 40.3 years.

Subjective Abilities. Measurement of subjective abilities in this study of person-environment fit were self-assessments of an individual's creative abilities. Two scales were pretested for their ability to tap individual creative abilities.

Intrinsic motivation was measured using a scale developed by Warr, Cook and Wall (1979). The measure was designed to examine "the degree to which a person wants to work well in his or her job in order to achieve intrinsic satisfaction" (Warr et al., p. 133, 1979). The scale consists of six items with a seven-point response scale anchored by 1 = strongly disagree and 7 = strongly agree. Sample items in the

scale include "I feel a sense of personal satisfaction when I do this job well" and "I try to think of ways of doing my job effectively." The initial examination of the scale obtained alpha coefficients of .82 in two different samples of blue-collar workers ($N = 200$, $N = 390$), a test-retest correlation after six months of .65, loadings on a single factor for all scale items, and factorial independence of all scale items from other measures used in the study (Warr et al., 1979). Thus, the scale exhibited acceptable reliability and discriminant validity as a measure of intrinsic motivation.

The Innovativeness Scale, developed by Hurt, Joseph, and Cook (1977), was used as a self-report measure of innovativeness. The scale was originally developed to include twenty items. Reliabilities for the twenty-item scale range from .87 to .94 (Hurt et al., 1977; Goldsmith, 1986) with all twenty items loading onto one factor. In addition, the unidimensionality and reliability of the scale has been replicated in a variety of populations that differed in age and socioeconomic status suggesting that the scale has predictive validity across populations (Trocki & Hurt, 1976). Hurt et al. (1977) recommend the use of the ten items with the highest item-total correlations as a short form of the Innovativeness Scale. The internal reliability of the short form is .89 and its correlation with the long form is .92. Responses for the scale were scored from 7 = strongly agree to 1 = strongly disagree and the scale includes items such as "I find it stimulating to be original in my thinking and behavior." The short form of the Innovativeness scale was pretested for use in this study. See Appendix B for the items in these scales.

Objective Abilities. Objective abilities were assessed using supervisor ratings. The supervisors were asked to complete an evaluation for each of their subordinates who participated in the study. The questionnaire consisted of the same scales used by employees to assess their subjective abilities.

Subjective Supplies. The Work Environment Inventory was used to assess subjective supplies. Proper measurement of subjective supplies determines how much of the attribute is perceived to be present (Edwards & Cooper, 1990). The original instructional set for the WEI asked respondents to answer the questions in terms of the feeling or impression they most often have about their current work environment. Thus, the WEI is a measure of perceptions of environment supplies. Reliability and validity evidence for the questionnaire was presented earlier in the chapter.

Objective Supplies. In order to operationalize objective supplies, archival data from company and department records was used. Data gathered from the archives tapped supplies provided by the organization that are conducive to or encourage creativity as outlined in the Model of Creative Fit. Therefore, the following information was collected: organization mission statements; area goals and objectives; information on training programs, production systems, data systems, financial resources and reward systems; procedure manuals; and organizational charts.

Mission statements were specifically mentioned by Amabile (1988) as a means for determining an organization's view of innovation. Information regarding the format, content and goals of training

programs, production systems, data systems, and financial resources were used to examine resources provided by the organization. Records in these areas provided information on the human, physical, informational, and financial resources available that are essential to creative production (Amabile, 1988). Finally, an examination of reward systems, procedure manuals, and organizational charts provided insight into departmental skills in managing creativity. Examination of reward systems provided insight into whether creative efforts were encouraged and rewarded. In addition, information on the organization's goal setting and performance feedback processes was gathered through a review of the reward system. By reviewing the length and complexity of department procedure manuals, data was collected on the overall complexity and formalization of the department and its communication processes. In addition, organizational charts were used to discern a department's norms and expectations with regard to complexity and formalization (Price & Mueller, 1986). Communication, complexity, and formalization are important, according to Amabile (1988), because open communication systems and the absence of formal, complex management structures are conducive to creativity.

The archival data for each area was summarized and presented to a panel of eight experts in organizational behavior and creativity. Included in the panel were four practicing managers and four academicians who were experts on creativity in organizations. The practicing managers had an average of 11.75 years of experience in business and industry while the academicians had an average of 13 years of academic experience. The panel of experts reviewed the archival data and completed a set of short indices developed by the author that

assessed environmental supplies for creativity (See Appendix B). The instructional set asked the experts to assess the current work environment of each area of the organization based on the information presented to them from the company and area records.

Subjective Demands. Subjective demands were assessed through respondent self-report. Respondents rated their perceptions of the level of demands placed on them by a particular attribute in their work environment. The scales outlined above to measure person abilities were used with a different instructional set to measure subjective demands. For this assessment, respondents were asked to rate each statement based on how much of each demand their work environment placed on them. For example, individuals were asked if their work environment demanded that they try to think of ways of doing their job effectively or if it demanded that they take pride in doing their job as well as they can.

Objective Demands. An objective measure of environment demands must tap demands the department placed on individuals for creative output. To accomplish this, archival data was collected and then rated by the same panel of experts that rated objective supplies. Included in the archival data were organization mission statements, departmental goals and objectives and performance appraisal criteria. Experts evaluated objective demands using scales developed by the author to measure each component of environmental demands (See Appendix B). Included in these scales were statements such as "the department demands that individuals have an intrinsic interest in their job", "this department requires its employees to have high levels of technical skills" and "this department demands that its employees have the ability

to develop novel ideas." These brief measures provided a general assessment of objective demands.

Dependent Variables

Strain. A thirteen item version of House and Rizzo's (1972) Anxiety-Stress Questionnaire was used as the measure of strain. The scale is divided into three sub-scales which measure 1) job-induced tension, 2) somatic tension, and 3) general fatigue and uneasiness. In a study of managers, scientists and engineers, the Anxiety-Stress Questionnaire had a Spearman-Brown internal reliability coefficient of 0.89 (Miles & Perreault, 1976). In addition, Miles (1975) found a test-retest correlation after four months of 0.79. The scale was scored on a seven point response scale. Items in the subscales included "my job tends to directly affect my health", "I sometimes feel weak all over", and "I do not have very good health."

Job Satisfaction. Two scales were used to examine job satisfaction. General job satisfaction was measured using Hackman and Oldham's (1975) scale. Facets of job satisfaction were tapped with a short version of Smith, Kendall and Hulin's (1969) Job Descriptive Index that was developed by Gregson (1987).

The General Job Satisfaction scale, a component of the Job Diagnostic Survey, is a general measure of "the degree to which the employee is satisfied and happy with the job" (Hackman & Oldham, 1975; p. 162). The five-item scale utilized a seven-point response dimension ranging from strongly disagree to strongly agree and included items such as "generally speaking, I am very satisfied with this job" (See Appendix

B). Internal consistency reliabilities (Spearman-Brown, Cronbach's alpha, and unspecified) are generally above 0.74. The scale also exhibits criterion-related validity. Significant correlations were found between general job satisfaction and scales of specific satisfactions (Cook, Hepworth, Wall & Warr, 1981).

The seventy-two item Job Descriptive Index (JDI) is one of the most widely used measures of job satisfaction in organizational research. The index examined five facets of job satisfaction: work on the present job, present pay, opportunities for promotion, supervision on the present job, and people on the present job and was developed by Smith, Kendall, and Hulin (1969). Gregson (1987) developed a short form of the JDI that utilized the six highest loading items for each facet from Smith et al., (1969). The thirty items in the short form loaded into the same factors as they did in Smith, Kendall, and Hulin's (1969) original study. Cronbach's alpha for the short version ranged from .84 for the work and coworkers subscales to .90 for the promotions subscale. For this study, the short form was scored from 1: strongly agree to 7: strongly disagree.

Performance. Two measures of performance were used as outcome variables: overall job performance and creative job performance. Supervisors were asked to rate employees' overall and creative job performance. A three item measure of overall performance developed by Hackman and Lawler (1971) was used that examines quality, quantity and over-all performance. A four item measure of creative performance was adapted from Amabile (1990) and included items such as "this employee is creative" and "this employee comes up with novel and useful ideas and

products for the organization." The measures of the dependent variables are presented in Appendix B. The scales used to measure strain and job satisfaction were included in the pilot study that follows.

Pilot Study

Prior to administration of the questionnaire, pretests were performed on all scales modified for this study. Changes in the scales needed to ensure reliability and validity were made following the pretest. The pretest was conducted with a convenience sample of 35 men and 43 women from across a variety of organizations and occupations. All of the respondents had college degrees and were employed full time. The pilot survey and its coding scheme are attached in Appendix C.

Factor analysis and reliability analysis were performed on the pretest data to determine which scale items might be discarded while maintaining the reliability and validity of the measures. A principle components analysis with varimax rotation was performed on the items used to measure supplies, values, demands and abilities because this method of factor analysis extracts more variance from each factor than would the loadings obtained from other methods of factoring (Nunnally, 1978). The purpose of the factor analysis was to identify commensurate scales to measure supplies and values and commensurate scales to measure demands and abilities. Therefore, the 66 items measuring supplies and the 66 items measuring values were each forced to load on a single factor. The sixteen items outlined to measure demands and the sixteen items outlined to measure abilities were each forced to load on a single factor solution, as well.

The 66-item Work Environment Inventory, which was used to measure supplies and values, was reduced to 30 items based on the factor analysis. Items were retained that had factor loadings greater than .30 on both the supplies and values measures simultaneously since factor loadings of at least .30 are considered significant for samples of fifty or larger (Hair, Anderson & Tatham, 1987). Table I presents the factor loadings of the items retained for the supplies measure while Table II presents the loadings of those same items for the values scale. Following factor analysis of the sixteen items originally selected to measure demands and abilities, the final measure for demands and abilities was reduced to eight items. Factor loadings of the items retained for the demands measure are presented in Table III and the factor loadings of those same items for the abilities scale are presented in Table IV.

Insert tables I, II, III, and IV about here

Reliability analysis was also performed on the modified scales and on the measures of the dependent variables to ensure that reliability was maintained following the reduction in the number of scale items and changes to the scales' response modes and instructional sets. The reliability results of this pilot study are displayed in Table V. All of the reliabilities for the modified scales were above .80 with the exception of the abilities scale which had a coefficient alpha of .70. These reliabilities are at acceptable levels for exploratory research (Nunnally, 1978).

Insert table V about here

Data Collection Procedures

Data was collected from four different sources. Subjective values, abilities, supplies and demands were assessed using a questionnaire completed by each employee. The questionnaire contained 135 items and took roughly twenty minutes to complete. Included in the questionnaire were two versions of the WEI; two versions of the Intrinsic Work Motivation and Innovativeness scales; the outcome measures; and demographic questions. Demographic data collected included education level, age, sex, job title and tenure with the organization. The employee questionnaire and its coding scheme is presented in Appendix D. Objective values were tapped by a questionnaire administered to the supervisors of the employees participating in the study. The 30 item survey took less than ten minutes to complete. A questionnaire was also administered to the supervisor of each employee to measure objective abilities. This questionnaire included the Intrinsic Task Motivation and Innovativeness scales as well as measures of overall and creative performance. It took approximately five minutes to complete. The survey and coding scheme for the supervisor surveys are found in Appendix E. Finally, expert ratings of archival data were used to examine objective supplies and objective demands for each area. After reviewing the archival data, each expert completed a questionnaire that included the newly developed scales to measure objective supplies and objective demands (See Appendix

F). Less than one hour was required to review the archival data and complete the questionnaires on each area of the organization.

The survey instrument was administered to employees and supervisors on-site over a three day period. The researcher met individually with each supervisor to explain the surveys. In addition, a cover letter was included with the supervisors' surveys that provided instructions for completing the questionnaires (See Appendix E). The supervisors completed the information and returned it directly to the researcher or mailed it to the researcher in self-addressed stamped envelopes that had been provided in order to maintain anonymity and confidentiality. The researcher also met individually or in small groups with the employees in a room that the company had set up for the research. The employees were given release time from their work and could participate in the study at any time during the three day period that was convenient for them. The script of instructions covered with the employees is included in Appendix D. Employees completed the surveys and turned them in directly to the researcher before returning to work. This ensured anonymity and confidentiality.

Archival data was collected with the help of the company's Director of Human Resources. The director collected the material requested for the study and provided it to the researcher while she was on-site collecting the employee and supervisor data. The archival data was summarized and presented to each member of the expert panel along with a questionnaire to be completed for each area of the company. A cover letter explaining the contents of the packet and giving instructions for completing the survey were also given to each expert. A copy of the cover letter is included in Appendix F. The experts'

questionnaires and data packets were either mailed to the experts or hand delivered. Self-addressed, stamped envelopes were provided for the return of the questionnaires.

Data Analysis Techniques

Because of the limitations of discrepancy scores in the measurement of person-environment fit, a multivariate method recommended by Cronbach and Furby (1970) and Edwards and Cooper (1990) was used to test the hypotheses (the difference score technique was also utilized for comparative purposes). Prior to the discussion of the multivariate method, the plan for analyzing the data in this study will be outlined. Following a review of the multivariate approach to measuring P-E Fit and a discussion of its ability to deal with criticisms of the difference score approach, the power analysis for this study will be presented.

Data Analysis Plan

Scale items were intermingled during construction of the questionnaire to minimize response bias. Preliminary data analysis began with summary descriptive statistics including frequencies, means and standard deviations. Factor analysis was used to determine if scale items loaded significantly on only a single factor and to determine factorial independence of all scale items from other measures used in the study. These analyses helped determine the discriminant validity of the scales. Internal consistency reliability of the scales was determined using Cronbach's alpha. Interrater reliability of the expert and supervisor ratings was calculated using a technique described by

Shrout and Fleiss (1979) that utilizes intraclass correlations to determine interrater reliability. Reliability for expert ratings was calculated using a two way random effects model for mean ratings while the reliability for supervisor ratings was calculated using Shrout and Fleiss' (1979) one way random effects model for mean ratings. The individual contribution of person and environment components in explaining the outcomes was also explored. Simple regression was used to examine the variance in the outcomes explained by the person and environment components as single predictors. Type III sums of squares were also calculated to determine if any additional variance in the outcomes was explained by the person or the environment component if it was assumed to enter the regression equation last. Finally, the hypotheses were tested using the multivariate approach outlined subsequently.

Multivariate P-E Fit

The multivariate method examines the discrepancy form of P-E fit by entering component scores together and estimating their joint contribution in predicting the outcomes of interest. The following regression equation, presented by Edwards and Cooper (1990), was used to examine person-environment fit from a multivariate perspective:

$$Y = b_0 + b_1P + b_2E + b_3P^2 + b_4E^2 + b_5P*E + e \quad (1)$$

Using Equation 1, linear, U-shaped, and asymptotic relationships between P-E fit and the outcomes of interest can be identified while avoiding many of the drawbacks of difference scores. The actual analysis of Equation 1 was done hierarchically. P and E components were entered in the first stage of the hierarchical analysis. During the second stage

of the analysis the interaction term (P*E) and the higher order terms were entered (P² and E²) as a block.

The higher order terms were entered in a block with the interaction term because a linear X linear (P*E) trend may be found when, in reality, a higher order trend explains better the relationship between the dependent variable and the independent variables. Therefore, Lubinsky and Humphreys (1990) recommend evaluating the linear X linear (P*E) interaction in competition with the squared terms (P² and E²) by entering them concurrently in hierarchical stepwise fashion after the linear terms (P and E) have been entered. This methodology allows the data to determine the precise functional relationship responsible for any additional explained variance. Thus, more accurate interpretations of the data should result (Lubinsky & Humphreys, 1990). P and E component signs in the equation refer to the first stage of the analysis, while signs on the higher-order terms refer to the second stage of the hierarchical analysis (Edwards & Cooper, 1990).¹

Table VI outlines the expected pattern of regression coefficients for Equation 1 associated with the different shaped relationships possible between P-E fit and the outcomes being examined. Table entries indicate the sign of coefficients expected to be significant in a given situation. Therefore, a linear relationship is demonstrated by significant coefficients for P and E only. A U-shaped relationship is indicated by significant coefficients for P², P*E, and/or E². Finally, an asymptotic relationship has significant coefficients for all five variables in Equation 1 (Edwards & Cooper, 1990). The multivariate method of analysis was facilitated by using three-dimensional plots to examine the relationship between the P and E components and outcomes. A

three-dimensional view of fit expands the view of fit from a set of constraints on the relationship between the person, the environment, and outcomes, to any situation in which the person and environment are jointly related to outcomes (Edwards, 1991).

Insert table VI about here

This regression equation and three-dimensional analysis facilitated the examination of the three hypotheses outlined in Chapter II. Equation 1 was designed to directly test the three hypotheses which indicated that P-E fit would be causally related to the outcome variables after controlling for the person or environment components. Comparing the results of Equation 1 with the results of an analysis with P and E components entered alone will provide the necessary information to determine if P-E fit explains variance above that explained by component analysis. These hypotheses would be supported if non-linear relationships were found between P-E fit and the outcomes. Non-linear relationships exist if the change in R-square is significant between step one and step two of the hierarchical regression. The significance of the change in R-square was tested using Cohen and Cohen's (1983) general F test for an increment. Equation 1 provided information on the direction of the relationships as well as giving insight into the shape and magnitude of the relationships. Examination of shape and magnitude constitutes an exploratory aim of the study. This information will add significantly to the understanding of person-environment fit along the dimension of creativity.

The research question examined the relative power of subjective versus objective measures in explaining the outcome variables. Correlations and t-tests provided insight into the relationships between objective and subjective measures. Forward stepwise regression was used to examine the relative explanatory power of objective versus subjective measures in explaining the outcome variables.

Overcoming Deficiencies in Difference Scores

The use of a multivariate, three dimensional method for analyzing P-E fit overcomes limitations of P-E fit outlined in Chapter II because it maintains the integrity of the person and environment components as separate constructs (Edwards, 1991). Predictive power is also increased using the multivariate approach because the multivariate approach allows coefficients on P and E to take on whatever values maximize the amount of variance explained by the equation. Difference score analysis in contrast, restricts the regression coefficients of component variables. In addition, non-linear relationships can be examined using the multivariate approach without relying on mathematical transformations of difference scores which tend to be flawed because they restrict the direction and magnitude of the regression coefficients (Edwards & Cooper, 1990). The multivariate approach to examining person-environment fit appears to have several advantages over the differences score approach; however, the multivariate approach is in early stages of development and little work has been done to compare it to the difference score approach. Therefore, both analysis techniques (i.e.,

multivariate and difference score) were conducted on the data for this study for comparative purposes.

Power Analysis

The power analysis for this study was carried out using the steps outlined by Cohen and Cohen (1983) for determining power in regression analysis with multiple independent variables. Assuming power = .90, $R^2 = .15$, alpha = .05, and the maximum number of independent variables = 8 (i.e. there would be 8 independent variables if objective and subjective measures of both the person and environment components of supply-value fit and demand-ability fit were entered into the regression equation simultaneously), a minimum sample size of 117 would be needed. As previously indicated, the sample size for this study was 143 which meets the requirements of this power analysis.

CHAPTER IV

RESULTS

This chapter presents the results of the research study presented in Chapter III. The chapter contains five sections 1) preliminary data analysis and descriptive statistics; 2) examination of the relationships between person-environment fit and strain; 3) examination of the relationships between person-environment fit and job satisfaction 4) examination of the relationships between person-environment fit and performance; and 5) examination of the relationships between the subjective and objective measures and the outcome variables. Following a restatement of each hypothesis or research question, results will be presented that indicate the degree to which the research question or hypothesis was supported.

Preliminary Data Analysis

Prior to examination of the research question and hypotheses, preliminary data analysis was conducted on the study scales. The preliminary analysis included factor analysis of scale items, reliabilities and summary statistics on the scales and examination of correlations between scales. Preliminary analysis of the scales derived from the employee and supervisor surveys will be reviewed first because scales from those surveys contained the same items. Scales utilized in

the expert survey will then be examined. Finally, results of the simple regression and the Type III sums of squares examining the linear relationship between the person and environment components and the outcomes will be presented.

Results of the principle components analysis of the subjective supply, subjective value, and objective value scales are presented in Table VII. The table presents the one factor solution derived for each scale. All 30 items had factor loadings above .30 on all three scales with the exception of items 8 (there is free and open communication within my work group), 10 (overall, the people in this organization have a shared "vision" of where we are going and what we are trying to do), 12 (performance evaluation in this organization is fair), 14 (there is an open atmosphere in this organization), and 25 (my supervisor values individual contributions to projects) which loaded above .30 on two of the three scales and item 5 (in my work group, people are willing to help each other) which loaded above .30 on the objective value scale. All three scales had eigenvalues above 10. These eigenvalues are high, suggesting that additional factors might be present. However, this research is exploratory and represents some of the initial work in creative person-environment fit. Therefore, the intent of this study is to examine broader, macro-level variables in order to gain a preliminary understanding of commensurate person and environment factors related to creativity. Chapter V will outline suggestions for future research aimed at developing more specific factors associated with creative person-environment fit.

Insert table VII about here

Table VIII outlines the results of the factor analysis for the scales designed to measure subjective demands, subjective abilities and objective abilities. Initially, the eight items making up each of these scales were forced to load onto one factor. The results in Table VIII indicate that all eight items loaded above .50 on the subjective demands and objective demands scales; however, the subjective abilities scale appeared to measure two different concepts. Therefore, the three scales were reanalyzed using a two-factor solution. The results of the two-factor analysis are also presented in Table VIII and clearly indicate that for all three scales a two-factor solution was preferable to the one-factor solution. Items loading on the first factor measure demands and abilities for innovativeness and those loading on the second factor measure intrinsic motivation. Therefore, subjective abilities, subjective demands, and objective abilities were divided into two scales (i.e., innovativeness and intrinsic motivation) to examine the research question and hypotheses. These results are logical since scales for innovativeness and intrinsic motivation were originally combined in an attempt to develop one scale that could be used to measure both demands and abilities.

Insert table VIII about here

Summary statistics and reliabilities for all independent and dependent variable scales derived from the employee and supervisor

surveys are presented in Table IX. The internal consistency reliabilities of all scales were above .70 which is acceptable for exploratory research (Nunnally, 1978). Interrater reliability for the supervisors' ratings of objective values was .81 ($p < .05$). Examination of the scale means indicates that employees rated their values and abilities for creativity higher than they rated the organization's supplies and demands for creativity (the differences were all significant at the .01 level) and that employees place great value on a creative environment and believe they are intrinsically motivated and creative (i.e., all averages were above 5 on a 7 point scale). Means for the outcome variables ranged between 3 and 5 on a 7 point scale with the exception of overall performance which had an average of 5.85. Consequently, employees are moderately satisfied, experience average levels of strain and are perceived by their supervisors as good performers who are moderately creative.

Insert table IX about here

Correlations were computed between all scales and with the demographic variables. These correlations are displayed in Table X. All six job satisfaction scales were significantly related to each other except for coworker satisfaction and pay satisfaction which were unrelated. The overall and creative performance scales were also significantly related. The employee's demographic variables were significantly related to several of the dependent variables (i.e., educational level was significantly related to satisfaction with coworkers and creative performance; age was related to general job

satisfaction and satisfaction with work and pay; sex was related to creative performance and satisfaction with supervisor, and; tenure with the organization was related to overall performance). Therefore, the demographic variables were controlled in the first step of the hierarchical regression analysis used to examine the hypotheses.

Insert table X about here

There were also a number of significant correlations between the outcome variables and the independent variables as well as significant correlations between the independent variables. The significant correlations between the independent variables that were analyzed together in the regression analysis were of particular concern because of the potential for multicollinearity. Specifically, subjective supplies and subjective values were significantly correlated ($r=.50$; $p<.01$), subjective demands for intrinsic motivation were significantly correlated with subjective abilities for intrinsic motivation ($r=.20$; $p<.05$) and subjective demands for innovativeness were significantly related to subjective abilities for innovativeness ($r=.23$; $p<.01$). However, Cohen and Cohen (1983) indicate that using hierarchical regression analysis can help deal with the problems of multicollinearity because this technique separates out the unique contributions made by the variables. Since hierarchical regression will be used in this study, the chance of multicollinearity should be reduced. In addition, the smaller the standard error of the regression coefficient, the less likely it is that multicollinearity problems exist (Dillon & Goldstein, 1984; Hair, Anderson & Tatham, 1987). A review of the regression

analysis for this study indicated that the standard errors of the regression coefficients were under .20 in all cases, again suggesting that multicollinearity should not have a significant impact on the analysis.

Measures of objective supplies and objective demands were derived from the expert's surveys. The items making up the objective supplies scale were factor analyzed to determine which items would load onto one factor to measure objective supplies. Results of the factor analysis are presented in Table XI. After the initial analysis, items 5, 6, 7 and 8 were eliminated because of their low factor loadings. In the subsequent factor analysis, the remaining ten items all had factor loadings above .50.

Insert table XI about here

Because subjective demands and abilities and objective abilities were split into two scales, innovativeness and intrinsic motivation, the objective demands items were examined to determine if they would load onto two similar factors. Initial loadings of the objective demand items onto one and two factor solutions indicated that items 3 and 4 were dissimilar to the other items in the scale (see Table XII). These two items were removed and the subsequent two factor solution clearly delineated two unique factors. Items 1, 2 and 5 were closely associated with demands for intrinsic motivation while items 6 through 9 related to demands for innovativeness.

Insert table XII about here

Summary statistics and coefficient alphas for each of the objective supplies and objective demands scales are presented in Table VII. The reliabilities of the three scales are above .80. Interrater reliabilities were also determined for each of the scales but were below .40 for each scale. These findings suggest that there was little agreement between the experts on the organization's demands and supplies for creativity.

Because the experts' ratings of objective supplies and objective demands focused on areas of the company, it was essential to the analysis that there be variance between the two areas of the company on those two measures. A lack of variance in the scores would result in biased estimates of the parameters and a regression model that was not full rank. T-tests were run to determine if the ratings of objective supplies and objective demands were significantly different between the manufacturing and support services areas of the company. Results of the t-tests are presented in Table XIII. These results clearly indicate that there were no significant differences between the ratings of supplies and demands between the two areas of the organization. The decision to use hierarchical regression analysis to examine the hypotheses was predicated on the belief that there would be perceived differences between the two areas of the company by the experts. Therefore, the lack of variance between areas of the company made it impossible to run the analysis necessary to test the hypotheses related to objective supplies and objective demands. A discussion of why this

problem occurred and how it can be alleviated in future research will be examined in Chapter V.

Insert table XIII about here

Results of the simple regression analysis and the type III sums of squares are presented in Table XIV. In the regression analysis, the person and the environment variables were entered as single predictors to determine their independent contribution to explaining the outcome variable. For the type III sums of squares analysis, subjective supplies and subjective values were entered together, demands for intrinsic motivation and abilities for intrinsic motivation were entered together and demands for innovativeness and abilities for innovativeness were entered together.

Insert table XIV about here

The type III sums of squares for subjective supplies was significant for all nine outcome variables. Subjective values did not explain additional variance in any of the outcomes when entered last in the equation above that explained by subjective supplies. Both demands for intrinsic motivation and abilities for intrinsic motivation had significant type III sums of squares for job satisfaction, satisfaction with promotion and satisfaction with work. Demands for intrinsic motivation explained significant variance in satisfaction with supervisor ($F=13.90$; $p, .01$), satisfaction with pay ($F=7.74$; $p<.01$) and satisfaction with coworkers ($F=15.18$; $p<.01$) when entered after

abilities for intrinsic motivation. Abilities for intrinsic motivation ($F=3.94$; $p<.05$) explained significant variance in strain when entered subsequent to demands for intrinsic motivation. Both demands and abilities for innovativeness had significant type III sums of squares for job satisfaction. Finally, demands for innovativeness explained significant variance in strain ($F=9.83$; $p<.01$), satisfaction with promotion ($F=12.26$; $p<.01$), satisfaction with supervisor ($F=7.64$; $p<.01$), satisfaction with work ($F=7.02$; $p<.01$), and satisfaction with pay ($F=14.50$; $p<.01$) when entered after abilities for intrinsic motivation.

In summary, there were only four instances in the twenty-seven examined where both the person and the environment component explained significant variance in outcomes when entered last in the regression equation (i.e., demands for intrinsic motivation and abilities for intrinsic motivation with strain; demands for innovativeness and abilities for innovativeness with strain; demands for intrinsic motivation and abilities for intrinsic motivation with satisfaction with promotion; and demands for intrinsic motivation and abilities for intrinsic motivation with satisfaction with work). It is important to note at this point that the relationships examined with the type III sums of squares were linear relationships between the person and environment components and the outcome variables. The following hypothesis tests will determine if there are any significant non-linear relationships between the person and environment components beyond the linear relationships exhibited in the simple regression and type III sums of squares analysis.

Relationships Between Person-Environment Fit
and Strain

Hypothesis 1 stated that person-environment fit between individual creativity and the creative environment would be causally related to strain after controlling for person and environment components. Four sub-hypotheses were examined directly. The regression analysis using the demographic variables did not explain significant variance in strain, therefore demographic variables were omitted from the final test of the hypotheses. Table XV presents the results of the regression analysis for Hypothesis 1.²

Insert table XV about here

Hypothesis 1a: Subjective supply-value fit will be causally related to strain after controlling for person and environment components.

Hypothesis 1a was not supported.

Hypothesis 1b: Subjective demand-ability fit will be causally related to strain after controlling for person and environment components.

Hypothesis 1b was supported for intrinsic motivation and innovativeness.

Person-environment fit between intrinsic motivation demands and abilities explained more variance in strain than demands or abilities alone. Variance explained increased by 8% to 12% ($F=4.05$; $p<.01$) with the addition of the fit terms. Significant coefficients included intrinsic motivation abilities ($b=-.21$; $p<.05$) and the squared

intrinsic motivation abilities term ($b=.15$; $p<.05$). Figure 9 presents the three dimensional graph that illustrates the relationship between intrinsic motivation demand-ability fit and strain. The addition of the higher order terms to the model examining the relationship between innovativeness demands and abilities and strain increased R-square by 6% to 15% ($F=3.09$; $p<.05$). Significant coefficients in the model included demands for innovativeness ($b=-.20$; $p<.01$) and the interaction of innovativeness demands and abilities ($b=-.13$; $p<.01$). The saddle shaped graph of this relationship is presented in Figure 10 and indicates that strain is lowest when demands and abilities for innovativeness are approximately equal and either very high or very low.

Insert figures 9 and 10 about here

Hypothesis 1c: Objective supply-value fit will be causally related to strain after controlling for person and environment components.

Hypothesis 1d: Objective demand-ability fit will be causally related to strain after controlling for person and environment components.

Neither Hypothesis 1c or Hypothesis 1d could be tested because there was no variance between areas on the expert ratings of objective supplies or objective demands.

Relationships Between Person-Environment Fit and Job Satisfaction

Hypothesis 2 stated that person-environment fit between individual

creativity and the creative environment would be causally related to job satisfaction after controlling for person and environment components. Six types of job satisfaction (i.e., general job satisfaction, promotion, supervisor, work, pay and coworker satisfaction) were examined for each of the four sub-hypotheses. Work satisfaction was significantly influenced by the demographic variables, therefore the demographic variables were included in the analysis of work satisfaction. Results of the analysis are presented in Table XV.

Hypothesis 2a: Subjective supply-value fit will be causally related to job satisfaction after controlling for person and environment components.

Hypothesis 2a was supported for general job satisfaction. The addition of the squared and interaction terms increased R-square from .30 to .34 ($F=2.56$; $p<.10$) indicating that the fit between subjective supplies and values explained more variance in general job satisfaction than either component alone. Significant coefficients in this model included subjective supplies ($b=.89$; $p<.01$), subjective supplies squared ($b=-.27$; $p<.05$), the interaction term ($b=.64$; $p<.05$), and subjective values squared ($b=-.32$; $p<.10$). Inspection of Figure 11 suggests that this relationship can be represented by an inverted asymmetric parabolic surface which indicates that job satisfaction is highest when supplies and values are high and approximately equal.

Insert figure 11 about here

Hypothesis 2a was supported for satisfaction with promotion.

Explained variance increased from .29 to .33 ($F=2.52$; $p<.10$) with the

inclusion of the non-linear components of subjective supplies and values for creativity. Significant coefficients included subjective supplies ($b=.96$; $p<.01$) and the interaction between subjective supplies and subjective values ($b=.64$; $p<.01$). Figure 12 depicts the relationship between supply-value fit and promotion satisfaction graphically. This graph indicates that satisfaction with promotion is highest where supplies and values are approximately equal, but that satisfaction with promotion is higher when both values and supplies are high than when both are low.

 Insert figure 12 about here

Hypothesis 2a was not supported for satisfaction with supervisor, work, pay or coworkers.

Hypothesis 2b: Subjective demand-ability fit will be causally related to job satisfaction after controlling for person and environment components.

Hypothesis 2b was not supported for intrinsic motivation demand-ability fit for any facet of job satisfaction.

Hypothesis 2b was supported for innovativeness demand-ability fit for general job satisfaction and satisfaction with promotion, supervisor, pay and coworkers. Explained variance in general job satisfaction was increased from 8% to 14% ($F=2.60$; $p<.10$) with the inclusion of the non-linear components of innovativeness demands and abilities. Significant coefficients included innovativeness demands ($b=.26$; $p<.01$) and the innovativeness demand-ability interaction ($b=.17$; $p<.01$). Figure 13 depicts this relationship three-dimensionally. The

addition of the non-linear terms increased explained variance from 8% to 14% ($F=3.42$; $p<.05$) for satisfaction with promotion. Innovativeness demands ($b=.32$; $p<.01$) and the interaction of innovativeness demands and abilities ($b=.19$; $p<.01$) were the only significant coefficients. The relationship between innovativeness demand-ability fit and satisfaction with promotion is illustrated in Figure 14. Explained variance in satisfaction with supervisor increased from 6% to 18% with the addition of the fit component. This increase was significant at the .01 level. Innovativeness demands ($b=.23$; $p<.01$), innovativeness demands squared ($b=.15$; $p<.01$) and the interaction of innovativeness demands and abilities ($b=.19$; $p<.01$) were all significantly and positively related to satisfaction with supervisor. This relationship is exhibited graphically in Figure 15.

 Insert figures 13, 14, and 15 about here

Coefficients significant in explaining satisfaction with pay included innovativeness demands ($b=.33$; $p<.01$) and the squared terms for both innovativeness demands ($b=.13$; $p<.05$) and innovativeness abilities ($b=-.14$; $p<.10$). R-square increased by .04 ($F=2.33$; $p<.10$) to .14 for satisfaction with pay with the addition of the curvilinear components. The graphic depiction of the relationship between innovativeness demand-ability fit and satisfaction with pay is exhibited in Figure 16. For satisfaction with coworkers, the linear terms did not explain significant variance. However, the overall model, which also included the higher order and interaction predictors, was significant at the .05 level ($F=2.28$). Only the interaction between innovativeness demands and

abilities had a significant regression coefficient ($b=.15$; $p<.05$). Figure 17 presents the three-dimensional graph of this relationship. A review of each graph related to hypothesis 2b illustrates that the facets of job satisfaction were highest when demands and abilities were equivalent and that the facets of job satisfaction were higher when demands and abilities were high than when both were low.

 Insert figures 16 and 17 about here

Hypothesis 2b was not supported for innovativeness demand-ability fit for work satisfaction.

Hypothesis 2c: Objective supply-value fit will be causally related to job satisfaction after controlling for person and environment components.

Hypothesis 2d: Objective demand-ability fit will be causally related to job satisfaction after controlling for person and environment components.

Neither hypothesis could be tested because there was no variance between areas on the expert ratings of objective supplies and objective demands.

Relationships Between Person-Environment Fit and Performance

Hypothesis 3 stated that person-environment fit between individual creativity and the creative environment would be causally related to performance after controlling for person or environment components. Four related sub-hypotheses were tested to examine both overall and

creative performance. The demographic variables were included as the first step of the regression analysis for creative performance because they explained significant variance in that outcome variable. Results of the analysis are presented in Table XV.

Hypothesis 3a: Subjective supply-value fit will be causally related to performance after controlling for person and environment components.

Hypothesis 3a was not supported for overall performance.

Hypothesis 3a was supported for creative performance. In addition to the significant amount of variance in creative performance explained by the demographic variables, the linear components of subjective supplies and values explained 9% ($F=4.86$; $p<.01$) of the variance and the non-linear components explained 8% ($F=4.93$; $p<.01$) of the variance. Significant coefficients were obtained for subjective supplies ($b=.37$; $p<.01$), the squared component of subjective supplies ($b=-.23$; $p<.05$) and the interaction between subjective supplies and values ($b=-.72$; $p<.01$). Figure 18 illustrates that creative performance was highest when supplies and values were about equal and creative performance was higher when supplies and values were high than when they were low.

 Insert figure 18 about here

Hypothesis 3b: Subjective demand-ability fit will be causally related to performance after controlling for person and environment components.

Hypothesis 3b was not supported for overall or creative performance for either intrinsic motivation demands and abilities or

innovativeness demands and abilities.

Hypothesis 3c: Objective supply-value fit will be causally related to performance after controlling for person and environment components.

Hypothesis 3d: Objective demand-ability fit will be causally related to performance after controlling for person and environment components.

Neither hypothesis could be tested because there was no variance between areas on the expert ratings of objective supplies and objective demands.

Relationships Between Subjective and Objective Measures and Outcome Variables

The research question examined the relative ability of subjective and objective measures of individual creativity and the work environment to explain individual outcomes. The outcomes examined include strain, job satisfaction and performance.

Research Question: Are subjective or objective measures of individual creativity and the creative environment more closely related to strain, job satisfaction, and performance?

The relationships between objective and subjective measures of each scale (i.e., supplies, values, intrinsic motivation and innovativeness) were examined using correlations and paired comparisons of their means. The results, presented in Table XVI, indicated that the objective and subjective measures of each scale were highly correlated with the exception of the demands for intrinsic motivation and the

demands for innovativeness scales. The paired comparisons indicate, however, that although the measures were highly correlated, the means of all of the subjective measures were significantly higher than the means of the objective measures ($p < .01$ for each comparison).

Insert table XVI about here

Forward stepwise regression was utilized to determine the relative explanatory ability of objective and subjective measures in explaining the outcomes. Comparisons could only be made between objective and subjective values and objective and subjective abilities for intrinsic motivation and innovativeness because of the lack of variance in the objective measures of values and demands for intrinsic motivation and innovativeness.

The results of the stepwise regression examining the relationships between the dependent variables and objective and subjective measures of the independent variables are presented in Table XVII. Subjective values entered into the stepwise regression before objective values for all of the dependent variables. The coefficient for subjective values was also significant in all of the models at the .05 level with the exception of satisfaction with pay and creative performance. Variance explained by subjective values ranged from 7% for coworker satisfaction to 4% for general job satisfaction and overall performance.

Insert table XVII about here

For objective and subjective abilities for intrinsic motivation, a variety of relationships were found with the dependent variables. Subjective abilities for intrinsic motivation were significantly related to strain ($b = -.23$; $p < .05$). Objective abilities for intrinsic motivation were not significant.

Objective abilities for intrinsic motivation entered in the first step of the analysis for satisfaction with supervisor ($b = .33$; $p < .05$), satisfaction with pay ($b = .24$; $p < .10$), satisfaction with coworker ($b = .33$; $p < .05$), overall performance ($b = .73$; $p < .01$) and creative performance ($b = .33$; $p < .01$). The relationships between objective abilities for intrinsic motivation and both overall and creative performance were particularly interesting because objective abilities for intrinsic motivation explained 51% and 22% of the variance in those outcomes, respectively. Subjective abilities for intrinsic motivation were not a significant predictor of any of these outcomes.

Both objective and subjective abilities for intrinsic motivation were significant in explaining general job satisfaction, satisfaction with work, and satisfaction with promotion. For general job satisfaction, subjective abilities for intrinsic motivation were included in the first step of the analysis ($b = .58$; $p < .01$). Objective abilities for intrinsic motivation entered in the second stage of the analysis and were significant in explaining general job satisfaction ($b = .30$; $p < .05$). The overall model explained 19% ($F = 15.40$; $p < .01$) of the variance in general job satisfaction. Subjective abilities for intrinsic motivation also entered in the first step of the regression with satisfaction with work ($b = .81$; $p < .01$). Objective abilities for intrinsic motivation entered the regression with a significant

coefficient in the second step of the analysis ($b=.33$; $p<.01$) and increased R-square from .30 to .35 ($F=9.94$; $p<.01$). Objective abilities for intrinsic motivation were most closely related to satisfaction with promotion, entering in the first step of the analysis ($b=.67$; $p<.01$). Abilities for intrinsic motivation were also significant in explaining satisfaction with promotion with a regression coefficient of .34 ($p<.05$). R-square for the model was .16 ($F=14.16$; $p<.01$).

Overall performance was the only outcome significantly related to both objective and subjective abilities for innovativeness. Objective abilities for innovativeness entered the equation first ($b=.29$; $p<.01$), however, subjective abilities for innovativeness were significant in the second step of the analysis ($b=-.10$; $p<.05$). R-square increased from .27 to .29 ($F=4.41$; $p<.05$) with the addition of subjective abilities for innovativeness.

Objective abilities for innovativeness were significant in explaining strain ($b=-.11$; $p<.10$), general job satisfaction ($b=.21$; $p<.01$), satisfaction with promotion ($b=.27$; $p<.01$), satisfaction with supervisor ($b=.14$; $p<.10$), satisfaction with work ($b=.27$; $p<.01$), satisfaction with pay ($b=.17$; $p<.05$), satisfaction with coworkers ($b=.14$; $p<.10$) and creative performance ($b=.40$; $p<.01$). R-square was .10 or below for all of the outcome variables except creative performance. Objective abilities for innovativeness explained 38% of the variance in creative performance ($F=85.32$; $p<.01$). Subjective abilities for innovativeness were not significant in explaining any of the outcomes.

In summary, the hypothesis tests indicate that both intrinsic motivation and innovativeness demand-ability fit were significant in

explaining individual strain. General job satisfaction was explained by subjective supply-value fit and innovativeness demand-ability fit. For the facets of job satisfaction, innovativeness demand-ability fit explained significant variance in satisfaction with promotion, supervisor, pay and coworkers. Subjective supply-value fit was also significant in explaining satisfaction with promotion. Only subjective supply-value fit explained significant variance in creative performance.

The results related to the research question indicate that subjective measures of individuals' values were more closely associated with the study outcome variables than objective measures of values although the variance explained in most cases was relatively small. Subjective abilities for intrinsic motivation were better predictors of strain while both objective and subjective measures of abilities for intrinsic motivation explained general job satisfaction and satisfaction with work and promotion. Only the objective measures of intrinsic motivation abilities were significant in explaining satisfaction with supervisor, pay, coworkers and overall and creative performance. Finally, significant variance in general job satisfaction and overall and creative performance was also explained by objective measures of abilities for innovativeness.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

A person-environment fit model of creativity was developed and tested. The purpose of this chapter is to interpret the results of the data analysis and draw conclusions about the Model of Creative Fit. In addition, implications of the research for management practice will be examined. Finally, limitations of this study and suggestions for future research on person-environment fit and creativity will be discussed.

Discussion and Conclusions

The discussion of the results will focus on three issues:

1) Is the concept of creative fit important? 2) If creative fit is a useful concept, what kind of fit (supply-value or demand-ability) should be examined? and 3) Should both objective and subjective measures of the person and environment variables be examined?

Is the concept of creative fit important? The finding that ten of the twenty-seven fit relationships examined in this study were statistically significant illustrates the need to examine the multidirectional influence that occurs between individual and organizational components of creativity rather than examining the two components independently. A closer examination of the variance explained by these models indicates the practical as well as statistical

significance of these findings. Previous person-environment fit research has found that "fit" increased the variance explained by three to six percent (Caplan et al., 1980; Harrison, 1976; Harrison et al., 1987; House, 1972; Kulka, 1976); whereas, this study indicates that four to twelve percent more variance in the outcomes was explained by creative fit than by the linear components of the person and environment alone. For example, only 6% of supervisor satisfaction was explained by the linear components of organizational demands for innovation and individual abilities for innovation. By including the fit component (i.e., the squared and interaction terms), variance explained in supervisor satisfaction increased to 18%. The inclusion of the fit components also increased the overall model R-square to .29 or greater for the relationship between supply-value fit and creative performance ($R^2=.29$), supply-value fit and promotion satisfaction ($R^2=.33$) and supply-value fit and job satisfaction ($R^2=.34$). These results suggest that the concept of creative fit is important in explaining strain, job satisfaction and performance.

If only the relative effects of the person and environment components had been examined, one would assume that only the person or environment component was important because twenty-three of the twenty-seven relationships examined in the type III sums of squares analysis indicated that only the person or only the environment component explained significant variance in strain, job satisfaction and performance. However, the fit analysis, which included the interaction between the person and environment components, clearly indicated that non-linear components of the person and environment factors explained variance in the outcomes beyond that explained by the linear components

of those factors examined in the type III sums of squares. In other words, the relationships between person and environment components and strain, job satisfaction and performance had shape and curvature; that is, they were not all simple linear relationships. These results reinforce the findings of Newton and Keenon (1990) who found, in a longitudinal study of the situational and dispositional influences on job attitudes and affect of engineers, that it was inappropriate to examine only the relative influence of dispositional and situational factors because much of the variance explained by these factors originated from their interactive rather than additive effects. Therefore, future theory development and research should continue to emphasize the importance of taking a person-environment fit perspective when examining creativity.

If creative fit is a useful concept, what kind of fit (supply-value or demand-ability) should be examined? Based on the results of this study, both supply-value fit and demand-ability fit were important in understanding individual outcomes in organizations as was suggested by Edwards and Cooper (1990). However, the relationship between each type of fit and the outcomes in this study differed. Innovativeness demand-ability fit was significantly related to strain while supply-value fit was associated with creative performance. Both innovativeness demand-ability fit and supply-value fit explained significant variance in job satisfaction. In other words, when workers perceived themselves as being creative and the company demanded that they be creative, individuals experienced less strain and were more satisfied with all aspects of their job. When the environment was as supportive as workers

wanted it to be, employees were more satisfied and performed more creatively.

These findings agree with previous studies by Locke (1969, 1976) and Rice, Bennett and McFarland (1989) that found that job satisfaction was associated with supply-value fit. The results of the present study also indicated that supply-value fit was positively related to creative performance. This finding differs from those of Green (1972) and Schwab and Cummings (1970) which suggest that performance is unlikely to be influenced by supply-value fit. The seemingly conflicting results may have occurred because creative supply-value fit was examined in the present study rather than a general measure of supply-value fit. Since creative supply-value fit was related to creative performance but not overall performance, supply-value fit may be able to explain performance if the supplies and values being measured focus on the specific type of performance that is of interest. This supports Edwards' (1991) contention that fit related to particular job content dimensions should only influence outcomes related to that dimension and the work of Amabile (1988) which indicated that an organization environment facilitating creativity would improve creative performance. Contrary to Edwards and Cooper's (1990) proposal, demand-ability fit rather than supply-value fit was related to strain. For this sample, employees' experienced more strain when they could not meet the organization's demands or when their abilities were not used to their fullest rather than when the company did not provide an environment conducive to creativity.

The shapes of the relationships that were found between the person and environment components and the outcomes can shed considerable light

upon the relationships between these variables. Two basic shapes best illustrate the relationships that were found. The significant relationships between the fit components and job satisfaction and creative performance had shapes similar to that exhibited in Figure 12. This inverted, asymptotic form illustrates that creative performance and facets of job satisfaction were higher when the organization provided an environment conducive to creativity and when employees desired a creative environment (i.e., the person and environment components were approximately equal) as well as when the organization required its employees to be creative and when the employees had the ability to be creative. These outcomes were highest when the organization's supplies for creativity and the individual's values for a creative environment were both high rather than low and when the organization's demands that employees be creative and the employees' abilities to be creative were both high rather than low. The saddle shaped graph in Figure 10 illustrates the relationship between strain and innovativeness demand-ability fit. As in Figure 12, outcomes were more positive (i.e., strain was lower) when the environment and person components (i.e., innovativeness demands and abilities) were approximately equal and were most positive when both were high rather than low. However, in Figure 10, strain was also low when demands and abilities for innovativeness were both low and approximately equal.

Therefore, to have satisfied, creative employees who experience low levels of stress, both person (i.e., values for a creative environment and abilities to be creativity) and environment factors (i.e., supplies for creativity and demands that employees be creative) related to creativity should be high and approximately equal. An excess

of either component inhibits positive outcomes for the individual. These results indicate that both supply-value and demand-ability fit need to be examined because of their unique relationships with individual outcomes.

Should both objective and subjective measures of the person and environment variables be examined? To answer this question, the relationship between objective and subjective measures needs to be reviewed as does the relative explanatory power of objective and subjective measures. Analysis of the relationship between objective and subjective measures of the independent variables indicated that the subjective ratings were significantly higher in value than the objective ratings of the same constructs. Objective values were measured using supervisors' ratings while subjective measures consisted of employees' ratings. Apparently, supervisors did not realize how important it was to subordinates that their creative efforts received support and encouragement from the organization. Supervisor ratings also served as the objective measures of intrinsic motivation and innovativeness abilities. Employees rated their abilities higher than did their supervisors. Since research has found that the "average" employee will rate his performance near the seventy-fifth percentile, this is not an unexpected result (Robbins, 1989).

Expert ratings were used to measure supplies provided by the organization to support creativity and demands placed on employees by the organization to be intrinsically motivated and creative. Subjective measures of these variables may have been higher than objective measures for two reasons. First, employees may have perceived the demands placed on them by the organization as being more rigorous than did the experts

because the employees were the ones actually experiencing the demands. Second, experts based their ratings on archival information provided by the company. Organizational supplies for creativity included factors like supervisor encouragement and work group support. These components of supplies for creativity may not have been adequately captured in the archival data presented to the experts. Further discussion of the limitations of the experts' ratings will be presented in the final section of this chapter. The fact that subjective ratings were higher than objective ratings does not, by itself, answer the question of whether objective or subjective measures should be examined. However, when this information is viewed in light of the findings related to the relative explanatory power of objective and subjective measures, insight is provided into which measures should be examined.

Self report (subjective) measures were important in explaining strain and job satisfaction while supervisor ratings (objective) were significantly related to performance and job satisfaction. The less a person valued a creative environment the more strain they experienced and the less satisfied they were with their job. Strain was also higher for employees who did not feel they were intrinsically motivated. Therefore, in order to manage individual strain and job satisfaction, it is important to understand how people perceive the organization's values related to creativity. It is also important in managing strain to understand how people view their own intrinsic motivation. These findings support previous research that indicated that subjective measures of the environment should be stronger predictors of strain than objective measures because individual's perceptions of stressors

intervenes between objective stressors and the outcomes of those stressors (French & Caplan, 1972; Hackman & Lawler, 1971; Kraut, 1966).

The results also indicate that supervisor ratings of individual's intrinsic motivation and innovativeness were more closely associated with performance measures and job satisfaction than self-ratings of those abilities. These objective ratings were significantly lower than the employees' ratings of their own abilities. Employees believed that they had more ability than their supervisors believed that they had, but it was the supervisors' ratings that influenced performance and job satisfaction most directly.

The relationship with performance is logical since, in addition to rating individual's abilities, supervisors also rated individual performance. Therefore, a supervisor's ratings of an individual's abilities would be expected to be closely associated with the supervisor's rating of the employee's performance. This finding also strengthens Amabile's (1983b) contention that intrinsic motivation and abilities to be innovative are related to creative performance. These findings are particularly important because the supervisor ratings of employees' intrinsic motivation explained 51% of the variance in overall performance and 22% of the variance in creative performance. Supervisor ratings of employees' innovativeness explained 27% of the variance in overall performance and 38% of the variance in creative performance. It is possible that supervisor response bias could have inflated the relationships found here since supervisors rated both performance and abilities. A suggestion for dealing with this issue is presented in the final section of this chapter.

The significant relationship between supervisor ratings of employees' abilities and job satisfaction suggests that a supervisor's views of employees' abilities are more important to employee job satisfaction than self perceptions of abilities. Supervisor's ratings of employees' intrinsic motivation were positively related to satisfactions associated with interpersonal relationships (i.e., satisfaction with supervisors and coworkers) while supervisor ratings of employees' innovativeness were related to factors more closely associated with the context of the work (i.e., satisfaction with work and promotion). This provides additional support for Edwards' (1991) proposal that specific job content dimensions should only influence outcomes associated with that dimension.

Theory and research needs to continue to examine both objective and subjective measures of creative fit because objective measures were the best predictors of performance, subjective measures were the best predictors of strain and both objective and subjective measures were predictive of job satisfaction. In addition, the disparity between objective and subjective measures indicated that supervisors' and employees' perceptions differed. Further theory development and research should focus on why the differences in ratings occurred and how those differences might influence outcomes.

In summary, three basic contributions to the study of creativity arise from this study. First, there is value in studying creativity from a person-environment fit perspective. Amabile (1988) suggested that person and environment components were important in examining creativity, but this study is one of the first to empirically examine the joint influence of individual and organizational components of

creativity on individual outcomes. Second, when examining creative fit, both supply-value and demand-ability versions of fit should be utilized because each version is related to different outcomes. This finding provides empirical support for Edwards and Cooper's (1990) proposal that both versions of fit should be examined in any study of fit. Finally, both objective and subjective measures of fit components should be included when examining creative fit because objective and subjective ratings have unique relationships with individual outcomes.

Contributions to Management Practice

Much research has been done on creativity; however, the results have not always been translated into useful guidelines for implementation in an organizational setting. Although this study is exploratory in nature, the results do provide some suggestions for promoting creativity in organizations. It is hoped that the following recommendations will help bridge the gap between research and practice. These recommendations focus on the need to develop programs at both the individual and organizational level to encourage creativity and enhance individual well-being and effectiveness.

Organizational Level Guidelines

In order to improve individual well-being and effectiveness, this study indicates that it is important at the organizational level to focus on providing an environment that is challenging and stimulating while also affording opportunities for individuals and groups to be creative. To provide a challenging and stimulating work environment that shows employees that the organization values and demands

creativity, organizations should focus on providing encouragement for their employees. Creativity should be rewarded and encouraged, performance evaluation should be fair, and open communication and the willingness to accept new ideas should be encouraged. This general framework provides preliminary guidance for the development of programs that can facilitate creativity and enhance employee well-being.

Developing an appropriate program of rewards and recognition and implementing an effective performance appraisal system can facilitate the development of an environment conducive to creativity. An organization's reward and recognition system should be designed to promote creative endeavors and accomplishments. Developing a fund which is used to support new ideas and programs would clearly indicate to employees that the organization values creativity and will support creative efforts. Because of the importance of intrinsic motivation in creativity, the reward system should also include as one of its elements recognition for creative efforts and accomplishments as well as added freedom and discretion to be creative. Encouragement from the employee's work group and supervisor is also an important aspect of a work environment conducive to creativity. This encouragement may come in the form of open lines of communication or in openness to new ideas and new ways of doing things. Staff meetings designed to promote brainstorming and idea generation without fear of criticism can also enhance feelings of work group and supervisor support.

It is also important to employee well-being and effectiveness that the organization expects its employees to be innovative. A reward system, as discussed previously, is one way to emphasize to employees the importance of creativity to the organization. In addition,

performance appraisal systems should support and encourage idea generation and creative performance. Individuals should be evaluated on their creative inputs to the organization and they should be given adequate feedback on what is expected of them and where improvements are needed. These evaluations and the subsequent feedback process should be done in a supportive and positive environment to reinforce for the employee that the organization and their supervisor champion their efforts to be creative.

Individual Level Guidelines

Based on the results of this study, it appears that employees are more satisfied and more productive when they value an environment conducive to creativity and when they have the ability to be creative. Employees who value a creative environment are those who feel that open communication and freedom are important. They also want to receive feedback on their work and they want their supervisor to show confidence in their abilities. Finally, employees who value a creative environment want to be rewarded for their creativity and trusted by the organization. It is also important, according to the results of this study, that employees are creative. Therefore, organizations should develop methods for improving the creative abilities of their employees. These general conclusions lead to several potential programs for developing more satisfied and more productive workers.

At the individual level, organizations should concentrate on developing a selection process that will bring people into the organization who want a creative work environment and on implementing training and development programs that will improve individual's skills

in creativity. Selection processes that provide a realistic job preview of the creative climate of the organization to job candidates should help match the individual's desires for a job with the organization's climate. The more accurate the information, the more likely it is that individuals who do not desire a creative work environment will choose not to be a part of the organization. The selection process could also include structured interviews requiring candidates to respond to hypothetical, job-related circumstances or that ask candidates to provide personal job-related examples. This would provide information on the candidates' abilities to be creative as well as on their values for a creative work environment. Assessment centers or work simulations would also provide valuable insight into candidates' values and abilities. These techniques are expensive and time consuming, however. Finally, personality tests and tests of skills related to creativity are available that can help screen candidates' creative abilities and desires.

Training and development programs can also be implemented that facilitate the development of employees' creative skills. According to Farr (1990), programs designed to increase individual creativity and innovation in organizations should focus on four factors. First, individual's efficacy beliefs concerning creativity and innovation need to be increased. Feedback from peers, supervisor's and others in the work environment can facilitate this process by emphasizing the value of the employee's contributions. Second, people need to be aware of the need for change. This awareness can be facilitated by developing each individual's ability to recognize potential problem areas that require creative solutions. Third, Farr (1990) indicated that individuals need

to perceive that there will be a payoff for change. Positive feedback from peers and supervisor's can provide reinforcement for creative behaviors as can the added challenge and enrichment provided by a job that requires the use of creative abilities. Finally, individuals need to develop the capacity to generate new and useful ideas. Training in brainstorming, analogy development, divergent thinking and group problem solving can assist in this area.

These suggestions provide some guidance for organizations interested in developing a work environment that promotes creativity while also maximizing individual outcomes. It is important to remember that organizational and individual level factors must be developed jointly to improve creativity and individual outcomes. Focusing on only the organization or only the individual may lead to lower levels of performance and job satisfaction and higher levels of strain.

Study Limitations and Directions for Future Research

The present research on the Model of Creative Fit found support for the need to examine creative fit. However, there are a number of limitations to this study that should be addressed in order to provide guidelines for future research in this area. General limitations of the study are addressed followed by more specific discussions of issues related to the examination of supply-value and demand-ability fit, objective and subjective measures, and the multivariate method used to measure fit.

The sample for this study consisted of employees of a manufacturing facility with relatively low levels of education.

Research across a variety of organizational settings including those with more highly educated, professional employees and employees in service oriented organizations will be important to determine the generalizability of these findings to other settings. Outcomes other than strain, job satisfaction and performance may also be related to creative fit. Commitment to the organization and job involvement may be influenced by how well an individual's values for a creative environment match the supplies for creativity provided by the organization or how well an individual's abilities match with the organization's demands. Performance measures for this study focused on individual level performance. It is reasonable to assume, however, that the "creative fit" between the individual and the organization may influence organizational level outcomes as well. The relationship between creative person-environment fit and cost savings, profits, stock prices or number of patents could be examined to determine the role of "fit" in organizational level outcomes.

Because this study is one of the first to include both supply-value and demand-ability fit, the scales used in this study were first attempts at examining supplies and values for creativity and demands and abilities for creativity. Therefore, additional research is needed on these scales to ensure their reliability and validity for this type of research. A finer grained approach to examining supplies and values for creativity would also be useful. Supplies and values were examined from a broad perspective for this study because of its exploratory nature. Future research should examine the usefulness of breaking down the supplies and values scales into subscales so that specific elements of supplies and values can be examined independently. Stronger

relationships might be found, particularly with the facets of job satisfaction.

As previously indicated, supply-value fit was most closely associated with job satisfaction and creative performance while demand-ability fit was related to strain and job satisfaction. Because of the unique relationships found in this study between each type of fit and the outcomes, there is a continued need to examine both perspectives of fit to gain a clear understanding of the role of creative person-environment fit in explaining individual outcomes. Additional research needs to be done in this area to verify the consistency of the relationships between the two versions of fit and outcomes.

Further examination of both objective and subjective measures of the fit components is also merited based on the results of this study. Although there are a number of limitations to the objective analysis that was done in this study, it appears that objective measures may provide insight into individual outcomes, particularly performance and creativity, that is unavailable through employee self-report. The limitations of the objective measures in this study provide guidance for future research. First, the lack of variance across the organizational environment prevented a "fit" analysis using the objective measures. It appears, however, that this concern was due to the nature of the organization in which this study was conducted and could be alleviated in future research. The company used in this study was relatively small and, although it was initially expected that the support services and manufacturing areas would have unique cultures, it turned out that a single corporate culture (pertaining to creativity) pervaded all areas of the organization.

To ensure adequate variance in the environment, future studies should be done in larger, more diverse organizations or across organizations. Within organization studies could be done with departments that are in different physical locations or that have little interaction with each other. It would be less likely that the same culture would pervade departments with minimal contact. A larger company would also have more diversity in its departments. The organization used in this study was a subsidiary of a larger national company. Most of the marketing and research and development work was carried out at the home office rather than at the subsidiary where the study was conducted. A site which included divisions doing original, creative work such as marketing and research and development would be more likely to exhibit variance in creativity across those departments. Finally, preliminary research should be done prior to the study to determine if there are differences across departments. This preliminary investigation might include interviews with supervisors and employees in each department to determine if creative expectations and skills are different across departments.

Studies conducted across organizations could also ensure that the corporate cultures of the organizations were indeed different. It would be much more likely that variance would occur in the creative climate of different organizations than within the same organization. However, it would still be important to obtain background information on the organizations to ensure that variance existed. In addition to interviews with supervisors and employees in the organization, information on the creative climate of the organization could be

obtained through annual reports, industry analyses and reports in the popular press.

A second concern with the objective measures is that the experts may not have had adequate information to accurately assess the environment's supplies and demands for creativity. If expert ratings are used in future research as an objective measure of the organizational environment, additional material such as job descriptions, budgets and detailed information on the organization's objectives and policies should be included. Experts could also interview employees, supervisors, and top management in the organization to obtain more detailed information on the organization's creative environment. Finally, coworker ratings of employee's values, abilities and performance could be used as a supplement to supervisor ratings in order to overcome the problems of supervisor response bias. These alternative objective ratings could help clarify the relationship between performance and objective measures of abilities for intrinsic motivation and innovativeness.

The use of Edwards and Cooper's (1990) multivariate method for examining person-environment fit added considerable insight into the relationship between creative person-environment fit and the outcomes of interest. Results from this study support this technique as a useful tool for examining the joint relationship between person and environment components. This analysis not only showed the magnitude of the relationship between the three dimensions, but also provided information on the shape of that relationship. The ability to interpret the magnitude and shape of these relationships was enhanced by the use of three dimensional graphs. Continued research needs to be done on this

technique to determine its relative value in examining P-E fit compared to other techniques such as the discrepancy approach, the absolute value approach and the ratio approach.

In conclusion, this study provides preliminary support for the need to examine creativity from a person-environment fit perspective. It also illustrates the need to examine supplies and values for creativity and demands and abilities for creativity because of their unique relationships with outcomes such as strain, job satisfaction and performance. Finally, the value in examining both objective and subjective measures of the person and environment components and of taking a multivariate approach to P-E fit was underscored. Further research in this area should improve our understanding of how to encourage creativity while improving employee well-being and effectiveness.

ENDNOTES

¹The analysis was also run using a three step hierarchical analysis in order to separate the influence of the squared and interaction terms. The results of the two and three step hierarchical analyses compared favorably. Because the results were comparable and because of Lubinsky and Humphreys' (1990) arguments in favor of using a two step approach, only the results of the two step hierarchical analysis were reported. The comparative three step analysis is available from the author upon request.

²The analysis for the study was done, for comparative purposes, using both the multivariate approach and by substituting the absolute value of the difference score (P-E) for the interaction term (P*E) in Equation 1. The pattern of results using the difference score approach was similar to that using the interaction term. Because of the similarity in results between the two approaches, and because the multivariate approach overcomes several of the deficiencies in difference scores, only the results of the analysis using the interaction term were reported in Chapter IV. Results of the difference score analysis are available from the author.

BIBLIOGRAPHY

- Abbey, A., & Dickson, J. W. (1983). R&D work climate and innovation in semiconductors. Academy of Management Journal, 26(2), 362-368.
- Albrecht, K., & Albrecht, S. (1987). The creative corporation. Homewood, IL: Dow Jones-Irwin.
- Alderfer, C. P. (1976). Change processes in organizations. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 1591-1638). Chicago: Rand McNally.
- Amabile, T. M. (1979). Effects of external evaluation on artistic creativity. Journal of Personality and Social Psychology, 37(2), 221-233.
- Amabile, T. M. (1982). Social psychology of creativity: A consensual assessment technique. Journal of Personality and Social Psychology, 43, 997-1013.
- Amabile, T. M. (1983a). The social psychology of creativity: A componential conceptualization. Journal of Personality and Social Psychology, 45(2), 357-376.
- Amabile, T. M. (1983b). The social psychology of creativity. New York: Springer-Verlag.
- Amabile, T. M. (1984, August). Creativity motivation in research and development. Paper presented at the meeting of the American Psychological Association, Toronto, Canada.
- Amabile, T. M. (1988a). A model of creativity and innovation in organizations. Research in Organizational Behavior, 10, 123-167.
- Amabile, T. M. (1988b). From individual creativity to organizational innovation. In K. Gronhaug & G. Kaufman (Eds.), Innovation: A cross-disciplinary perspective. Oslo: Norwegian University Press.
- Amabile, T. M., & Gyskiewicz, S. S. (1987). Creativity in the R&D laboratory (Technical Rep. No. 30). Greensboro, NC: Center for Creative Leadership.
- Amabile, T. M., & Gyskiewicz, N. D. (1989). The creative environment scales: Work environment inventory. Creativity Research Journal, 2, 231-258.

- Amabile, T. M., Gryskiewicz, N. D., Burnside, R., & Koester, N. (1990). Creative environment scales: Work environment inventory, a guide to its development and use. Unpublished manuscript, Center for Creative Leadership, Greensboro, NC.
- Amabile, T. M., Hennessey, B. A., & Grossman, B. S. (1986). Social influences on creativity: The effects of contracted-for reward. Journal of Personality and Social Psychology, 50(1), 14-23.
- Amos, S. P. (1978). Personality differences between established and less-established male and female creative artists. Journal of Personality Assessment, 42, 374-377.
- Bachtold, L. M., & Werner, E. E. (1973). Personality characteristics of creative women. Perceptual and Motor Skills, 36, 311-319.
- Bailey, J. M., & Bhagat, R. S. (1987). Meaning and measurement of stressors in the work environment: An evaluation. In S. V. Kasl & C. L. Cooper (Eds.), Stress and health: Issues in research methodology (pp. 207-229). New York: John Wiley & Sons, Ltd.
- Bailin, S. (1984). Can there be creativity without creation? Interchange, 15(2), 13-22.
- Baldrige, J. V., & Burnham, R. A. (1975). Organizational innovation: Individual, organizational and environmental impacts. Administrative Science Quarterly, 20, 165-176.
- Barone, D. F., Cady, G. R., Katell, A. D., Roselione, F. B., & Hamilton, R. A. (1988). The work stress inventory: Organizational stress and job risk. Educational and Psychological Measurement, 48, 141-154.
- Barron, F. (1972). Artists in the making. New York: Seminar.
- Barron, F. (1988). Putting creativity to work. In F. J. Sternberg (Ed.), The nature of creativity (pp. 76-98). New York: Cambridge University Press.
- Barron, F., & Harrington, D. M. (1981). Creativity, intelligence, personality. Annual Review of Psychology, 32, 439-476.
- Beehr, T. A., & Newman, J. E. (1978). Job stress, employee health, and organizational effectiveness: A facet analysis, model, and literature review. Personnel Psychology, 31, 665-699.
- Belcher, T. L. (1975). Effect of different test situations on creativity scores. Psychological Reports, 36, 511-514.
- Bem, D., & Allen, A. (1974). On predicting some of the people some of the time: The search for cross-situational consistencies in behavior. Psychological Review, 81, 506-520.

- Bem, D., & Funder, D. (1978). Predicting more of the people more of the time: Assessing the personality of situations. Psychological Review, 85, 485-501.
- Bhagat, R. S., McQuaid, S. J., Lindholm, H., & Segovis, J. (1985). Total life stress: A multimethod validation of the construct and its effect on organizationally valued outcomes and withdrawal behavior. Journal of Applied Psychology, 70(1), 202-214.
- Blau, G. (1981). An empirical investigation of job stress, social support, service length, and job strain. Organizational Behavior and Human Performance, 27, 179-302.
- Blau, P. M., & Duncan, O. D. (1967). The American occupational structure. New York: Wiley.
- Block, J., Block, J., & Morrison, A. (1981). Parental agreement-disagreement on child rearing orientations and gender-related personality correlates in children. Child Development, 52, 965-974.
- Bohrstedt, G. W. (1969). Observations on the measurement of change. In E. F. Borgatta & G. W. Bohrstedt (Eds.), Sociological Methodology, San Francisco: Jossey-Bass.
- Brief, A. P., & Atieh, J. M. (1987). Studying job stress: Are we making mountains out of molehills? Journal of Occupational Behaviour, 8, 115-126.
- Brief, A. P., Burke, M. J., Robinson, B. S., & Webster, J. (1988). Should negative affectivity remain an unmeasured variable in the study of job stress. Journal of Applied Psychology, 73(2), 193-198.
- Brief, A. P., Schuler, R. S., & Van Sell, M. (1981). Managing job stress. Boston: Little, Brown, and Company.
- Broadbent, D. (1987). Is autonomy always a good thing? The Occupational Psychologist, 1, 7-15.
- Bromet, E. J., Dew, M. A., Parkinson, D. K., & Schulberg, C. (1988). Predictive effects of occupational and marital stress on the mental health of a male workforce. Journal of Organizational Behavior, 9, 1-13.
- Burchfield, S. R. (1979). The stress response: A new perspective. Psychosomatic Medicine, 41, 661-672.
- Burnside, R. M. (1990). Improving corporate climates for creativity. In M. A. West & J. L. Farr (Eds.), Innovation and creativity at work: Psychological and organizational strategies (pp. 265-284). New York: John Wiley & Sons.

- Burnside, R. M., Amabile, T. M., & Gyskiewicz, N. B. (1988). Assessing organizational climates for creativity and innovation. In Y. Ijiri & R. L. Kuhn (Eds.), New directions in creative and innovative management (pp. 169-185). New York: Ballinger.
- Cannon, W. B. (1935). Stresses and strains of homeostasis. American Journal of Medical Science, 189, 1-14.
- Caplan, R. D. (1972). Organizational stress and individual strain: A social-psychological study of risk factors in coronary heart disease among administrators, engineers, and scientists. Dissertation Abstracts International, 32, 6706B-6707B. (University Microfilms No. 72-14822)
- Caplan, R. D. (1979). Social support, person-environment fit, and coping. In L. Ferman & J. Gordus (Eds.), Mental health and the economy, Kalamazoo, MI: Upjohn Institute for Employment Research.
- Caplan, R. D. (1983). Person-environment fit: Past, present, and future. In C. L. Cooper (Ed.), Stress Research (pp. 35-78). New York: John Wiley & Sons, Ltd.
- Caplan, R. D. (1987) Person-environment fit theory and organizations: Commensurate dimensions, time perspectives, and mechanisms. Journal of Vocational Behavior, 31, 248-267.
- Caplan, R. D., Cobb, S., French, J. R. P., Jr., Harrison, R. V., & Pinneau, S. R., Jr. (1980). Job demands and worker health: Main effects and occupational differences. University of Michigan: Institute for Social Research.
- Caplan, R. D., Tripathi, R. C., & Naidu, R. K. (1985). Subjective past, present, and future fit: Effects on anxiety, depression, and other indicators of well being. Journal of Personality and Social Psychology. 48(1), 180-197.
- Cattell, R. B. (1971). Abilities: Their structure, growth and action. Boston, MA: Houghton Mifflin.
- Chambers, J. A. (1964). Relating personality and biographical factors to scientific creativity. Psychological Monograph, 78.
- Chatman, J. A. (1989). Improving interactional organizational research: A model of person-organization fit. Academy of Management Review, 14(3), 333-349.
- Chatman, J. A. (1990). Pursuing interactional organizational research: A longitudinal study of person-organization fit. Unpublished manuscript, Kellogg Graduate School of Management, Northwestern University.

- Chemers, M. M., Hayes, R. B., Rhodewalt, F., & Wycsocki, J. (1985). A person-environment analysis of job stress: A contingency model explanation. Journal of Personality and Social Psychology, 49(3), 628-635.
- Cherrington, D. J., & England, J. L. (1980). The desire for an enriched job as a moderator of the enrichment-satisfaction relationship. Organizational Behavior and Human Performance, 25, 139-159.
- Cohen, J., & Cohen, P. (1983). Applied multiple regression/correlation analysis for the behavioral sciences (3rd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Cook, J. D., Hepworth, S. J., Wall, T. D., & Warr, P. B. (1981). The experience of work. New York: Academic Press.
- Cooper, C. L., & Marshall, J. (1976). Occupational sources of stress: A review of the literature relating to coronary heart disease and mental health. Journal of Occupational Psychology, 49, 11-28.
- Cox, R. S., Nash, W. R., & Ash, J. J. (1976). Instructions, three levels of reward and creativity test scores of college students. Psychological Reports, 38, 411-414.
- Cox, T., & Mackay, C. (1981). A transactional approach to occupational stress. In E. N. Corlett & J. Richardson (Eds.), Stress, work design, and productivity. New York: John Wiley & Sons, Ltd.
- Cronbach, L. J. (1958). Proposals leading to analytic treatment of social perception scores. In R. Tagiuri & L. Petrullo (Eds.), Person perception and interpersonal behavior. Stanford, CA: Stanford University Press.
- Cronbach, L. J., & Furby, L. (1970). How should we measure "change" - or should we? Psychological Bulletin, 74, 68-80.
- Damonpour, F. (1987). The adoption of technological, administrative, and ancillary innovations: Impact of organizational factors. Journal of Management, 13, 675-688.
- Davis-Blake, A., & Pfeffer, J. (1989). Just a mirage: The search for dispositional effects in organizational research. Academy of Management Review, 14(3), 385-400.
- Dewe, P. J., & Guest, D. E. (1990). Methods of coping with stress at work: A conceptual analysis and empirical study of measurement issues. Journal of Organizational Behavior, 11, 135-150.
- Diener, E., Larsen, R., & Emmons, R. (1984). Person X situation interactions: Choice of situations and congruence response models. Journal of Personality and Social Psychology, 47, 580-592.
- Dillon, W. R., & Goldstein, M. (1984). Multivariate analysis: Methods and applications. New York: John Wiley & Sons.

- Domino, G. (1982). Attitudes towards dreams, sex differences and creativity. Journal of Creative Behavior, 16(2), 112-122.
- Downey, H., Hellriegel, D., & Slocum, J. (1975). Congruence between individual needs, organizational climate, job satisfaction and performance. Academy of Management Journal, 18, 149-154.
- Edwards, J. R. (1991). Person-job fit: A conceptual integration, literature review, and methodological critique. In C. L. Cooper & I. T. Robertson (Eds.), International Review of Industrial and Organizational Psychology, 6, 283-357.
- Edwards, J. R., & Cooper, C. L. (1990). The person-environment fit approach to stress: Recurring problems and some suggested solutions. Journal of Organizational Behavior, 11, 293-307.
- Elliott, G. R., & Eisdorfer, C. (Eds.). (1982). Stress and human health: Analysis and implications of research. New York: Springer Publishing Company.
- Ellison, R. L., James, L. R., & Carron, T. (1970). Prediction of R&D performance criteria with biographical information. Journal of Industrial Psychology, 5, 37-57.
- Ellison, R. L., James, L. R., McDonald, B. W., Fox, D. G., & Taylor, C. W. (1968). The prediction of scientific and engineering performance with biographical information. Unpublished report, Institute of Behavioral Research in Creativity, Salt Lake City, UT.
- Endler, N. S., & Edwards, J. (1982). Stress and personality. In L. Goldberger & S. Breznitz (Eds.), Handbook of stress: Theoretical and clinical aspects (pp. 36-48). New York: The Free Press.
- Eulberg, J. R., Weekley, J. A., & Bhagat, R. S. (1988). Models of stress in organizational research: A metatheoretical perspective. Human Relations, 41, 331-350.
- Farr, J. L. (1990). Facilitating individual role innovation. In M. A. West & J. L. Farr (Eds.), Innovation and creativity at work (pp. 207-230). New York: John Wiley & Sons.
- Farr, J. L., & Ford, C. M. (1990). Individual innovation. In M. A. West & J. L. Farr (Eds.), Innovation and creativity at work (pp. 63-80). New York: John Wiley & Sons.
- Findlay, C. S., & Lumsden, C. J. (1988). The creative mind: Toward an evolutionary theory of discovery and innovation. Journal of social and biological structures.
- Fleischer, G. (1964). The effects of anxiety upon tests of creativity. Unpublished doctoral dissertation, State University of New York at Buffalo.

- Fleming, R., Baum, A., & Singer, J. E. (1984). Toward an integrative approach to the study of stress. Journal of Personality and Social Psychology, 46(4), 939-949.
- Frankenhaeuser, M. (1990). Psychoneuroendocrine approaches to the study of stressful person-environment transactions. In H. Selye (Ed.), Selye's guide to stress research (Vol. 1, pp. 46-70). New York: Van Nostrand Reinhold Company.
- Friedericksen, N., & Ward, W. C. (1978). Measures for the study of creativity in scientific problem solving. Applied Psychological Measurement, 2, 1024.
- French, J. R. P., Jr. (1973). Person role fit. Occupational Mental Health, 3(2), 15-20.
- French, J. R. P., Jr., & Kahn, R. L. (1962). A programmatic approach to studying the industrial environment and mental health. Journal of Social Issues, 18, 1-48.
- French, J. R. P., Jr., & Caplan, R. D. (1972). Organizational stress and individual strain. In A. Marrow (Ed.), The failure of success. New York: AMACOM.
- French, J. R. P., Caplan, R. D., & Harrison, R. V. (1982). The mechanisms of job stress and strain. New York: John Wiley & Sons.
- French, J. R. P., Rodgers, W., & Cobb, S. (1974). Adjustment as person-environment fit. In G. V. Coelho, D. A. Hamburg, & J. E. Adams (Eds.), Coping and adaptation (pp. 316-333). New York: Basic Books.
- Furnham, A., & Schaeffer, R. (1984). Person-environment fit, job satisfaction and mental health. Journal of Occupational Psychology, 57, 295-307.
- Ganster, D., Mayes, B. T., Sime, W. E., & Tharp, G. D. (1982). Managing organizational stress: A field experiment. Journal of Applied Psychology, 67(5), 533-542.
- Gerhart, B. (1987). How important are dispositional factors and determinants of job satisfaction? Implications for job design and other personnel programs. Journal of Applied Psychology, 72(3), 366-373.
- Gibb, J. R. (1966). Managing for creativity in the organization. In C. W. Taylor (Ed.), Climate for creativity (pp. 23-32). New York: Pergamon Press.
- Glowinkowski, S. P., & Cooper, C. L. (1987). Managers and professionals in business/industrial settings: The research evidence. Journal of Organizational Behavior Management, 8(2), 177-193.
- Goldsmith, R. E. (1986). Convergent validity of four innovativeness scales. Educational and Psychological Measurement, 46, 81-87.

- Gough, H. G. (1976). Studying creativity by means of word association tests. Journal of Applied Psychology, 61(3), 348-353.
- Gough, H. G. (1979). A creative personality scale for the adjective check list. Journal of Personality and Social Psychology, 37, 1398-1405.
- Gotz, K. O., & Gotz, K. (1979). Personality characteristics of successful artists. Perceptual and Motor Skills, 49, 919-924.
- Graham, W. (1976). Commensurate characterization of persons, groups, and organizations: Development of the trait ascription questionnaire (TAQ). Human Relations, 29, 607-622.
- Greene, C. N. (1972). The satisfaction-performance controversy. Business Horizons, 14(5), 31-41.
- Gregson, T. (1987). Factor analysis of a multiple-choice format for job satisfaction. Psychological Reports, 61, 747-750.
- Guilford, J. P. (1967). The nature of human intelligence. New York: McGraw-Hill.
- Hackman, J. R., & Lawler, E. E., III. (1971). Employee reactions to job characteristics. Journal of Applied Psychology Monograph, 55, 259-286.
- Hackman, J. R., & Oldham, G. R. (1975). Development of the job diagnostic survey. Journal of Applied Psychology, 60(2), 159-170.
- Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of theory. Organizational Behavior and Human Performance, 16, 250-279.
- Hackman, J. R., & Oldham, G. R. (1980). Work redesign, Reading, MA: Addison-Wesley.
- Hadley, D. J. (1967). Experimental relationships between creativity and anxiety. Journal of Creative Behavior, 1, 215-216.
- Hall, D. T., & Mansfield, R. (1971). Organizational and individual response to external stress. Administrative Science Quarterly, 16, 533-547.
- Harrington, D. M. (1981). Creativity, analogical thinking and muscular metaphors. Journal of Mental Imagery, 6, 121-126.
- Harrison, R. V. (1976). Job demands and worker health: Person-environment misfit. Dissertation Abstracts International, 37, 1035B. (University Microfilms No. 76-19, 150)
- Harrison, R. V. (1978). Person-environment fit and job stress. In C. L. Cooper & R. Payne (Eds.), Stress at work (pp. 175-205). New York: John Wiley & Sons.

- Harrison, R. V. (1985). The person-environment fit model and the study of job stress. In T. A. Beehr & R. S. Bhagat (Eds.), Human stress and cognition in organizations (23-55). New York: John Wiley & Sons.
- Harrison, R. V., Moss, G. E., Dielman, T. E., Horvath, W. J., & Harlan, W. R. (1987). Person-environment fit, type A behavior, and work strain: The complexity of the process. In J. C. Quick, R. S. Bhagat, J. E. Dalton, & J. D. Quick (Eds.), Work stress: Health care systems in the workplace (pp. 72-92). New York: Praeger.
- Hausman, C. R. (1979). Criteria of creativity. Philosophy and Phenomenological Research, 40, 237-249.
- Helson, R. (1977). The creative spectrum of authors of fantasy. Journal of Personality, 45, 310-326.
- Helson, R., & Crutchfield, R. S. (1970). Creative types in mathematics. Journal of Personality, 38, 177-197.
- Hendrix, W. H., Ovalle, N. K., II., & Troxler, R. G. (1985). Behavioral and physiological consequences of stress and its antecedent factors. Journal of Applied Psychology, 70(1), 188-201.
- Hennessey, B. A., & Amabile, T. M. (1988). The conditions of creativity. In R. J. Sternberg (Ed.), The nature of creativity (pp. 11-38). New York: Cambridge University Press.
- Hocevar, D. (1980). Intelligence, divergent thinking and creativity. Intelligence, 4, 24-40.
- Hocevar, D. (1981). Measurement of creativity: Review and critique. Journal of Personality Assessment, 45(5), 450-464.
- Holland, J. L. (1985). Making vocational choices: A theory of careers (2d. ed.). Englewood Cliffs, NJ: Prentice Hall.
- Holt, R. R. (1982). Occupational stress. In L. Goldberger & S. Breznitz (Eds.), Handbook of stress: Theoretical and clinical aspects (pp. 419-444). New York: The Free Press.
- House, J. S. (1972). The relationship of intrinsic and extrinsic work motivations to occupational stress and coronary heart disease risk. Dissertation Abstracts International, 33, 2514-A. (University Microfilms No. 72-29094)
- House, R. J., & Rizzo, J. R. (1972). Role conflict and ambiguity as critical variables in a model of organizational behavior. Organizational Behavior and Human Performance, 7, 467-505.
- Hurt, H. T., Joseph, K., & Cook, C. D. (1977). Scales for the measurement of innovativeness. Human Communication Research, 4(1), 58-65.

- James, M. (1982). The relationship between aspects of creativity and response to stressful life events. Dissertation Abstracts International, 43, 03B.
- Johns, G. (1981). Difference score measures of organizational behavior variables: A critique. Organizational Behavior and Human Performance, 27, 443-463.
- Johnson, S. M., Smith, P. C., & Tucker, S. M. (1982). Response format of the job descriptive index: Assessment of reliability and validity by the multitrait-multimethod matrix. Journal of Applied Psychology, 67(4), 500-505.
- Joyce, W., & Slocum, J. (1984). Collective climate: Agreement as a basis for defining aggregate climates in organizations. Academy of Management Journal, 27, 721-742.
- Kahana, E., Liang, J., & Felton, B. J. (1980). Alternative models of person-environment fit: Prediction of morale in three homes for the aged. Journal of Gerontology, 35, 584-595.
- Kahn, R., Hein, K., House, J., Kasl, S., & Stanislav, M. (1982). Report on stress in organizational settings. In G. R. Elliott & C. Eisdorfer (Eds.), Stress and human health: Analysis and implications of research. New York: Springer Publishing Company.
- Kahn, R. L., Wolfe, D. M., Quinn, R. P., & Snoek, J. D. (1964). Organizational stress: Studies in role conflict and ambiguity. New York: John Wiley & Sons, Inc.
- Kanter, R. M. (1983). The change masters. New York: Simon and Schuster.
- Kanter, R. M. (1988). When a thousand flowers bloom: Structural, collective, and social conditions for innovation in organizations. Research in Organizational Behavior, 10, 169-211.
- Kemer, E. R., Bedeian, A. G., Mossholder, K. W., & Touliatos, J. (1985). Outcomes of role stress: A multisample constructive replication. Academy of Management Journal, 28(2), 363-375.
- Kemery, E. R., Mossholder, K. W., & Bedeian, A. G. (1987). Role stress, physical symptomatology, and turnover intentions: A causal analysis of three alternative specifications. Journal of Occupational Behavior, 8, 11-23.
- Kenrick, D., & Funder, D. (1988). Profiting from controversy: Lessons from the person-situation debate. American Psychologist, 43, 23-35.
- Keon, T., Latack, J., & Wanous, J. (1982). Image congruence and the treatment of difference scores in organizational choice research. Human Relations, 35, 155-165.
- Khatena, J. (1971). Evaluation and the creative potential in music. Gifted Child Quarterly, 15, 262-266.

- Khatena, J. (1973). Imagination and production of original verbal images. Art Psychotherapy, 1, 193-200.
- Kimberly, J. R. (1981). Managerial innovation. In P. C. Nystrom & W. H. Starbuck (Eds.), Handbook of organizational design. Oxford: Oxford University Press.
- Kimberly, J. R., & Evanisko, M. J. (1981). Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations. Academy of Management Journal, 24, 689-713.
- King, N. (1990). Innovation at work: The research literature. In M. A. West & J. L. Farr (Eds.), Innovation and creativity at work: Psychological and organizational strategies (pp. 15-59). New York: John Wiley & Sons.
- King, N., & West, M. A. (1987). Experiences of innovation at work. Journal of Managerial Psychology, 2, 6-7.
- Kirton, M. (1976). Adapters and innovators: A description and measure. Journal of Applied Psychology, 61(5), 622-629.
- Kirton, M. (1978). Have adapters and innovators equal levels of creativity? Psychological Reports, 42, 695-698.
- Knapp, R. H. (1963). Demographic, cultural and personality attributes of scientists. In C. W. Taylor & R. Barron (Eds.), Scientific creativity: Its recognition and development (pp. 205-216). New York: Wiley.
- Koester, N., & Burnside, R. M. (1989, December). Climate for creativity: What to measure? What to say about it? Paper presented at the 2nd International Creativity Symposium, Noordwijk, The Netherlands.
- Kogan, N., Connor, K., Gross, A., & Fava, D. (1980). Understanding visual metaphor: Developmental and individual differences. Monographs of Social Research in Child Development, 183, 1.
- Korb, R., & Frankiewicz, R. G. (1979). Aptitudes, intellectual styles, and personality characteristics as facilitators and differentiators of creativity. Paper presented at the annual meeting of the American Psychological Association, New York.
- Kozmetsky, G. (1988). Why new directions for research in creative and innovative management? In Y. Ijiri & R. L. Kuhn (Eds.), New directions in creative and innovative management (pp. 15-28). Cambridge, MA: Ballinger.
- Kraut, A. I. (1966). A study of role conflicts and their relationships to job satisfaction, tension, and performance. Dissertation Abstracts International, 26, 7476.

- Kulik, C. T., Oldham, G. R., & Hackman, J. R. (1987). Work design as an approach to person-environment fit. Journal of Vocational Behavior, 31, 278-296.
- Kulka, R. A. (1976). Adjustment in high school: Person-environment fit, interaction or transaction. Dissertation Abstracts International, 36, 5352B.
- Kulka, R. A. (1979). Interaction as person-environment fit. New Directions for Methodology of Behavioral Science, 2, 55-71.
- Kulka, R. A., Klingel, D. M., & Mann, D. W. (1980). School crime and disruption as a function of student school fit: An empirical assessment. Journal of Youth and Adolescence, 9, 353-370.
- Kulka, R. W., Mann, D. W., & Klingel, D. M. (1980). A person-environment fit model of school crime and disruption. In K. Baker & R. J. Rubel (Eds.), Violence and crime in the schools: Theoretical perspectives (pp. 49-60). Lexington: Heath.
- Landsbergis, P. A. (1988). Occupational stress among health care workers: A test of the job demands-control model. Journal of Organizational Behavior, 9, 217-239.
- Latack, J. C. (1986). Coping with job stress: Measures and future directions for scale development. Journal of Applied Psychology, 71, 377-385.
- Lazarus, R. S. (1966). Psychological stress and the coping process. New York: McGraw-Hill.
- Leigh, J. H., Lucas, G. H., Jr., & Woodman, R. W. (1988). Effects of perceived organizational factors on role stress-job attitude relationships. Journal of Management, 14(1), 41-58.
- Lerner, J. V., Baker, N., & Lerner, R. M. (1985). A person-context goodness of fit model of adjustment. In P. C. Kendall (Ed.), Advances in cognitive-behavioral research and therapy (Vol. 4, pp. 111-136). Orlando: Academic Press, Inc.
- Lewin, K. (1936). Principles of topological psychology. New York: McGraw-Hill.
- Lewin, K. (1951). Field theory in social science. New York: Harper.
- Lind, S. K., & Mumford, M. D. (1987, March). Values as predictors of job performance and advancement potential. Paper presented at the meetings of the Southeastern Psychological Association, Atlanta, GA.
- Locke, E. A. (1969). What is job satisfaction? Organizational Behavior and Human Performance, 4, 309-336.

- Locke, E. H. (1976). The nature and causes of job satisfaction. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 1293-1349). Chicago: Rand McNally.
- Lofquist, L., & Dawis, R. (1969). Adjustment at work. New York: Appleton-Century Crafts.
- Lovelace, R. F. (1986). Stimulating creativity through managerial intervention. R&D Management, 16, 161-174.
- Lubinski, D., & Humphreys, L. G. (1990). Assessing spurious "moderating effects": Illustrated substantively with the hypothesized ("synergistic") relation between spatial and mathematical ability. Psychological Bulletin, 107(3), 385-393.
- MacKinnon, D. W. (1962). The nature and nurture of creative talent. American Psychologist, 17, 484-495.
- Magnusson, D. (1982). Situational determinants of stress: An interactional perspective. In L. Goldberger & S. Breznitz (Eds.), Handbook of stress: Theoretical and clinical aspects (pp. 231-253). New York: The Free Press.
- Margolis, B. L., Kroes, W. H., & Quinn, R. D. (1974). Job stress: An unlisted occupational hazard. Journal of Occupational Medicine, 16, 654-661.
- Martindale, C., & Greenough, J. (1973). The differential effect of increased arousal on creative and intellectual performance. The Journal of Genetic Psychology, 123, 329-335.
- Mason, J. W. (1975). A historical view of the stress field, part 1. Journal of Human Stress, 1(1), 6-12.
- Matteson, M. T., & Ivancevich, J. M. (1987). Controlling work stress: Effective human resource and management strategies. San Francisco: Jossey-Bass.
- Mayes, B. T., & Ganster, D. (1988). Exit and voice: A test of hypotheses based on fight/flight responses to job stress. Journal of Organizational Behavior, 9, 199-216.
- McGrath, J. E. (1976). Stress and behavior in organizations. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 1351-1395). Chicago: Rand McNally.
- McNemar, Q. (1969). Psychological statistics (4th ed.). New York: Wiley.
- McPherson, J. H. (1966). Assessing the relationships between the industrial climate and the creative process. In C. W. Taylor (Ed.), Climate for creativity (pp. 97-108). New York: Pergamon Press.

- Mednick, S. A., & Mednick, M. T. (1967). Examiners' manual: Remote associations test. Boston: Houghton Mifflin.
- Mendelsohn, G. A. (1976). Associative and attentional processes in creative performance. Journal of Personality, 4(4), 451-471.
- Miles, R. H. (1975). An empirical test of causal inference between role perceptions of conflict and ambiguity and various personal outcomes. Journal of Applied Psychology, 60, 334-339.
- Miles, R. H., & Perreault, W. D. (1976). Organizational role conflicts: Its antecedents and consequences. Organizational Behavior and Human Performance, 17, 19-44.
- Milgram, R. M., Yitzhak, V., & Milgram, N. A. (1977). Creative activity and sex-role identity in elementary school children. Perceptual and Motor Skills, 45, 371-376.
- Miner, J. B., & Brewer, J. F. (1976). The management of ineffective performance. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 995-1030). Chicago: Rand McNally.
- Mitchell, T. R., & James, L. R. (1989). Conclusions and future directions. Academy of Management Review, 14(3), 401-407.
- Morgan, G. (1988). Riding the waves of change. San Francisco: Jossey-Bass.
- Mumford, M. D., & Gustafson, S. B. (1988). Creativity syndrome: Integration, application, and innovation. Psychological Bulletin, 103(1), 27-43.
- Murphy, L. R., & Sorenson, S. (1988). Employee behaviors before and after stress management. Journal of Organizational Behavior, 9, 173-182.
- Murray, H. A. (1938). Explorations in personality. New York: Oxford University Press.
- Nadler, D., & Tushman, M. (1988). Strategic organizational design. Glenview, IL: Scott, Foresman & Co.
- Naylor, J. C., Pritchard, R. D., & Ilgen, D. R. (1980). A theory of behavior in organizations. New York: Academic Press.
- Nelson, D. L., & Quick, J. C. (1985). Professional women: Are distress and disease inevitable? Academy of Management Review, 10(2), 206-218.
- Newton, T., & Keenon, T. (1990). Further analysis of the dispositional argument in organizational behavior. Journal of Applied Psychology, 76, 781-787.

- Nicholson, N. (1990). Organizational innovation in context. In M. A. West & J. L. Farr (Eds.), Innovation and creativity at work: Psychological and organizational strategies (pp. 179-204). New York: John Wiley & Sons.
- Nicholson, N., & West, M. A. (1988). Managerial job change: Men and women in transition. Cambridge: Cambridge University Press.
- Nunnally, J. C. (1978). Psychometric theory. New York: McGraw-Hill.
- O'Brien, G. E., & Dowling, P. (1980). The effects of congruency between perceived and desired attributes upon satisfaction. Journal of Occupational Psychology, 53, 121-130.
- O'Reilly, C. (1977). Personality-job fit: Implications for individual attitudes and performance. Organizational Behavior and Human Performance, 18, 36-46.
- O'Reilly, C. A., III., Chatman, J., & Caldwell, D. (1990). People and organizational culture: A q-sort approach to assessing person-organization fit. Unpublished manuscript.
- Owen, S. V., & Baum, S. M. (1985). The validity of the measurement of originality. Educational and Psychological Measurement, 45, 939-944.
- Owens, W. A. (1969). Cognitive, noncognitive, and environmental correlates of mechanical ingenuity. Journal of Applied Psychology, 53(3), 199-208).
- Parasuraman, S., & Alutto, J. A. (1984). Sources and outcomes of stress in organizational settings: Toward the development of a structural model. Academy of Management Journal, 27(2), 330-350.
- Parloff, M. B. (1966). Creativity research program: A review. In C. W. Taylor (Ed.), Climate for creativity (pp. 269-285). New York: Pergamon Press.
- Payne, R., & Pugh, D. (1976). Organizational structure and climate. In M.D. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 1125-1173). Chicago: Rand McNally.
- Pelz, D. C. (1956). Some social factors related to performance in a research organization. Administrative Science Quarterly, 1, 310-325.
- Perkins, D. N. (1983). Novel remote analogies seldom contribute to discover. Journal of Creative Behavior, 17, 223-239.
- Perrewe, P. L., & Ganster, D. C. (1989). The impact of job demands and behavioral control on experienced job stress. Journal of Organizational Behavior, 10, 213-229.
- Pervin, L. A. (1968). Performance and satisfaction as a function of individual-environment fit. Psychological Bulletin, 69(1), 56-68.

- Pervin, L. Q. (1989). Person, situations, interactions: The history of a controversy and a discussion of theoretical models. Academy of Management Review, 14(3), 350-360.
- Peters, T. J., & Waterman, R. H. (1982). In search of excellence: Lessons from America's best run companies. New York: Harper and Row.
- Porter, L. W., & Lawler, E. E. (1968). Managerial attitudes and performance. Homewood, IL: Dorsey Press.
- Poze, T. (1983). Analogical connections - the essence of creativity. Journal of Creative Behavior, 17(4), 240-241.
- Price, J. L., & Mueller, C. W. (1986). Handbook of organizational measurement. Marshfield, MA: Pitman Publishing, Inc.
- Quick, J. C., & Quick, J. D. (1984). Organizational stress and preventive management. New York: McGraw Hill.
- Rice, R. W., McFarlin, D. B., & Bennett, D. E. (1989). Standards of comparison and job satisfaction. Journal of Applied Psychology, 74(4), 591-598.
- Robbins, S. P. (1989). Organizational behavior: Concepts, controversies, and applications. Englewood Cliffs, NJ: Prentice Hall.
- Rogers, C. (1954). Toward a theory of creativity. A Review of General Semantics, 11, 249-262.
- Rogers, E. M. (1983). Diffusion of innovations. New York: The Free Press.
- Romaniuk, J. G., & Romaniuk, M. (1981). Creativity across the life span: A measurement perspective. Human Development, 24, 366-381.
- Rounds, J. B., Dawis, R. W., & Lofquist, L. H. (1987). Measurement of person-environment fit and prediction of satisfaction in the theory of work adjustment. Journal of Vocational Behavior, 31, 297-318.
- Scarpello, V., & Campbell, J. P. (1984). Job satisfaction and the fit between individual needs and organizational rewards. Journal of Occupational Psychology, 56, 315-328.
- Schaefer, C. E., & Anastasi, A. (1968). A biographical inventory of identifying creativity in adolescent boys. Journal of Applied Psychology, 52, 42-48.
- Schneider, B. (1978). Person-situation selection: A review of some ability-situation interaction research. Personnel Psychology, 31, 281-297.

- Schuler, R. S. (1980). Definition and conceptualization of stress in organizations. Organizational Behavior and Human Performance, 25(2), 184-215.
- Schuler, R. S., Aldag, R. J., & Brief, A. P. (1977). Role conflict and ambiguity: A scale analysis. Organizational Behavior and Human Performance, 20, 111-128.
- Schwab, D. P., & Cummings, L. L. (1970). Theories of performance and satisfaction: A review. Industrial Relations, 7, 408-430.
- Selye, H. (1950). The physiology and pathology of exposure to stress. Montreal: Acta.
- Selye, H. (1956). The stress of life. New York: McGraw-Hill.
- Shrout, P. E., & Fleiss, J. L. (1979). Intraclass correlations: Uses in assessing rater reliability. Psychological Bulletin, 86, 420-428.
- Siegel, S. M., & Kaemmerer S. (1978). Measuring the perceived support for innovation in organizations. Journal of Applied Psychology, 63, 553-562.
- Sladeczek, I., & Domino, G. (1985). Creativity, sleep and primary process thinking in dreams. Journal of Creative Behavior, 19(1), 38-46.
- Smith, M. J., & Robertson, I. T. (1989). Advances in selection and assessment. Chichester: Wiley.
- Smith, P. C., Kendall, L. M., & Hulin, C. L. (1975). The measurement of satisfaction in work and retirement. Bowling, Green, OH: Bowling Green State University.
- Snyder, M., & Kendzierski, D. (1982). Acting on one's attitude: Procedures for linking attitude and behavior. Journal of Experimental and Social Psychology, 18, 165-183.
- Sobel, R. S. (1978). Remote associations theory of creativity: Fifteen years later. Journal of Supplemental Abstract Services, MS 1735.
- Spector, P. E., Dwyer, D. J., & Jex, S. M. (1988). Relationship of job stressors to affective, health, and performance outcomes: A comparison of multiple data sources. Journal of Applied Psychology, 73(1), 11-19.
- Staw, B. M. (1984). Organizational behavior: A review and reformulation of the field's outcome variables. Annual Review of Psychology, 35, 627-666.
- Staw, B. M., Bell, N. E., & Clausen, J. A. (1986). The dispositional approach to job attitudes: A lifetime longitudinal test. Administrative Science Quarterly, 31, 56-77.

- Staw, B. M., & Ross, J. (1985). Stability in the midst of change: A dispositional approach to job attitudes. Journal of Applied Psychology, 70(1), 469-480.
- Stein, M. I. (1974). Stimulating creativity. New York: Academic.
- Stern, G. G. (1970). People in context: Measuring person-environment congruence in education and industry. New York: John Wiley & Sons.
- Sternberg, R. J. (1988). A three-facet model of creativity. In R. J. Sternberg (Ed.), The nature of creativity (pp. 125-147). New York: Cambridge University Press.
- Suedfeld, P., & Vernon, J. (1965). Stress and verbal originality in sensory deprivation. Psychological Record, 15, 567-570.
- Super, D. E. (1957). The psychology of careers. New York: Harper and Row.
- Super, D. E. (1970). Work values inventory. Boston: Houghton-Mifflin.
- Tannebaum, A. S., & Kuleck, W. J., Jr. (1978). The effect on organization members of discrepancy between perceived and preferred rewards implicit in work. Human Relations, 31, 809-822.
- Tardif, T. Z., & Sternberg, R. J. (1988). What do we know about creativity? In R. J. Sternberg (Ed.), The nature of creativity (pp. 429-440). New York: Cambridge University Press.
- Taylor, C. W. (1988). Various approaches to and definitions of creativity. In R. J. Sternberg (Ed.), The nature of creativity (pp. 99-121). New York: Cambridge University Press.
- Taylor, C. W., & Ellison, R. L. (1966). Predictors and criteria of creativity: A Utah progress report. In E. W. Taylor (Ed.), Climate for creativity (pp. 149-165). New York: Pergamon Press.
- Taylor, W. L., & Cangemi, J. P. (1988). The effect of occupational stress on health and illness: A model. Psychology, a Journal of Human Behavior, 25(3/4), 53-63.
- Terborg, J. R. (1981). Interactional psychology and research on human behavior in organizations. Academy of Management Review, 6, 569-576.
- Tharenou, P., & Harker, P. (1984). Moderating influence of self-esteem on relationships between job complexity, performance and satisfaction. Journal of Applied Psychology, 69(4), 623-632.
- Thistlewaite, D. L. (1963). The college environment as a determinant of research potentiality. In C. W. Taylor & F. Barron (Eds.), Scientific creativity: Its recognition and development (pp. 265-271). New York: Wiley.

- Torrance, E. P. (1965) Rewarding creative behavior. Englewood Cliffs, NJ: Prentice-Hall.
- Trocki, F., & Hurt, H. T. (1976). Communication variables affecting the adoption of a curriculum change in industrial arts education. Unpublished manuscript, West Virginia University.
- Vats, A. (1977). Biology and creativity. Indian Psychological Review, 14(2), 69-72.
- Wagner, F. R., & Morse, J. J. (1975). A measure of individual sense of competence. Psychological Reports, 36, 451-459.
- Wall, T. D., & Payne, R. (1973). Are deficiency scores deficient? Journal of Applied Psychology, 58, 322-326.
- Warr, P., Cook, J., & Wall, T. (1979). Scales for the measurement of some work attitudes and aspects of psychological well-being. Journal of Occupational Psychology, 52, 129-148.
- Watson, D. (1988). Intraindividual and interindividual analyses of positive and negative affect: Their relation to health complaints, perceived stress, and daily activities. Journal of Personality and Social Psychology, 54(6), 1020-1030.
- Weisberg, R. W. (1986). Creativity: Genius and other myths. New York: W. H. Freeman and Company.
- Weiss, D. S. (1981). A multigroup study of personality patterns in creativity. Perceptual and Motor Skills, 52, 735-746.
- West, M. A. (1989). Innovation amongst health care professionals. Social Behaviour, 4, 173-184.
- West, M. A., & Farr, J. L. (1989). Innovation at work: Psychological perspectives. Social Behaviour, 4, 15-30.
- West, M. A., & Farr, J. L. (1990). Innovation at work. In M. A. West & J. L. Farr (Eds.), Innovation and creativity at work: Psychological and organizational strategies (pp. 3-13). New York: John Wiley & Sons.
- Woodman, R. W., & Schoenfeldt, L. F. (1989). Individual differences in creativity: An interactionist perspective. In J. A. Glover, R. R. Ronning, & C. R. Reynolds (Eds.), Handbook of creativity (pp. 77-92). New York: Plenum.
- Woodman, R. W., & Schoenfeldt, L. F. (1990). An interactionist model of creative behavior. Journal of Creative Behavior, 24, 10-20.
- Woodman, R. W., Sawyer, J. E., & Griffin, R. W. (1992). Toward a theory of organizational creativity. Working paper, Texas A & M University.

- Yerkes, R. M., & Dodson, J. D. (1908). The relation of strength of stimulus to rapidity of habit-formation. Journal of Comparative Neurology and Psychology, 18, 459-482.
- Zaltman, G., Duncan, R., & Holbek, J. (1973). Innovations and organizations. London: John Wiley & Sons.
- Zimring, C. M. (1981). Stress and the designed environment. Journal of Social Issues, 37(1), 145-171.

APPENDIX

APPENDIX A

HUMAN SUBJECTS CERTIFICATION

**OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
FOR HUMAN SUBJECTS RESEARCH**

Proposal Title: The Model of Creative Fit: An Examination of Person-
Environment Fit Along the Dimension of Creativity

Principal Investigator: Debra Nelson/Linda Livingstone

Date: January 29, 1991 IRB # BU-91-003

This application has been reviewed by the IRB and

Processed as: Exempt Expedite Full Board Review
Renewal or Continuation

Approval Status Recommended by Reviewer(s):

Approved

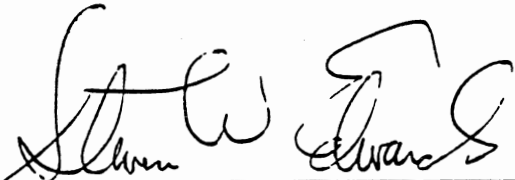
Deferred for Revision

Approved with Provision

Disapproved

Approval status subject to review by full Institutional Review Board at next meeting, 2nd and 4th Thursday of each month.

Comments, Modifications/Conditions for Approval or Reason for Deferral or Disapproval:

Signature: 
Chair of Institutional Review Board

Date: March 14, 1991

APPENDIX B

SURVEY QUESTIONS BY SCALE

The Work Environment Inventory

Freedom

I have the freedom to decide how I am going to carry out my projects.
In my daily work environment, I feel a sense of control over my own work and my own ideas.

I do not have the freedom to decide what projects I am going to do (R).
I feel considerable pressure to meet someone else's specifications in how I do my work (R).

Challenging Work

I feel challenged by the work I am currently doing.
I feel that I am working on important projects.

The tasks in my work are challenging.

The tasks in my work call out the best in me.

The organization has an urgent need for successful completion of the work I am now doing.

Sufficient Resources

Generally I can get the resources I need for my work.

The facilities I need for my work are readily available to me.

I have trouble getting the materials I need to do my work (R).

The information I need for my work is easily obtainable.

I can get all the data I need to carry out my projects successfully.

The budget for my project(s) is generally adequate.

Supervisory Encouragement

My supervisor serves as a good work model.

My supervisor does not communicate well with our work group (R).

My supervisor has poor interpersonal skills (R).

My supervisor is open to new ideas.

My supervisor supports my work group within the organization.

My supervisor's expectations for my project(s) are unclear (R).

My supervisor shows confidence in our work group.

My supervisor plans poorly (R).

My supervisor values individual contributions to project(s).

I get constructive feedback about my work.

My supervisor clearly sets overall goals for me.

Work Group Supports

There is free and open communication within my work group.

In my work group, people are willing to help each other.

People in my work group are open to new ideas.

There is a feeling of trust among the people I work with most closely.

My co-workers and I make a good team.

The people in my work group are committed to our work.

Within my work group, we challenge each other's ideas in a constructive way.

There is a good blend of skills in my work group.

Organizational Encouragement

People are encouraged to solve problems creatively in this organization.
New ideas are encouraged in this organization.

Ideas are judged fairly in this organization.

People are recognized for creative work in this organization.

There is an open atmosphere in this organization.

This organization has good mechanism for encouraging and developing creative ideas.

People in this organization can express unusual ideas without the fear of being called stupid.

People are rewarded for creative work in this organization.

In this organization, there is a lively and active flow of ideas.

Overall, the people in this organization have shared "vision" of where we are going and what we are trying to do.

People are encouraged to take risks in this organization.

In this organization top management expects that people will do creative work.

Failure is acceptable in this organization, if the effort on the project was good.

I feel that top management is enthusiastic about my project(s).

Performance evaluation in this organization is fair.

Organizational Impediments

There are many political problems in this organization.

People are too critical of new ideas in this organization.

There is destructive competition within this organization.

Destructive criticism is a problem in this organization.

People in this organization are very concerned about protecting their territory.

People in this organization feel pressure to produce anything acceptable, even if quality is lacking.

Top management does not want to take risks in this organization.

There is much emphasis in this organization on doing things the way we have always done them.

Procedures and structures are too formal in this organization.

People are quite concerned about negative criticism of their work in this organization.

This organization is strictly controlled by upper management.

Other areas of the organization hinder my project(s).

Workload Pressure

I have too much work to do in too little time.

I have sufficient time to do my project(s) (R).

I feel a sense of time pressure in my work.

There are unrealistic expectations for what people can achieve in this organization.

There are too many distractions from project work in this organization.

Intrinsic Job Motivation

I feel a sense of personal satisfaction when I do this job well.

My opinion of myself goes down when I do this job badly.

I take pride in doing my job as well as I can.

I feel unhappy when my work is not up to my usual standard.

I like to look back on the day's work with a sense of a job well done.

I try to think of ways of doing my job effectively.

- I am generally cautious about accepting new ideas (R).
- I rarely trust new ideas until I can see whether the vast majority of people around me accept them (R).
- I am aware that I am usually one of the last people in my group to accept something new (R).
- I am reluctant about adopting new ways of doing things until I see them working for people around me (R).
- I find it stimulating to be original in my thinking and behavior.
- I tend to feel that the old way of living and doing things is the best way (R).
- I am challenged by ambiguities and unsolved problems.
- I must see other people using new innovations before I will consider them (R).
- I am challenged by unanswered questions.
- I often find myself skeptical of new ideas (R).

Anxiety-Stress Questionnaire

Job-Induced Tension

- My job tends to directly affect my health.
- I work under a great deal of tension.
- I have felt fidgety or nervous as a result of my job.
- If I had a different job, my health would probably improve.
- Problems associated with my job have kept me awake at night.
- I have felt nervous before attending meetings in the company.
- I often "take my job home with me" in the sense that I think about it when doing other things.

Somatic Tension

- I am often bothered by acid indigestion or heartburn.
- I sometimes feel weak all over.
- I have had trouble getting to sleep or staying asleep.
- I get irritated or annoyed over the way things are going.
- I may now have an ulcer but I am not sure of it.

General Fatigue and Uneasiness

- I would consider myself in good or excellent health (R).
- I would consider myself in fair health (R).
- I do not have very good health.
- I wake up with stiffness or aching in joints or muscles.
- I seem to tire quickly.

General Job Satisfaction

- Generally speaking, I am very satisfied with this job.
- I frequently think of quitting this job (R).
- I am generally satisfied with the kind of work I do in this job.
- Most people on this job are very satisfied with the job.
- People on this job often think of quitting (R).

Job Descriptive Index

Promotions

- There are good opportunities for advancement at my firm.
- There is a good chance for promotions at my firm.
- Opportunities are somewhat limited at my firm (R).
- My job is a dead-end job (R).
- Promotions are based on ability at my firm.
- My firm has an unfair promotion policy (R).

Supervision

My supervisors are quick tempered (R).
My supervisors are impolite (R).
My supervisors are annoying (R).
My supervisors are stubborn (R).
My supervisors are hard to please (R).
My supervisors are tactful.

Work

My work is satisfying.
My work gives me a sense of accomplishment.
My work is challenging.
My work is boring (R).
My work is good.
My work is tiresome (R).

Pay

I am underpaid (R).
My pay is less than I deserve (R).
My pay is bad (R).
I am highly paid.
My income is adequate for normal expenses.
My income is barely enough to live on (R).

Coworkers

My coworkers are stupid (R).
My coworkers are slow (R).
My coworkers are lazy (R).
My coworkers are intelligent.
My coworkers are boring (R).
It is easy to make enemies of my coworkers (R).

Overall Performance

This employee produces high quality work.
This employee produces a high quantity of work.
Overall, this employee's performance is effective.

Creative Performance

This employee is innovative.
This employee is very creative in their work.
This employee comes up with novel and useful ideas and products for the organization.
This employee is creative.

Supplemental Scales for Experts

Objective Supplies

The department places value on innovation in general.
 The department has an orientation toward risk.
 The department takes pride in its members and what they are capable of doing.
 The department has an offensive strategy of taking the lead toward the future.
 The department has people with strong skills and abilities in the task domain.
 The department has ample funds allocated to this work domain.
 Material resources in this department are sufficient.
 This department has relevant personnel training available.
 There is an open communication system in this department.
 There are equitable and generous rewards and recognition for creativity in this department.
 The management structure in this department is formal and complex (R).
 There is an absence of unnecessary layers of hierarchy in this department.
 Management in this department is participative and collaborative.
 This department uses frequent, constructive, and supportive feedback on work efforts.

Objective Demands

The department demands that individuals have a positive attitude toward their job.
 The department demands that individuals have an intrinsic interest in their job.
 This department requires that its employees have great a deal of factual knowledge about the domain in question
 This department requires its employees to have high levels of technical skills.
 This department requires special talents on the part of its employees that are not necessary in other departments.
 This department demands that its employees have high levels of formal education.
 This department demands that its employees have the ability to take new perspectives on problems.
 This department requires that individuals pursue their work energetically and persistently.
 This department demands that its employees have the ability to develop novel ideas.

(R) signifies reverse scoring on this item.

APPENDIX C

PRETEST SURVEY AND CODING SHEET

SURVEY

If you have already taken this survey, do not fill it out again. If you have not, please answer the following questions to the best of your ability. It is extremely important that you answer all of the questions, so that the research results will be complete. All of your responses will be kept confidential and the data will be reported in aggregation only. Thank you for your cooperation.

I. For each of the following questions, please respond twice. For the first response scale answer the question in terms of how often you feel it is true about your current work environment. For the second response scale answer the question in terms of how often it would be true in your desired or ideal work environment. Circle the number of the response most appropriate for each statement.

- 1 - Never true of your current/desired work environment.
- 2 - Almost never true of your current/desired work environment.
- 3 - Sometimes true of your current/desired work environment.
- 4 - True as often as it is not true of your current/desired work environment.
- 5 - Often true of your current/desired work environment.
- 6 - Almost always true of your current/desired work environment.
- 7 - Always true of your current/desired work environment.

		<u>Current Environment</u>							<u>Desired Environment</u>						
1.	I have the freedom to decide how I am going to carry out my projects	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2.	I feel that I am working on important projects	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3.	I have too much work to do in too little time	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4.	This organization is strictly controlled by upper management	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5.	My coworkers and I make a good team . .	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6.	The tasks in my work are challenging . .	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7.	In this organization, there is a lively and active flow of ideas	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8.	My supervisor clearly sets overall goals for me	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9.	There is much emphasis in this organization on doing things the way we have always done them	1	2	3	4	5	6	7	1	2	3	4	5	6	7
10.	I have sufficient time to do my project(s)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
11.	I feel considerable pressure to meet someone else's specifications in how I do my work	1	2	3	4	5	6	7	1	2	3	4	5	6	7
12.	Overall, the people in this organization have a shared "vision" of where we are going and what we are trying to do	1	2	3	4	5	6	7	1	2	3	4	5	6	7
13.	There is a feeling of trust among the the people I work with most closely . .	1	2	3	4	5	6	7	1	2	3	4	5	6	7
14.	People in this organization are very concerned about protecting their territory	1	2	3	4	5	6	7	1	2	3	4	5	6	7
15.	There are too many distractions from project work in this organization .	1	2	3	4	5	6	7	1	2	3	4	5	6	7

II. For each of the following statements, please respond twice. For the first response scale describe the extent to which you agree or disagree that the statement applies to you. For the second response scale, describe the extent to which you agree or disagree that the organization expects this of you.

For example: For the statement "I feel a sense of personal satisfaction when I do this job well", the first response (self rating) should indicate your agreement or disagreement that you feel personal satisfaction when you do this job well. The second response (organizational expectations) should indicate your agreement or disagreement that the organization expects you to feel personal satisfaction when you do this job well.

	Self Rating							Organizational Expectations						
	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
1. I am generally cautious about accepting new ideas	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2. Problems here are easy to solve once you understand the various consequences of your actions, a skill I have acquired	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3. No one knows this job better than I do	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4. I feel a sense of personal satisfaction when I do this job well	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5. I rarely trust new ideas until I can see whether the vast majority of people around me accept them	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6. My opinion of myself goes down when I do this job badly	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7. Considering the time spent on the job, I feel thoroughly familiar with my tasks	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8. I am aware that I am usually one of the last people in my group to accept something new	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9. If anyone here can find the answer, I'm the one	1	2	3	4	5	6	7	1	2	3	4	5	6	7
10. I am reluctant about adopting new ways of doing things until I see them working for people around me	1	2	3	4	5	6	7	1	2	3	4	5	6	7
11. I take pride in doing my job as well as I can	1	2	3	4	5	6	7	1	2	3	4	5	6	7
12. This job is manageable and any problems tend to be optimally solved	1	2	3	4	5	6	7	1	2	3	4	5	6	7
13. I find it stimulating to be original in my thinking and behavior	1	2	3	4	5	6	7	1	2	3	4	5	6	7
14. I feel unhappy when my work is not up to my usual standard	1	2	3	4	5	6	7	1	2	3	4	5	6	7
15. I tend to feel that the old way of living and doing things is the best way	1	2	3	4	5	6	7	1	2	3	4	5	6	7
16. I do not know as much as my predecessor did concerning this job	1	2	3	4	5	6	7	1	2	3	4	5	6	7
17. I am challenged by ambiguities and unsolved problems	1	2	3	4	5	6	7	1	2	3	4	5	6	7

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
22. I have felt fidgety or nervous as a result of my job	1	2	3	4	5	6	7
23. My work is challenging	1	2	3	4	5	6	7
24. My pay is bad	1	2	3	4	5	6	7
25. I have had trouble getting to sleep or staying asleep	1	2	3	4	5	6	7
26. My coworkers are lazy	1	2	3	4	5	6	7
27. Most people on this job are very satisfied with the job	1	2	3	4	5	6	7
28. My job is a dead-end job	1	2	3	4	5	6	7
29. I do not have very good health	1	2	3	4	5	6	7
30. My supervisors are stubborn	1	2	3	4	5	6	7
31. My work is boring	1	2	3	4	5	6	7
32. If I had a different job, my health would probably improve	1	2	3	4	5	6	7
33. I am highly paid	1	2	3	4	5	6	7
34. My coworkers are intelligent	1	2	3	4	5	6	7
35. I get irritated or annoyed over the way things are going	1	2	3	4	5	6	7
36. Promotions are based on ability at my firm	1	2	3	4	5	6	7
37. My supervisors are hard to please	1	2	3	4	5	6	7
38. I wake up with stiffness or aching in joints or muscles	1	2	3	4	5	6	7
39. My work is good	1	2	3	4	5	6	7
40. My income is adequate for normal expenses	1	2	3	4	5	6	7
41. Problems associated with my job have kept me awake at night	1	2	3	4	5	6	7
42. My coworkers are boring	1	2	3	4	5	6	7
43. People on this job often think of quitting	1	2	3	4	5	6	7
44. My firm has an unfair promotion policy	1	2	3	4	5	6	7
45. I may now have an ulcer but I am not sure of it	1	2	3	4	5	6	7
46. My supervisors are tactful	1	2	3	4	5	6	7
47. My work is tiresome	1	2	3	4	5	6	7
48. I seem to tire quickly	1	2	3	4	5	6	7
49. My income is barely enough to live on	1	2	3	4	5	6	7
50. I have felt nervous before attending meetings in the company	1	2	3	4	5	6	7
51. It is easy to make enemies of my coworkers	1	2	3	4	5	6	7
52. I often "take my job home with me" in the sense that I think about it when doing other things	1	2	3	4	5	6	7

IV. For each of the following questions, please respond twice. For the first response scale answer the question in terms of how often you feel it is true about your current work environment. For the second response scale answer the question in terms of how often it would be true in your desired or ideal work environment. Circle the number of the response most appropriate for each statement.

- 1 - Never true of your current/desired work environment.
- 2 - Almost never true of your current/desired work environment.
- 3 - Sometimes true of your current/desired work environment.
- 4 - True as often as it is not true of your current/desired work environment.
- 5 - Often true of your current/desired work environment.
- 6 - Almost always true of your current/desired work environment.
- 7 - Always true of your current/desired work environment.

V. Which of the following best describes your highest level of education?

- | | | | |
|--------------------------|-----------------------------------|--------------------------|----------------------|
| <input type="checkbox"/> | less than high school diploma | <input type="checkbox"/> | some graduate school |
| <input type="checkbox"/> | high school graduate | <input type="checkbox"/> | masters degree |
| <input type="checkbox"/> | some college/specialized training | <input type="checkbox"/> | earned doctorate |
| <input type="checkbox"/> | bachelor's degree | | |

What is your current age? _____ years

What is your sex? _____ male _____ female

What is your current annual household income?

- | | | | |
|--------------------------|--------------------|--------------------------|--------------------|
| <input type="checkbox"/> | less than \$10,000 | <input type="checkbox"/> | \$60,001 - 70,000 |
| <input type="checkbox"/> | \$10,001 - 20,000 | <input type="checkbox"/> | \$70,001 - 80,000 |
| <input type="checkbox"/> | \$20,001 - 30,000 | <input type="checkbox"/> | \$80,001 - 90,000 |
| <input type="checkbox"/> | \$30,001 - 40,000 | <input type="checkbox"/> | \$90,001 - 100,000 |
| <input type="checkbox"/> | \$40,001 - 50,000 | <input type="checkbox"/> | over \$100,000 |
| <input type="checkbox"/> | \$50,001 - 60,000 | | |

What is your employment status?

- full time
 part time
 unemployed

What is your current job title? _____

In what department do you work? _____

What type of organization do you work for (i.e. telecommunications, bank, etc.)

How many years have you worked with this organization? _____

Thank you for taking the time to complete this survey. It is with the cooperation of people such as you that we can learn more about how to help organizations improve

Subjective Values and Subjective Supplies (Sections I and IV)

Work Environment Inventory	
Freedom	1, 42, 21(R), 11(R)
Challenging Work	48, 2, 6, 34, 36
Sufficient Resources	30, 24, 56(R), 64, 50, 44
Supervisory Encouragement	25, 52(R), 19(R), 63, 47, 31(R), 55, 35(R), 57, 48, 8
Work Group Supports	59, 27, 23, 13, 5, 51, 17, 39
Organizational Encouragement	45, 16, 40, 33, 38, 54, 49, 46, 7, 12, 55, 26, 43, 57, 20
Organizational Impediments	22, 58, 18, 66, 14, 37, 41, 9, 28, 32, 4, 65
Workload Pressure	3, 10(R), 61, 29, 15

Subjective Abilities and Subjective Demands (Section II)

Intrinsic Job Motivation	4, 6, 11, 14, 18, 22
Sense of Competence	
Task Knowledge/Problem Solving	2, 7, 12, 19, 21, 24
Confidence	3, 9, 16(R)
Innovativeness Scale	1(R), 5(R), 8(R), 10(R), 13, 15(R), 17, 20(R), 23, 25(R)

Outcome Variables (Section III)

Anxiety-Stress Questionnaire	
Job-Induced Tension	2, 12, 22, 32, 41, 50, 52
Somatic Tension	5, 15, 25, 35, 45
General Fatigue & Uneasiness	8(R), 19(R), 29, 38, 48
Job Descriptive Index	
Promotions	3, 11, 20(R), 28(R), 36, 44(R)
Supervision	4(R), 13(R), 21(R), 30(R), 37(R), 46
Work	6, 14, 23, 31(R), 39, 47(R)
Pay	7(R), 16(R), 24(R), 33, 40, 49(R)
Coworkers	10(R), 17(R), 26(R), 34, 42(R), 51(R)
General Job Satisfaction	1, 9(R), 18, 27, 43(R)

(R) signifies reverse scoring on these items.

APPENDIX D

EMPLOYEE SURVEY AND CODING SHEET

SCRIPT FOR EMPLOYEE MEETINGS

Good Morning (or afternoon). My name is Linda Livingstone. I am really glad to have the opportunity to meet with you for a few minutes today. I appreciate you taking the time to participate in this research. The research that I am doing is designed to find out what is satisfying to employees in their work environment. Mercruiser has shown a great deal of interest in this issue by agreeing to participate in this research.

Before explaining more about the survey you are going to complete, I want to tell you a little bit about myself. I am completing my Ph.D. at Oklahoma State and began a new job this fall with Baylor University in Waco, TX as a member of their faculty.

The survey you are to complete asks you questions about yourself and about your work environment. Please answer the questions as honestly and thoroughly as you can. There are questions on the front and back of each sheet, so be sure and complete both sides of each page. I realize that some of the questions may seem redundant or repetitive. Please answer all of the questions, however, so that I can get a complete picture of what you think.

As soon as you have completed the survey, please make sure your name is on the front page and turn it in directly to me. I will immediately place the surveys in my case and take them back to the university for tabulation. After the results have been input into the computer, the original surveys will be destroyed. It will be impossible to identify your individual responses. The responses will be tabulated and provided to Mercruiser in aggregate form. Your responses are completely confidential.

I know that completing a survey like this takes valuable time away from your work. However, your assistance will help us learn more about how to help organizations improve. Thank you for taking the time to complete this survey.

NAME _____

SURVEY

Please answer the following questions to the best of your ability. It is extremely important that you answer all of the questions, so that the research results will be complete. All of your responses will be kept confidential and the data will be reported in aggregation only. Thank you for your cooperation.

I. For each of the following questions, please respond twice. For the first response scale answer the question in terms of how often you feel it is true about your current work environment at Mercruiser. For the second response scale answer the question in terms of how often it would be true in your desired or ideal work environment. Circle the number of the response most appropriate for each statement.

- 1 = Never true of your current/desired work environment.
 2 = Almost never true of your current/desired work environment.
 3 = Sometimes true of your current/desired work environment.
 4 = True as often as it is not true of your current/desired work environment.
 5 = Often true of your current/desired work environment.
 6 = Almost always true of your current/desired work environment.
 7 = Always true of your current/desired work environment.

	<u>Mercruiser's Current Environment</u>							<u>Your Desired Environment</u>						
1. My coworkers and I make a good team	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2. In this organization, there is a lively and active flow of ideas	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3. Overall, the people in this organization have a shared "vision" of where we are going and what we are trying to do	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4. There is a feeling of trust among the people I work with most closely	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5. People in this organization are very concerned about protecting their territory	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6. New ideas are encouraged in this organization	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7. Within my work group, we challenge each other's ideas in a constructive way	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8. My supervisor has poor interpersonal skills	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9. Performance evaluation in this organization is fair	1	2	3	4	5	6	7	1	2	3	4	5	6	7
10. There are many political problems in this organization	1	2	3	4	5	6	7	1	2	3	4	5	6	7
11. People in my work group are open to new ideas	1	2	3	4	5	6	7	1	2	3	4	5	6	7
12. My supervisor serves as a good work model	1	2	3	4	5	6	7	1	2	3	4	5	6	7
13. In my work group, people are willing to help each other	1	2	3	4	5	6	7	1	2	3	4	5	6	7
14. My supervisor's expectations for my project(s) are unclear	1	2	3	4	5	6	7	1	2	3	4	5	6	7

	<u>Mercruiser's Current Environment</u>							<u>Your Desired Environment</u>						
	Never True	Almost Never True	Sometimes True	True as Often as It Is Not True	Often True	Almost Always True	Always True	Never True	Almost Never True	Sometimes True	True as Often as It Is Not True	Often True	Almost Always True	Always True
15. People are recognized for creative work in this organization	1	2	3	4	5	6	7	1	2	3	4	5	6	7
16. There is an open atmosphere in this organization	1	2	3	4	5	6	7	1	2	3	4	5	6	7
17. There is a good blend of skills in my work group	1	2	3	4	5	6	7	1	2	3	4	5	6	7
18. People are encouraged to solve problems creatively in this organization	1	2	3	4	5	6	7	1	2	3	4	5	6	7
19. People are rewarded for creative work in this organization	1	2	3	4	5	6	7	1	2	3	4	5	6	7
20. My supervisor supports my work group within the organization	1	2	3	4	5	6	7	1	2	3	4	5	6	7
21. The people in my work group are committed to our work	1	2	3	4	5	6	7	1	2	3	4	5	6	7
22. I get constructive feedback about my work	1	2	3	4	5	6	7	1	2	3	4	5	6	7
23. This organization has a good mechanism for encouraging and developing creative ideas	1	2	3	4	5	6	7	1	2	3	4	5	6	7
24. I feel that top management is enthusiastic about my project(s)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
25. People are too critical of new ideas in this organization	1	2	3	4	5	6	7	1	2	3	4	5	6	7
26. There is free and open communication within my work group	1	2	3	4	5	6	7	1	2	3	4	5	6	7
27. My supervisor shows confidence in my work group	1	2	3	4	5	6	7	1	2	3	4	5	6	7
28. My supervisor values individual contributions to projects	1	2	3	4	5	6	7	1	2	3	4	5	6	7
29. My supervisor is open to new ideas	1	2	3	4	5	6	7	1	2	3	4	5	6	7
30. Destructive criticism is a problem in this organization	1	2	3	4	5	6	7	1	2	3	4	5	6	7

II. For each of the following statements, please respond twice. For the first response scale describe the extent to which you agree or disagree that the statement applies to you. For the second response scale, describe the extent to which you agree or disagree that Mercruiser expects this of you.

For example: For the statement "I feel a sense of personal satisfaction when I do this job well", the first response (self rating) should indicate your agreement or disagreement that you feel personal satisfaction when you do this job well. The second response (Mercruiser's expectations) should indicate your agreement or disagreement that Mercruiser expects you to feel personal satisfaction when you do this job well.

	<u>Self Rating</u>							<u>Mercruiser's Expectations</u>						
	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
1. I feel a sense of personal satisfaction when I do this job well	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2. I rarely trust new ideas until I can see whether the vast majority of people around me accept them	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3. I am reluctant about adopting new ways of doing things until I see them working for people around me	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4. I take pride in doing my job as well as I can	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5. I tend to feel that the old way of living and doing things is the best way	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6. I like to look back on the day's work with a sense of a job well done	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7. I must see other people using new innovations before I will consider them	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8. I often find myself skeptical of new ideas	1	2	3	4	5	6	7	1	2	3	4	5	6	7

III. Please respond to the following items by indicating your degree of agreement or disagreement.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
1. Generally speaking, I am very satisfied with this job	1	2	3	4	5	6	7
2. My job tends to directly affect my health	1	2	3	4	5	6	7
3. There are good opportunities for advancement at my firm	1	2	3	4	5	6	7
4. My supervisors are quick tempered	1	2	3	4	5	6	7
5. I am often bothered by acid indigestion or heartburn	1	2	3	4	5	6	7
6. My work is satisfying	1	2	3	4	5	6	7
7. I am underpaid	1	2	3	4	5	6	7
8. I would consider myself in good or excellent health	1	2	3	4	5	6	7
9. I frequently think of quitting this job	1	2	3	4	5	6	7
10. My coworkers are stupid	1	2	3	4	5	6	7
11. There is a good chance for promotions at my firm	1	2	3	4	5	6	7
12. I work under a great deal of tension	1	2	3	4	5	6	7
13. My supervisors are impolite	1	2	3	4	5	6	7
14. My work gives me a sense of accomplishment	1	2	3	4	5	6	7
15. I sometimes feel weak all over	1	2	3	4	5	6	7
16. My pay is less than I deserve	1	2	3	4	5	6	7
17. My coworkers are slow	1	2	3	4	5	6	7
18. I am generally satisfied with the kind of work I do in this job	1	2	3	4	5	6	7
19. I would consider myself in fair health	1	2	3	4	5	6	7
20. Opportunities are somewhat limited at my firm	1	2	3	4	5	6	7
21. My supervisors are annoying	1	2	3	4	5	6	7
22. I have felt fidgety or nervous as a result of my job	1	2	3	4	5	6	7
23. My work is challenging	1	2	3	4	5	6	7
24. My pay is bad	1	2	3	4	5	6	7
25. I have had trouble getting to sleep or staying asleep	1	2	3	4	5	6	7
26. My coworkers are lazy	1	2	3	4	5	6	7
27. Most people on this job are very satisfied with the job	1	2	3	4	5	6	7

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
28. My job is a dead-end job	1	2	3	4	5	6	7
29. I do not have very good health	1	2	3	4	5	6	7
30. My supervisors are stubborn	1	2	3	4	5	6	7
31. My work is boring	1	2	3	4	5	6	7
32. If I had a different job, my health would probably improve	1	2	3	4	5	6	7
33. I am highly paid	1	2	3	4	5	6	7
34. My coworkers are intelligent	1	2	3	4	5	6	7
35. I get irritated or annoyed over the way things are going	1	2	3	4	5	6	7
36. Promotions are based on ability at my firm	1	2	3	4	5	6	7
37. My supervisors are hard to please	1	2	3	4	5	6	7
38. I wake up with stiffness or aching in joints or muscles	1	2	3	4	5	6	7
39. My work is good	1	2	3	4	5	6	7
40. My income is adequate for normal expenses	1	2	3	4	5	6	7
41. Problems associated with my job have kept me awake at night	1	2	3	4	5	6	7
42. My coworkers are boring	1	2	3	4	5	6	7
43. People on this job often think of quitting	1	2	3	4	5	6	7
44. My firm has an unfair promotion policy	1	2	3	4	5	6	7
45. I may now have an ulcer but I am not sure of it	1	2	3	4	5	6	7
46. My supervisors are tactful	1	2	3	4	5	6	7
47. My work is tiresome	1	2	3	4	5	6	7
48. I seem to tire quickly	1	2	3	4	5	6	7
49. My income is barely enough to live on	1	2	3	4	5	6	7
50. I have felt nervous before attending meetings in the company	1	2	3	4	5	6	7
51. It is easy to make enemies of my coworkers	1	2	3	4	5	6	7
52. I often "take my job home with me" in the sense that I think about it when doing other things	1	2	3	4	5	6	7

IV. Which of the following best describes your highest level of education?

- | | |
|--|---|
| <input type="checkbox"/> less than high school diploma | <input type="checkbox"/> some graduate school |
| <input type="checkbox"/> high school graduate | <input type="checkbox"/> masters degree |
| <input type="checkbox"/> some college/specialized training | <input type="checkbox"/> earned doctorate |
| <input type="checkbox"/> bachelor's degree | |

What is your current age? _____ years

What is your sex? male female

What is your employment status?

- full time part time unemployed

What is your current job title? _____

In what department do you work? _____

How many years have you worked with this organization? _____

What is your immediate supervisor's name? _____

Thank you for taking the time to complete this survey. It is with the cooperation of people such as you that we can learn more about how to help organizations improve.

CODING FOR EMPLOYEE SURVEY

Subjective Values and Subjective Supplies (Section I)

Work Environment Inventory

Supervisory Encouragement	8(R), 12, 14(R), 20, 22, 27, 28, 29
Work Group Supports	1, 4, 7, 11, 13, 17, 21, 26
Organizational Encouragement	2, 3, 6, 9, 15, 16, 18, 19, 23, 24
Organizational Impediments	5, 10, 25, 30

Subjective Abilities and Subjective Demands (Section II)

Intrinsic Job Motivation	1, 4, 6
Innovativeness Scale	2(R), 3(R), 5(R), 7(R), 8(R)

Outcome Variables (Section III)

Anxiety-Stress Questionnaire

Job-Induced Tension	2, 12, 22, 32, 41, 50, 52
Somatic Tension	5, 15, 25, 35, 45
General Fatigue & Uneasiness	8(R), 19(R), 29, 38, 48

Job Descriptive Index

Promotions	3, 11, 20(R), 28(R), 36, 44(R)
Supervision	4(R), 13(R), 21(R), 30(R), 37(R), 46
Work	6, 14, 23, 31(R), 39, 47(R)
Pay	7(R), 16(R), 24(R), 33, 40, 49(R)
Coworkers	10(R), 17(R), 26(R), 34, 42(R), 51(R)

General Job Satisfaction	1, 9(R), 18, 27, 43(R)
--------------------------	------------------------

(R) signifies reverse scoring on these items.

APPENDIX E

SUPERVISOR SURVEYS AND CODING SHEET



Oklahoma State University

COLLEGE OF BUSINESS ADMINISTRATION

STILLWATER, OKLAHOMA 74078-0555
 BUSINESS 201
 405-744-5064
 FAX 405-744-5180

Dear Supervisor:

In order to understand better the role of an individual's work environment in their well-being and effectiveness, I am conducting a research study. This effort is part of my dissertation research and is being conducted at _____ through the consent of _____ Management. Supervisors in several departments of the company are being asked to participate in the survey. I would appreciate your contribution to this research by completing the attached questionnaires (Supervisor's Survey I and Supervisor's Survey II).

A copy of Supervisor's Survey I should be completed on each of your employees that is participating in this study. In addition, it is important that you also complete one copy of Supervisor's Survey II. Please answer the questions on each survey honestly and thoroughly. Please complete Supervisor's Survey II at this time. You may also take time now to complete Survey I on each employee. If it is not convenient to complete your employees' ratings at this time, please do so this week and return the surveys to me in the attached, self-addressed, stamped envelope. If you have any questions about the surveys, I can be reached at (817)755-2261 (work) or (817)752-2256 (home).

The survey responses will be tabulated and provided to _____ in aggregate form. No individual responses will be identified. Be assured that your responses are completely confidential. Your conscientious attention to this survey will help us learn more about how to help organizations improve. Thank you for taking the time to complete these surveys.

Sincerely,

Linda Parrack Livingstone
 Department of Management
 College of Business Administration



NAME OF EMPLOYEE BEING RATED _____
 NAME OF SUPERVISOR DOING THE RATING _____
 DEPARTMENT NAME _____

SUPERVISOR'S SURVEY I

Please answer the following questions to the best of your ability as they apply to each employee that you supervise. It is extremely important that you answer all of the questions, so that the research results will be complete. All of your responses will be kept confidential and the data will be reported in aggregation only. Thank you for your cooperation.

Rate the extent to which you agree or disagree that this statement applies to this employee.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree Not Disagree	Slightly Agree	Agree	Strongly Agree
1. They rarely trust new ideas until they can see whether the vast majority of people around them accept them	1	2	3	4	5	6	7
2. They feel a sense of personal satisfaction when they do this job well	1	2	3	4	5	6	7
3. They are reluctant about adopting new ways of doing things until they see them working for people around them	1	2	3	4	5	6	7
4. They take pride in doing their job as well as they can	1	2	3	4	5	6	7
5. They tend to feel that the old way of living and doing things is the best way	1	2	3	4	5	6	7
6. They like to look back on the day's work with a sense of a job well done	1	2	3	4	5	6	7
7. They must see other people using new innovations before they will consider them	1	2	3	4	5	6	7
8. They often find themselves skeptical of new ideas	1	2	3	4	5	6	7
9. This employee is innovative	1	2	3	4	5	6	7
10. This employee produces high quality work	1	2	3	4	5	6	7
11. This employee is very creative in their work	1	2	3	4	5	6	7
12. This employee produces a high quantity of work	1	2	3	4	5	6	7
13. This employee comes up with novel and useful ideas and products for the organization	1	2	3	4	5	6	7
14. Overall, this employee's performance is effective	1	2	3	4	5	6	7
15. This employee is creative	1	2	3	4	5	6	7

Thank you for taking the time to complete this survey. I realize it takes valuable time away from other things you could be doing. However, it is with the cooperation of people such as you that we can learn more about how to help organizations improve.

CODING FOR SUPERVISOR'S SURVEY I

Objective Abilities

Intrinsic Job Motivation	2, 4, 6
Innovativeness Scale	1(R), 3(R), 5(R), 7(R), 8(R)

Outcome Variables

Performance

Overall Job Performance	10, 12, 14
Creative Job Performance	9, 11, 13, 15

(R) signifies reverse scoring on these items.

NAME _____

SUPERVISOR'S SURVEY II

Please answer the following questions to the best of your ability from the perspective of a "TYPICAL EMPLOYEE" in your department. It is extremely important that you answer all of the questions, so that the research results will be complete. All of your responses will be kept confidential and the data will be reported to your organization in aggregation only. Thank you for your cooperation.

Answer each the following questions in terms of how often it would be true in a "TYPICAL EMPLOYEE'S" desired or ideal work environment. Circle the number of the response most appropriate for each statement.

- 1 = Never true of their desired work environment.
- 2 = Almost never true of their desired work environment.
- 3 = Sometimes true of their desired work environment.
- 4 = True as often as it is not true of their desired work environment.
- 5 = Often true of their desired work environment.
- 6 = Almost always true of their desired work environment.
- 7 = Always true of their desired work environment.

- 1. My coworkers and I make a good team 1 2 3 4 5 6 7
- 2. In this organization, there is a lively and active flow of ideas 1 2 3 4 5 6 7
- 3. Overall, the people in this organization have a shared "vision" of where we are going and what we are trying to do 1 2 3 4 5 6 7
- 4. There is a feeling of trust among the people I work with most closely 1 2 3 4 5 6 7
- 5. People in this organization are very concerned about protecting their territory 1 2 3 4 5 6 7
- 6. New ideas are encouraged in this organization 1 2 3 4 5 6 7
- 7. Within my work group, we challenge each other's ideas in a constructive way 1 2 3 4 5 6 7
- 8. My supervisor has poor interpersonal skills 1 2 3 4 5 6 7
- 9. Performance evaluation in this organization is fair 1 2 3 4 5 6 7
- 10. There are many political problems in this organization 1 2 3 4 5 6 7
- 11. People in my work group are open to new ideas 1 2 3 4 5 6 7
- 12. My supervisor serves as a good work model 1 2 3 4 5 6 7
- 13. In my work group, people are willing to help each other 1 2 3 4 5 6 7
- 14. My supervisor's expectations for my project(s) are unclear 1 2 3 4 5 6 7
- 15. People are recognized for creative work in this organization 1 2 3 4 5 6 7
- 16. There is an open atmosphere in this organization 1 2 3 4 5 6 7

- | | Never True | Almost Never True | Sometimes True | True as Often as It is Not True | Often True | Almost Always True | Always True |
|--|------------|-------------------|----------------|---------------------------------|------------|--------------------|-------------|
| 17. There is a good blend of skills in my work group . | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. People are encouraged to solve problems creatively in this organization | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19. People are rewarded for creative work in this organization | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20. My supervisor supports my work group within the organization | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21. The people in my work group are committed to our work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22. I get constructive feedback about my work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23. This organization has a good mechanism for encouraging and developing creative ideas | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24. I feel that top management is enthusiastic about my project(s) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25. People are too critical of new ideas in this organization | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26. There is free and open communication within my work group | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 27. My supervisor shows confidence in my work group . | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 28. My supervisor values individual contributions to projects | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 29. My supervisor is open to new ideas | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30. Destructive criticism is a problem in this organization | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | | | | | | |
| 31. How long have you worked for this organization? _____ years | | | | | | | |
| 32. How many years have you worked in this department? _____ years | | | | | | | |
| 33. What is the name of your department? _____ | | | | | | | |
| 34. How many years have you been a supervisor in this department? _____ years | | | | | | | |
| 35. How many years have you worked in this industry? _____ years | | | | | | | |
| 36. What is your current age? _____ years | | | | | | | |
| 37. What is your sex? () Male () Female | | | | | | | |
| 38. Which of the following best describes your highest level of education? | | | | | | | |
| () less than high school diploma | | | | () some graduate school | | | |
| () high school graduate | | | | () master's degree | | | |
| () some college/specialized training | | | | () earned doctorate | | | |
| () bachelor's degree | | | | | | | |

Please rank your employees based on their level of performance in the space provided below. The employee with the highest level of performance should be ranked number 1. Include all employees in the ranking for which you completed the Supervisor's Survey I. If you have more than 15 employees to rank, please add additional lines.

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) _____
- 13) _____
- 14) _____
- 15) _____

How are financial and other resources made available to employees in your department for the development of new ideas and projects?

What process is used in your department for accepting and implementing employee suggestions?

Thank you for taking the time to complete this survey. I realize it takes valuable time away from other things you could be doing. However, it is with the cooperation of people such as you that we can learn more about how to help organizations improve.

CODING FOR SUPERVISOR'S SURVEY II

Objective Values

Work Environment Inventory

Supervisory Encouragement	8(R), 12, 14(R), 20, 22, 27, 28, 29
Work Group Supports	1, 4, 7, 11, 13, 17, 21, 26
Organizational Encouragement	2, 3, 6, 9, 15, 16, 18, 19, 23, 24
Organizational Impediments	5, 10, 25, 30

(R) signifies reverse scoring on these items.

APPENDIX F

EXPERT SURVEY AND CODING SHEET

BAYLOR

BAYLOR UNIVERSITY

December 20, 1991

Dear Expert:

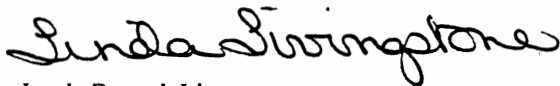
Thank you for agreeing to serve as a member of the expert panel for my dissertation research. Your experience and background will contribute significantly to the finished product. My research is designed to examine the role of an individual's work environment in their well-being and effectiveness. In particular, I am interested in examining the organization's creative environment. For the purposes of this study, creativity has been defined as a **process influenced by individual and organizational factors resulting in the production of novel and useful ideas and/or products.**

Enclosed is a summary of information that was collected from the organization where the study was conducted. The information provided is lengthy, but I have attempted to organize it in a way that makes it easy for you to get a sense of the information that is available. Three categories of information are provided. First, general information on the entire organization is provided. Second there is a section of information about Support Services departments in the organization. Finally, information is provided on Manufacturing departments in the organization. Please review the data and then complete the two surveys that have been included. A separate survey should be completed on the Support Services Department and on the Manufacturing Department. If you have any questions about the summarized information or about the survey, please contact me at (817)755-2261 (work) or (817) 752-2256 (home).

I have enclosed a self-addressed stamped envelope that you can use to return the surveys. You do not need to return the packet of information. If it is more convenient, you can FAX me the completed surveys. My FAX number is 817-755-2421.

Your responses will be tabulated and provided to the organization in aggregate form. No individual responses will be identified. Be assured that your responses are completely confidential. Your conscientious attention to the surveys will help us learn more about how to help organizations improve. Thank you for taking the time to assist with this project.

Sincerely,



Linda Parrack Livingstone
Assistant Professor

EXPERT SURVEY

Based on your analysis of the archival data, rate the degree to which you agree or disagree with each of these statements regarding the department's current work environment.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
1. The department places value on innovation in general . . .	1	2	3	4	5	6	7
2. The department has an orientation toward risk	1	2	3	4	5	6	7
3. The department takes pride in its members and what they are capable of doing	1	2	3	4	5	6	7
4. The department has an offensive strategy of taking the lead toward the future	1	2	3	4	5	6	7
5. The department has people with strong skills and abilities in the task domain	1	2	3	4	5	6	7
6. The department has ample funds allocated to this work domain	1	2	3	4	5	6	7
7. Material resources in this department are sufficient . . .	1	2	3	4	5	6	7
8. This department has relevant personnel training available	1	2	3	4	5	6	7
9. There is an open communication system in this department	1	2	3	4	5	6	7
10. There are equitable and generous rewards and recognition for creativity in this department	1	2	3	4	5	6	7
11. The management structure in this department is formal and complex	1	2	3	4	5	6	7
12. There is an absence of unnecessary layers of hierarchy in this department	1	2	3	4	5	6	7
13. Management in this department is participative and collaborative	1	2	3	4	5	6	7
14. This department uses frequent, constructive, and supportive feedback on work efforts	1	2	3	4	5	6	7
15. The department demands that individuals have a positive attitude toward their job	1	2	3	4	5	6	7
16. The department demands that individuals have an intrinsic interest in their job	1	2	3	4	5	6	7
17. This department requires that its employees have a great deal of factual knowledge about the domain in question .	1	2	3	4	5	6	7
18. This department requires its employees to have a high level of technical skills	1	2	3	4	5	6	7
19. This department requires special talents on the part of its employees that are not necessary in other departments	1	2	3	4	5	6	7
20. This department demands that its employees have high levels of formal education	1	2	3	4	5	6	7
21. This department demands that its employees have the ability to take new perspectives on problems	1	2	3	4	5	6	7
22. This department requires that individuals pursue their work energetically and persistently	1	2	3	4	5	6	7
23. This department demands that its employees have the ability to develop novel ideas	1	2	3	4	5	6	7

How many years of work experience do you have in business/industry? _____ years

How many years of work experience do you have in academics? _____ years

CODING FOR EXPERT'S SURVEY

Objective Supplies

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11(R), 12, 13, 14

Objective Demands

15, 16, 17, 18, 19, 20, 21, 22, 23

(R) signifies reverse scoring on these items.

APPENDIX G

TABLES

TABLE I
 PILOT STUDY FACTOR ANALYSIS SUMMARY: SUPPLY VARIABLES

Item	<u>Factor Loading</u> Supplies
My coworkers and I make a good team	.667
There is a feeling of trust among the people I work with most closely	.648
Within my work group, we challenge each other's ideas in a constructive way	.703
People in my work group are open to new ideas	.792
In my work group, people are willing to help each other	.669
There is a good blend of skills in my work group	.712
The people in my work group are committed to our work	.716
There is free and open communication within my work group	.776
In this organization, there is a lively and active flow of ideas	.750
Overall, the people in this organization have a shared "vision" of where we are going and what we are trying to do	.652
There is destructive competition within this organization	.796
Performance evaluation in this organization is fair	.612
People are recognized for creative work in this organization	.752
There is an open atmosphere in this organization	.788
People are encouraged to solve problems creatively in this organization	.764

TABLE I (Continued)

Item	<u>Factor Loading</u> <u>Supplies</u>
People are rewarded for creative work in this organization	.761
This organization has a good mechanism for encouraging and developing creative ideas	.736
I feel that top management is enthusiastic about my project(s)	.650
My supervisor has poor interpersonal skills	.605
My supervisor serves as a good work model	.801
My supervisor's expectations for my project(s) are unclear	.465
My supervisor supports my work group within the organization	.742
I get constructive feedback about my work	.640
My supervisor shows confidence in my work group	.771
My supervisor values individual contributions to projects	.748
My supervisor is open to new ideas	.707
People in this organization are very concerned about protecting their territory	-.484
There are many political problems in this organization	-.611
People are too critical of new ideas in this organization	-.525
Destructive criticism is a problem in this organization	-.592
Eigenvalue	<u>14.436</u>

TABLE II
PILOT STUDY FACTOR ANALYSIS SUMMARY: VALUE VARIABLES

Item	<u>Factor Loading</u> <u>Values</u>
My coworkers and I make a good team	.394
There is a feeling of trust among the people I work with most closely	.449
Within my work group, we challenge each other's ideas in a constructive way	.553
People in my work group are open to new ideas	.562
In my work group, people are willing to help each other	.602
There is a good blend of skills in my work group	.514
The people in my work group are committed to our work	.759
There is free and open communication within my work group	.689
In this organization, there is a lively and active flow of ideas	.363
Overall, the people in this organization have a shared "vision" of where we are going and what we are trying to do	.458
There is destructive competition within this organization	.626
Performance evaluation in this organization is fair	.586
People are recognized for creative work in this organization	.773
There is an open atmosphere in this organization	.449
People are encouraged to solve problems creatively in this organization	.465

TABLE II (Continued)

Item	<u>Factor Loading Values</u>
People are rewarded for creative work in this organization	.526
This organization has a good mechanism for encouraging and developing creative ideas	.679
I feel that top management is enthusiastic about my project(s)	.564
My supervisor has poor interpersonal skills	.492
My supervisor serves as a good work model	.662
My supervisor's expectations for my project(s) are unclear	.405
My supervisor supports my work group within the organization	.490
I get constructive feedback about my work	.596
My supervisor shows confidence in my work group	.660
My supervisor values individual contributions to projects	.621
My supervisor is open to new ideas	.600
People in this organization are very concerned about protecting their territory	-.442
There are many political problems in this organization	-.663
People are too critical of new ideas in this organization	-.346
Destructive criticism is a problem in this organization	-.376
Eigenvalue	<u>9.319</u>

TABLE III
 PILOT STUDY FACTOR ANALYSIS SUMMARY: DEMAND VARIABLES

Item	<u>Factor Loading</u> Demands
I feel a sense of personal satisfaction when I do this job well	.463
I take pride in doing my job as well as I can	.626
I like to look back on the day's work with a sense of a job well done	.534
I rarely trust new ideas until I can see whether the vast majority of people around me accept them	.645
I am reluctant about adopting new ways of doing things until I see them working for people around me	.782
I tend to feel that the old way of living and doing things is the best way	.651
I must see other people using new innovations before I will consider them	.784
I often find myself skeptical of new ideas	.717
Eigenvalue	<u>3.472</u>

TABLE IV
 PILOT STUDY FACTOR ANALYSIS SUMMARY: ABILITY VARIABLES

Item	<u>Factor Loading</u> <u>Abilities</u>
I feel a sense of personal satisfaction when I do this job well	-.203
I take pride in doing my job as well as I can	-.137
I like to look back on the day's work with a sense of a job well done	-.208
I rarely trust new ideas until I can see whether the vast majority of people around me accept them	.752
I am reluctant about adopting new ways of doing things until I see them working for people around me	.861
I tend to feel that the old way of living and doing things is the best way	.771
I must see other people using new innovations before I will consider them	.890
I often find myself skeptical of new ideas	.835
Eigenvalue	<u>3.494</u>

TABLE V
PILOT STUDY RELIABILITIES AND SUMMARY STATISTICS

Scale	# Items	Mean	Std. Dev.	Coefficient Alpha
Supplies	30	4.50	.88	.92
Values	30	5.81	.32	.86
Demands	8	5.14	.87	.81
Abilities	8	5.65	.72	.70
Strain	17	3.35	.92	.84
Job Satisfaction	5	4.47	1.41	.86
Promotion	6	3.97	1.53	.88
Supervisor	6	4.87	1.44	.90
Work	6	5.04	1.18	.84
Pay	6	3.82	1.32	.86
Coworkers	6	5.44	1.17	.89

TABLE VI
 PATTERN OF COEFFICIENTS FOR RELATIONSHIPS
 BETWEEN P-E FIT AND OUTCOMES

Form of Relationship	P	E	P ²	P*E	E ²
Positive Linear	+	-	0	0	0
Negative Linear	-	+	0	0	0
U-Shaped	0	0	+	-	+
Inverted U-Shaped	0	0	-	+	-
Positive Asymptotic ^a	+	-	+	-	+
Negative Asymptotic	-	+	+	-	+
Positive Inverted Asymptotic	+	-	-	+	-
Negative Inverted Asymptotic	-	+	-	+	-

^aFor the asymptotic forms, the term 'positive' indicates that the outcome increases (at an increasing rate) as P increases and E decreases, whereas the term 'negative' indicates that the outcome decreases (at a decreasing rate) as P increases and E decreases,

From: Edwards, J. R., & Cooper, C. L. (1990). The person-environment fit approach to stress: Recurring problems and some suggested solutions. Journal of Organizational Behavior, .11, 293-307.

TABLE VII
 FACTOR ANALYSIS SUMMARY: SUBJECTIVE SUPPLIES,
 SUBJECTIVE VALUES AND OBJECTIVE VALUES

Item	<u>Factor Loading</u>		
	Subjective Supplies	Subjective Values	Objective Values
1. My coworkers and I make a good team	.61	.78	.68
2. There is a feeling of trust among the people I work with most closely	.63	.76	.77
3. Within my work group, we challenge each other's ideas in a constructive way	.48	.74	.77
4. People in my work group are open to new ideas	.61	.74	.75
5. In my work group, people are willing to help each other	-.13	-.24	-.78
6. There is a good blend of skills in my work group	.63	.60	.80
7. The people in my work group are committed to our work	.60	.70	.80
8. There is free and open communication within my work group	.37	.26	.48
9. In this organization, there is a lively and active flow of ideas	.66	.79	.78
10. Overall, the people in this organization have a shared "vision" of where we are going and what we are trying to do	-.22	-.41	-.48
11. There is destructive competition within this organization	.60	.76	.85
12. Performance evaluation in this organization is fair	.63	.72	.17
13. People are recognized for creative work in this organization	.63	.80	.70
14. There is an open atmosphere in this organization	.34	.21	.36
15. People are encouraged to solve problems creatively in this organization	.67	.66	.86
16. People are rewarded for creative work in this organization	.73	.70	.86
17. This organization has a good mechanism for encouraging and developing creative ideas	.62	.70	.54

TABLE VII (Continued)

Item	<u>Factor Loading</u>		
	Subjective Supplies	Subjective Values	Objective Values
18. I feel that top management is enthusiastic about my project(s)	.69	.76	.82
19. My supervisor has poor interpersonal skills	.72	.82	.87
20. My supervisor serves as a good work model	.67	.78	.73
21. My supervisor's expectations for my project(s) are unclear	.67	.71	.65
22. My supervisor supports my work group within the organization	.71	.82	.69
23. I get constructive feedback about my work	.73	.84	.87
24. My supervisor shows confidence in my work group	.69	.77	.76
25. My supervisor values individual contributions to projects	-.39	-.24	-.43
26. My supervisor is open to new ideas	.63	.78	.75
27. People in this organization are very concerned about protecting their territory	.72	.69	.66
28. There are many political problems in this organization	.68	.72	.62
29. People are too critical of new ideas in this organization	.58	.51	.56
30. Destructive criticism is a problem in this organization	-.43	-.39	-.72
Eigenvalue	<u>10.87</u>	<u>13.69</u>	<u>14.89</u>

TABLE VIII

FACTOR ANALYSIS SUMMARY: SUBJECTIVE DEMANDS, SUBJECTIVE ABILITIES
AND OBJECTIVE ABILITIES

Item	<u>Subjective Demands</u>			<u>Subjective Abilities</u>			<u>Objective Abilities</u>		
	<u>1 Factor Solution</u>	<u>2 Factor Solution</u>		<u>1 Factor Solution</u>	<u>2 Factor Solution</u>		<u>1 Factor Solution</u>	<u>2 Factor Solution</u>	
1. I feel a sense of personal satisfaction when I do this job well	.52	.12	.18	.08	.00	.90	.70	.28	.85
2. I take pride in doing my job as well as I can	.62	.76	-.05	.76	.76	.00	.86	.87	.25
3. I like to look back on the day's work with a sense of a job well done	.68	.79	.02	.83	.83	.03	.86	.89	.23
4. I rarely trust new ideas until I can see whether the vast majority of people around me accept them	.49	.06	.83	.08	.01	.84	.68	.23	.89
5. I am reluctant about adopting new ways of doing things until I see them working for people around me	.61	.62	.16	.69	.70	-.04	.76	.82	.13
6. I tend to feel that the old way of living and doing things is the best way	.55	.13	.84	.10	.03	.77	.63	.16	.90
7. I must see other people using new innovations before I will consider them	.79	.76	.28	.82	.81	.07	.86	.90	.19
8. I often find myself skeptical of new ideas	.73	.78	.13	.77	.77	.00	.85	.81	.31
Eigenvalue	<u>3.21</u>	<u>2.80</u>	<u>2.15</u>	<u>3.02</u>	<u>3.01</u>	<u>2.11</u>	<u>4.88</u>	<u>3.86</u>	<u>2.58</u>

TABLE IX
 MEANS, STANDARD DEVIATIONS AND COEFFICIENT ALPHAS
 FOR STUDY VARIABLES

Scale	# Items	Mean	Std. Dev.	Coefficient Alpha
Subjective Supplies	30	4.40	.80	.90
Subjective Values	30	5.68	.63	.88
Subjective Demands for Intrinsic Motivation	3	5.46	1.13	.78
Subjective Abilities for Intrinsic Motivation	3	6.28	.78	.77
Subjective Demands for Innovativeness	5	4.66	1.28	.80
Subjective Abilities for Innovativeness	5	5.31	1.18	.83
Objective Supplies	10	3.81	.01	.94
Objective Values	30	5.05	.64	.91
Objective Demands for Intrinsic Motivation	3	4.40	.20	.80
Objective Abilities for Intrinsic Motivation	3	5.93	.76	.89
Objective Demands for Innovativeness	4	4.15	.12	.88
Objective Abilities for Innovativeness	5	4.62	1.39	.93
Strain	17	3.35	.96	.87
Job Satisfaction	5	4.40	1.20	.78
Promotion Satisfaction	6	3.29	1.39	.89
Supervisor Satisfaction	6	5.03	1.26	.88
Work Satisfaction	6	4.76	1.15	.81
Pay Satisfaction	6	3.42	1.33	.88
Coworker Satisfaction	6	5.07	1.20	.89
Overall Performance	3	5.85	.78	.82
Creative Performance	4	3.93	.89	.94

TABLE X
PEARSON PRODUCT-MOMENT CORRELATIONS FOR STUDY VARIABLES

Variables	1	2	3	4	5
1. Strain	-				
2. Promotion Satisfaction	-.24***	-			
3. Supervisor Satisfaction	-.31***	.43***	-		
4. Work Satisfaction	-.35***	.62***	.30***	-	
5. Pay Satisfaction	-.19**	.42***	.29***	.32***	-
6. Coworker Satisfaction	-.25***	.36***	.42***	.38***	.12
7. Job Satisfaction	-.48***	.63***	.43***	.73***	.41***
8. Overall Performance	-.17**	.32***	.33***	.30***	.24***
9. Creative Performance	-.17**	.24***	.15*	.29***	.20**
10. Education	.00	.06	.03	.13	.08
11. Age	-.12	.13	.06	.25**	.17**
12. Sex ^a	.04	-.12	.17**	.03	.00
13. Organizational Tenure	-.07	.03	.05	.12	.09
14. Area of Company ^b	-.09	.35***	.11	.39***	.15*
15. Subjective Supplies	-.32***	.54***	.48***	.46***	.27***
16. Subjective Values	-.25***	.25***	.25***	.24***	.09
17. Subjective Demands for Intrinsic Motivation	-.12	.43***	.32***	.38***	.22***
18. Subjective Abilities for Intrinsic Motivation	-.19**	.26***	.17**	.55***	-.02
19. Subjective Demands for Innovativeness	-.28***	.27***	.25***	.23***	.29***
20. Subjective Abilities for Innovativeness	-.14*	.00	.11	.07	-.04
21. Objective Values	-.14*	.17**	.11	.14	.08
22. Objective Abilities for Intrinsic Motivation	-.13	.37***	.32***	.34***	.14*
23. Objective Abilities for Innovativeness	-.16*	.27***	.15*	.32***	.18**

TABLE X (Continued)

Variables	6	7	8	9	10
6. Coworker Satisfaction	-				
7. Job Satisfaction	.34***	-			
8. Overall Performance	.21**	.31***	-		
9. Creative Performance	.16*	.27***	.63***	-	
10. Education	.23***	.02	.03	.21**	-
11. Age	.14	.21**	-.07	-.10	.01
12. Sex ^a	-.08	.03	.00	-.22**	-.28***
13. Organizational Tenure	.00	.07	-.18**	-.13	-.15*
14. Area of Company ^b	.33***	.22***	.10	.12	.35***
15. Subjective Supplies	.52***	.54***	.37***	.31***	.09
16. Subjective Values	.26***	.19**	.21**	.15*	.18**
17. Subjective Demands for Intrinsic Motivation	.32***	.41***	.14*	.12	-.03
18. Subjective Abilities for Intrinsic Motivation	.07	.38***	.12	.04	-.03
19. Subjective Demands for Innovativeness	.14*	.24***	-.03	-.05	-.05
20. Subjective Abilities for Innovativeness	.10	-.08	-.04	.05	.16*
21. Objective Values	.04	.03	.03	.12	.05
22. Objective Abilities for Intrinsic Motivation	.21**	.24***	.72***	.47***	.04
23. Objective Abilities for Innovativeness	.16*	.28***	.52***	.61***	.14

TABLE X (Continued)

Variables	11	12	13	14	15
11. Age	-				
12. Sex ^a	.01	-			
13. Organizational Tenure	.20**	.11	-		
14. Area of Company ^b	.09	-.04	-.05	-	
15. Subjective Supplies	.09	.00	-.01	.32***	-
16. Subjective Values	.10	-.01	-.02	.31***	.50***
17. Subjective Demands for Intrinsic Motivation	.03	.03	.10	.13	.48***
18. Subjective Abilities for Intrinsic Motivation	.14*	.22***	.00	.20**	.28***
19. Subjective Demands for Innovativeness	.08	.15*	.11	.10	.30***
20. Subjective Abilities for Innovativeness	-.02	.04	-.04	.09	.01
21. Objective Values	.03	.02	.12	.31***	.16*
22. Objective Abilities for Intrinsic Motivation	.03	.04	-.11	.26***	.41***
23. Objective Abilities for Innovativeness	-.13	-.08	-.07	.11	.33***

TABLE X (Continued)

Variables	16	17	18	19	20
16. Subjective Values	-				
17. Subjective Demands for Intrinsic Motivation	.12	-			
18. Subjective Abilities for Intrinsic Motivation	.35***	.20**	-		
19. Subjective Demands for Innovativeness	.22***	.26***	.16*	-	
20. Subjective Abilities for Innovativeness	.24***	-.01	.03	.23***	-
21. Objective Values	.27***	.08	-.07	.08	.32***
22. Objective Abilities for Intrinsic Motivation	.23***	.21**	.23***	-.03	-.02
23. Objective Abilities for Innovativeness	.15*	.12	.16*	-.05	.20**

TABLE X (Continued)

Variables	21	22	23
21. Objective Values	-		
22. Objective Abilities for Intrinsic Motivation	.19**	-	
23. Objective Abilities for Innovativeness	.15*	.47***	

* p < .10

** p < .05

*** p < .01

^aMales were coded as 1 and females were coded as 2 for the sex variable.

^bThe manufacturing area was coded as 1 and the support services area was coded as 2.

TABLE XI
 FACTOR ANALYSIS SUMMARY: OBJECTIVE SUPPLIES

Item	Initial Factor Loadings	Factor Loadings After Item Removal
1. The department places value on innovation in general.	.94	.94
2. The department has an orientation toward risk.	.93	.92
3. The department takes pride in its members and what they are capable of doing.	.83	.81
4. The department has an offensive strategy of taking the lead toward the future.	.95	.94
5. The department has people with strong skills and abilities in the task domain.	.17	--
6. The department has ample funds allocated to this work domain.	.00	--
7. Material resources in this department are sufficient.	.27	--
8. This department has relevant personnel training available.	.11	--
9. There is an open communication system in this department.	.82	.83
10. There are equitable and generous rewards and recognition for creativity in this department.	.71	.72
11. The management structure in this department is formal and complex.	.74	.73
12. There is an absence of unnecessary layers of hierarchy in this department.	.89	.89
13. Management in this department is participative and collaborative.	.67	.70
14. This department uses frequent, constructive feedback on work efforts.	.49	.51
Eigenvalue	<u>6.63</u>	<u>6.54</u>

TABLE XII
 FACTOR ANALYSIS SUMMARY: OBJECTIVE DEMANDS

Item	Initial One Factor Loadings	Initial Two Factor Loadings	Two Factor Loadings After Item Removal
1. The department demands that individuals have a positive attitude toward their job.	.83	.81 .15	.47 .73
2. The department demands that individuals have an intrinsic interest in their job.	.70	.63 .41	.19 .87
3. This department requires that its employees have a great deal of factual knowledge about the domain in question.	.05	-.12 .80	-- --
4. This department requires its employees to have a high level of technical skills.	.23	.05 .88	-- --
5. This department requires special talents on the part of its employees that are not necessary in other departments.	.62	.52 .51	.09 .84
6. This department demands that its employees have high levels of formal education.	.66	.72 -.21	.85 .04
7. This department demands that its employees have the ability to take new perspectives on problems.	.80	.81 .02	.88 .19
8. This department requires that individuals pursue their work energetically and persistently.	.82	.79 .21	.79 .30
9. This department demands that its employees have the ability to develop novel ideas.	.89	.94 -.17	.78 .48
Eigenvalues	<u>4.14</u>	<u>4.04</u> <u>1.99</u>	<u>2.98</u> <u>2.36</u>

TABLE XIII

T-TESTS BETWEEN THE MANUFACTURING AND SUPPORT SERVICES AREAS FOR
OBJECTIVE SUPPLIES AND OBJECTIVE DEMANDS

Focal Variables	Mean	T-Value
<u>Objective Supplies</u>		
Manufacturing Area	3.82	.021
Support Services Area	3.80	
<u>Objective Demands for Intrinsic Motivation</u>		
Manufacturing Area	4.54	.877
Support Services Area	4.13	
<u>Objective Demands for Innovativeness</u>		
Manufacturing Area	4.06	.385
Support Services Area	4.31	

* p < .10

** p < .05

*** p < .01

TABLE XIV
SIMPLE REGRESSION ANALYSIS AND TYPE THREE SUMS OF SQUARES

Regression Model	R^{2a}	F	Type III SS	F
<u>Strain</u>				
Subjective Supplies	.10	16.21***	6.77	8.11***
Subjective Values	.06	9.44***	1.44	1.73
Demands for Intrinsic Motivation	.02	2.17	1.01	1.12
Abilities for Intrinsic Motivation	.03	5.03***	3.55	3.94**
Demands for Innovativeness	.08	12.02***	8.47	9.83***
Abilities for Innovativeness	.02	3.01*	.87	1.01
<u>Job Satisfaction</u>				
Subjective Supplies	.29	58.97***	54.38	53.57***
Subjective Values	.04	5.35**	1.69	1.67
Demands for Intrinsic Motivation	.17	27.92***	23.10	21.38***
Abilities for Intrinsic Motivation	.16	23.93***	18.98	17.57***
Demands for Innovativeness	.06	8.72***	14.47	10.76***
Abilities for Innovativeness	.01	.80	3.75	2.78*
<u>Satisfaction w/ Promotion</u>				
Subjective Supplies	.29	57.57***	63.22	45.44***
Subjective Values	.06	9.06***	.18	.13
Demands for Intrinsic Motivation	.18	31.70***	40.25	26.20***
Abilities for Intrinsic Motivation	.07	10.62***	9.08	5.91**
Demands for Innovativeness	.08	11.52***	22.11	12.26***
Abilities for Innovativeness	.00	.00	1.38	.76
<u>Satisfaction w/ Supervisor</u>				
Subjective Supplies	.23	41.78***	37.79	30.27***
Subjective Values	.06	9.32***	.04	.03
Demands for Intrinsic Motivation	.11	16.64***	19.86	13.90***
Abilities for Intrinsic Motivation	.03	4.35**	2.73	1.91
Demands for Innovativeness	.06	9.13***	11.58	7.64***
Abilities for Innovativeness				

TABLE XIV (Continued)

Regression Model	R ^{2a}	F	Type III SS	F
<u>Satisfaction w/ Work</u>				
Subjective Supplies	.22	38.74***	30.07	28.39***
Subjective Values	.06	8.44***	.01	.01
Demands for Intrinsic Motivation	.14	23.32***	13.87	16.50***
Abilities for Intrinsic Motivation	.30	61.58***	44.51	52.95***
Demands for Innovativeness	.05	7.76***	8.98	7.02***
Abilities for Innovativeness	.00	.00	.06	.04
<u>Satisfaction w/ Pay</u>				
Subjective Supplies	.07	11.15***	16.97	10.30***
Subjective Values	.01	1.14	.68	.41
Demands for Intrinsic Motivation	.05	7.18***	13.07	7.74***
Abilities for Intrinsic Motivation	.00	.00	1.08	.64
Demands for Innovativeness	.08	12.76***	28.39	14.50***
Abilities for Innovativeness	.00	.00	3.08	1.91
<u>Satisfaction w/ Coworkers</u>				
Subjective Supplies	.27	51.96***	41.71	38.88***
Subjective Values	.07	10.02***	.00	.00
Demands for Intrinsic Motivation	.10	16.09***	20.00	15.18***
Abilities for Intrinsic Motivation	.01	.74	.01	.01
Demands for Innovativeness	.02	2.96	3.07	2.15
Abilities for Innovativeness	.01	1.57	1.10	.77
<u>Overall Performance</u>				
Subjective Supplies	.14	22.93***	8.42	16.00***
Subjective Values	.04	6.19***	.04	.08
Demands for Intrinsic Motivation	.02	2.75*	1.18	1.98
Abilities for Intrinsic Motivation	.01	1.91	.69	1.16
Demands for Innovativeness	.00	.00	.03	.04
Abilities for Innovativeness	.00	.00	.13	.21

TABLE XIV (Continued)

Regression Model	R ^{2a}	F	Type III SS	F
<u>Creative Performance</u>				
Subjective Supplies	.10	15.00***	8.42	11.49***
Subjective Values	.02	3.18*	.01	.01
Demands for Intrinsic Motivation	.01	2.06	1.47	1.84
Abilities for Intrinsic Motivation	.00	.00	.04	.05
Demands for Innovativeness	.00	.00	.41	.50
Abilities for Innovativeness	.00	.00	.43	.53

^a Represents variance explained when the variable is entered as a single predictor of the outcome variable.

TABLE XV
RESULTS OF HIERARCHICAL REGRESSION ANALYSIS

Regression Model	Step One Results ^a				Step Two Results ^b				Model R ²	Model F	
	P	E	R ²	F	P ²	E ²	PxE	R ²			F
<u>Strain</u>											
Supply-Value Fit	-.18	-.32***	.11	9.01***	-.34***	.06	-.28	.04	1.88	.15	4.79***
Intrinsic Motivation Demand-Ability Fit	-.21***	-.08	.04	3.08**	.15***	-.07	-.08	.08	4.05***	.12	3.75***
Innovation Demand- Ability Fit	-.07	-.20***	.08	6.52***	.02	-.05	-.13***	.06	3.09**	.14	4.60***
<u>Job Satisfaction</u>											
Supply-Value Fit	-.20	.89***	.30	30.46***	-.32*	-.27**	.64***	.04	2.56*	.34	14.14***
Intrinsic Motivation Demand-Ability Fit	.48***	.37***	.26	24.38***	-.02	.02	.05	.00	--	.26	9.72***
Innovation Demand- Ability Fit	-.14*	.26***	.08	5.81***	-.06	-.01	.17***	.06	2.60*	.14	4.17***
<u>Promotion Satisfaction</u>											
Supply-Value Fit	-.07	.96***	.29	28.67***	-.26	.05	.64**	.04	2.52*	.33	13.36***
Intrinsic Motivation Demand-Ability Fit	.33**	.48***	.22	19.35***	-.15*	.09	.02	.03	1.95	.25	9.09***
Innovation Demand- Ability Fit	-.09	.32***	.08	6.13***	-.10	.07	.19***	.06	3.42**	.14	4.64***

TABLE XV (Continued)

Regression Model	Step One Results ^a				Step Two Results ^b					Model R ²	Model F
	P	E	R ²	F	P ²	E ²	PxE	ΔR ²	F		
<u>Supervisor Satisfaction</u>											
Supply-Value Fit	.03	.75***	.23	20.76***	.01	-.02	.42	.03	1.98	.26	9.69***
Intrinsic Motivation Demand-Ability Fit	.18	.34***	.12	9.33***	-.06	.05	-.08	.01	.31	.13	3.88***
Innovation Demand- Ability Fit	.06	.23***	.06	4.80***	-.07	.15***	.19***	.12	6.40***	.18	5.98***
<u>Work Satisfaction</u>											
Supply-Value Fit	.02	.70***	.23	15.66***	-.12	-.09	.28	.01	.41	.38 ^c	6.00***
Intrinsic Motivation Demand-Ability Fit	.69***	.28***	.32	39.26***	.01	-.02	.03	.00	--	.46 ^c	8.55***
Innovation Demand- Ability Fit	.06	.19**	.05	4.08**	-.07	-.04	.11*	.03	1.83	.23 ^c	2.88***
<u>Pay Satisfaction</u>											
Supply-Value Fit	-.13	.50***	.08	5.76***	-.29	-.31**	.73**	.04	1.96	.12	3.54***
Intrinsic Motivation Demand-Ability Fit	-.11	.27***	.05	3.90**	-.04	.02	-.07	.00	--	.05	1.59
Innovation Demand- Ability Fit	-.13	.33***	.10	7.38***	-.14*	.13**	.00	.04	2.33*	.14	4.41***

TABLE XV (Continued)

Regression Model	Step One Results ^a				Step Two Results ^b					Model R ²	Model F
	P	E	R ²	F	P ²	E ²	PxE	ΔR^2	F		
<u>Coworker Satisfaction</u>											
Supply-Value Fit	.00	.78***	.27	25.80***	.06	-.16	.38	.03	1.89	.30	11.64***
Intrinsic Motivation Demand-Ability Fit	-.01	.34***	.10	8.00***	-.04	.00	-.11	.01	.31	.11	3.36***
Innovation Demand- Ability Fit	.08	.12	.03	1.86	-.08	.02	.15**	.05	2.52*	.08	2.28***
<u>Overall Performance</u>											
Supply-Value Fit	.03	.35***	.14	11.43***	-.11	-.08	.38*	.03	1.54	.17	5.52***
Intrinsic Motivation Demand-Ability Fit	.09	.08	.03	1.96	-.01	.02	-.03	.00	--	.03	.83
Innovation Demand- Ability Fit	-.03	-.01	.00	--	.01	.04	.02	.01	.51	.01	.36
<u>Creative Performance</u>											
Supply-Value Fit	-.07	.37***	.09	4.86***	-.13	-.23**	.72***	.08	4.93***	.29 ^c	3.96***
Intrinsic Motivation Demand-Ability Fit	.10	.10	.03	2.07	.01	.03	-.02	.00	--	.14 ^c	1.65*
Innovation Demand- Ability Fit	.00	.00	.00	--	-.01	.01	.08	.02	1.00	.14 ^c	1.54

* p < .10

** p < .05

*** p < .01

^a Step one results are main effects from the P and E components entered together.^b Step two results are from the P/E fit terms (the interaction, P*E and the higher order terms, P² and E²).^c Includes variance explained by the demographic variables controlled in the initial step of the analysis.

TABLE XVI
CORRELATIONS AND PAIRED COMPARISONS BETWEEN
OBJECTIVE AND SUBJECTIVE MEASURES

Focal Variables	Mean	T-Value	Correlation
Objective Supplies	3.81	8.81***	-.36***
Subjective Supplies	4.40		
Objective Values	5.05	10.79***	.27***
Subjective Values	5.68		
Objective Demands for Intrinsic Motivation	4.40	10.83***	-.16*
Subjective Demands for Intrinsic Motivation	5.46		
Objective Abilities for Intrinsic Motivation	5.93	4.45***	.23***
Subjective Abilities for Intrinsic Motivation	6.28		
Objective Demands for Innovativeness	4.15	4.78***	.06
Subjective Demands for Innovativeness	4.66		
Objective Abilities for Innovativeness	4.62	5.04***	.20**
Subjective Abilities for Innovativeness	5.31		

* p < .10

** p < .05

*** p < .01

TABLE XVII

RESULTS OF FORWARD STEPWISE REGRESSION COMPARING OBJECTIVE AND SUBJECTIVE MEASURES

Regression Model	<u>Variable Entering in 1st Step</u>				<u>Variables Entering in 2nd Step</u>				Model R ²	Model F
	Objective Measure	Subjective Measure	R ²		Objective Measure	Subjective Measure	ΔR^2	F		
<u>Strain</u>										
Values	--	-.38***	.06	9.44***	-.12	-.35***	.01	.84	.07	5.13***
Intrinsic Motivation Abilities	--	-.23**	.03	5.03**	-.12	-.20*	.01	1.26	.04	3.15**
Innovativeness Abilities	-.11*	--	.03	3.78*	-.10	-.10	.01	1.93	.04	2.87*
<u>Job Satisfaction</u>										
Values	--	.36**	.04	5.35**	--	--	--	--	.04	5.35**
Intrinsic Motivation Abilities	--	.58***	.15	23.93***	.30**	.51***	.04	6.01**	.19	15.40***
Innovativeness Abilities	.21***	--	.06	8.94***	.23***	-.13	.02	2.38	.08	5.70***
<u>Promotion Satisfaction</u>										
Values	--	.54***	.06	9.06***	.26	.47**	.01	1.89	.07	5.50***
Intrinsic Motivation Abilities	.67***	--	.13	21.87***	.59***	.34**	.03	5.72**	.16	14.16***
Innovativeness Abilities	.27***	--	.07	10.68***	.28***	-.07	.00	--	.07	5.57***

TABLE XVII (Continued)

Regression Model	Variable Entering in 1st Step				Variables Entering in 2nd Step				Model R ²	Model F
	Objective Measure	Subjective Measure	R ²	F	Objective Measure	Subjective Measure	ΔR ²	F		
<u>Supervisor Satisfaction</u>										
Values	--	.50***	.06	9.32***	--	--	--	--	.06	9.32***
Intrinsic Motivation Abilities	.52***	--	.10	15.65***	.48***	.17	.01	1.65	.11	8.68***
Innovativeness Abilities	.14*	--	.02	3.23*	.12	.09	.01	1.09	.03	2.16
<u>Work Satisfaction</u>										
Values	--	.43***	.06	8.44***	.15	.39**	.01	.88	.07	4.66**
Intrinsic Motivation Abilities	--	.81***	.30	61.58***	.33***	.74***	.05	9.94***	.35	37.71***
Innovativeness Abilities	.27***	--	.10	16.19***	--	--	--	--	.10	16.19***
<u>Pay Satisfaction</u>										
Values	--	.19	.01	1.14	--	--	--	--	.01	1.14
Intrinsic Motivation Abilities	.24*	--	.02	2.81*	--	--	--	--	.02	2.81*
Innovativeness Abilities	.17**	--	.03	4.83**	.19**	-.09	.01	.88	.04	2.85*

TABLE XVII (Continued)

Regression Model	Variable Entering in 1st Step				Variables Entering in 2nd Step				Model R ²	Model F
	Objective Measure	Subjective Measure	R ²	F	Objective Measure	Subjective Measure	ΔR ²	F		
<u>Coworker Satisfaction</u>										
Values	--	.49***	.07	10.02***	--	--	--	--	.07	10.02***
Intrinsic Motivation Abilities	.33**	--	.04	6.26**	--	--	--	--	.04	6.26**
Innovativeness Abilities	.14*	--	.03	3.80*	.13*	-.08	.01	.80	.04	2.30
<u>Overall Performance</u>										
Values	--	.25**	.04	6.19**	--	--	--	--	.04	6.19**
Intrinsic Motivation Abilities	.73***	--	.51	147.98***	.74***	-.05	.00	--	.51	74.28***
Innovativeness Abilities	.29***	--	.27	52.69***	.31***	-.10**	.02	4.41**	.29	29.19***
<u>Creative Performance</u>										
Values	--	.21*	.02	3.18*	.13	.18	.01	1.05	.03	2.12
Intrinsic Motivation Abilities	.55***	--	.22	40.63***	.57***	-.08	.00	--	.22	20.73***
Innovativeness Abilities	.40***	--	.38	85.32***	.40***	-.06	.01	1.20	.39	43.32***

* p < .10
 ** p < .05
 *** p < .01

APPENDIX H

FIGURES

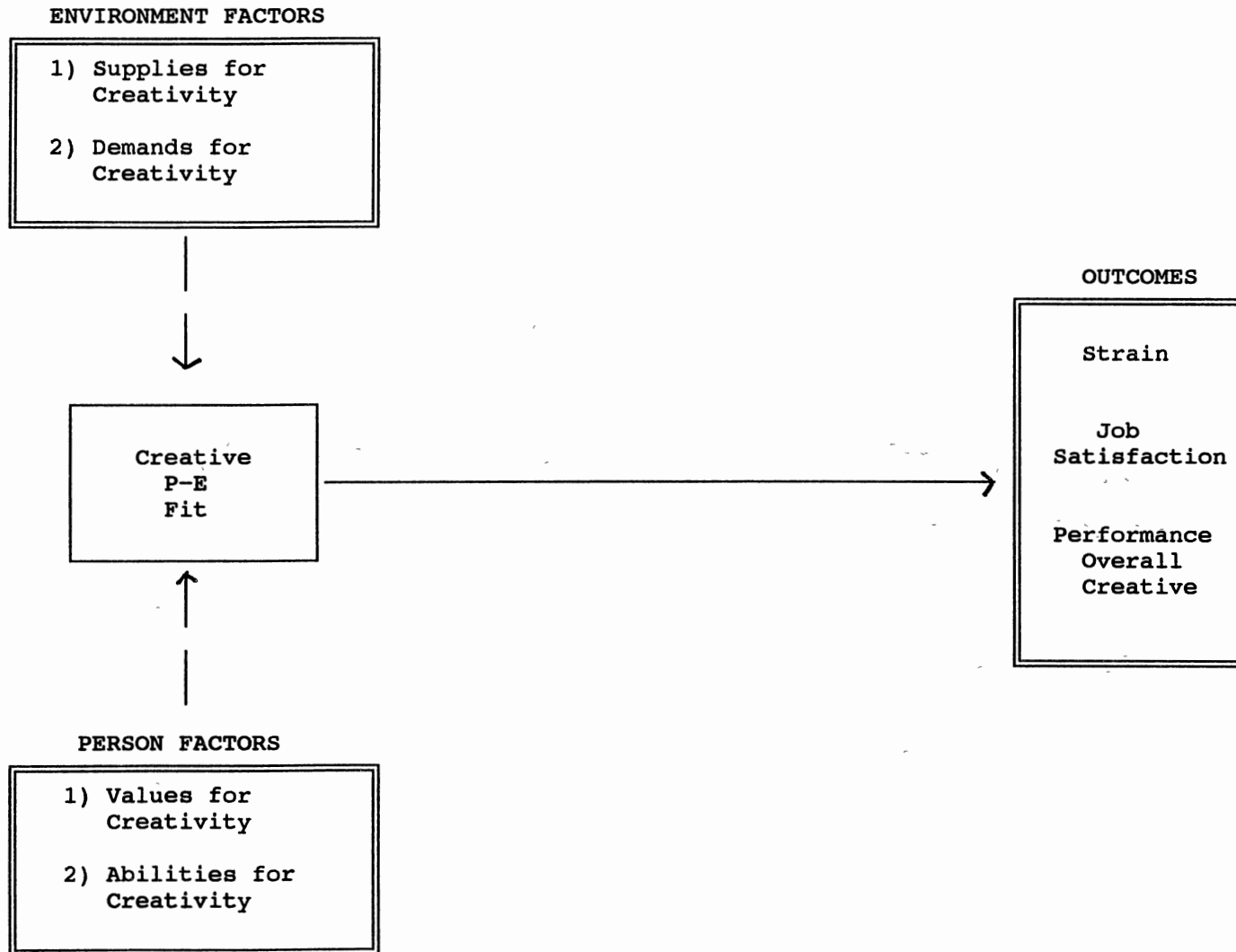


Figure 1. Model of Creative Fit

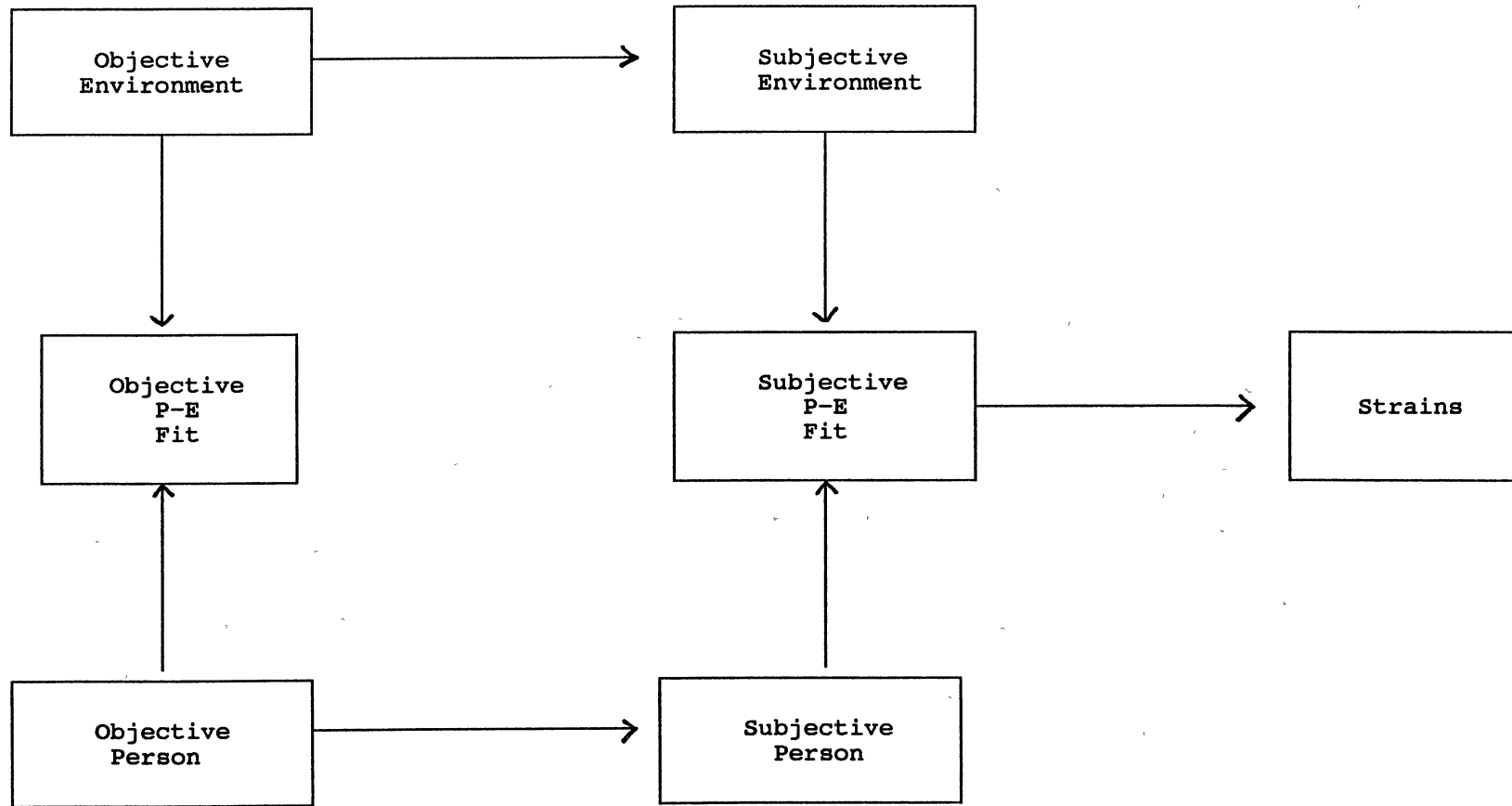


Figure 2. Person-Environment Fit Model of Stress

PERSON		ENVIRONMENT	
VALUES	ABILITIES	SUPPLIES	DEMANDS
Objective Person Values	Objective Person Abilities	Objective Environment Supplies	Objective Environment Demands
Subjective Person Values	Subjective Person Abilities	Subjective Environment Supplies	Subjective Environment Demands

Figure 3. Measurement Dimensions

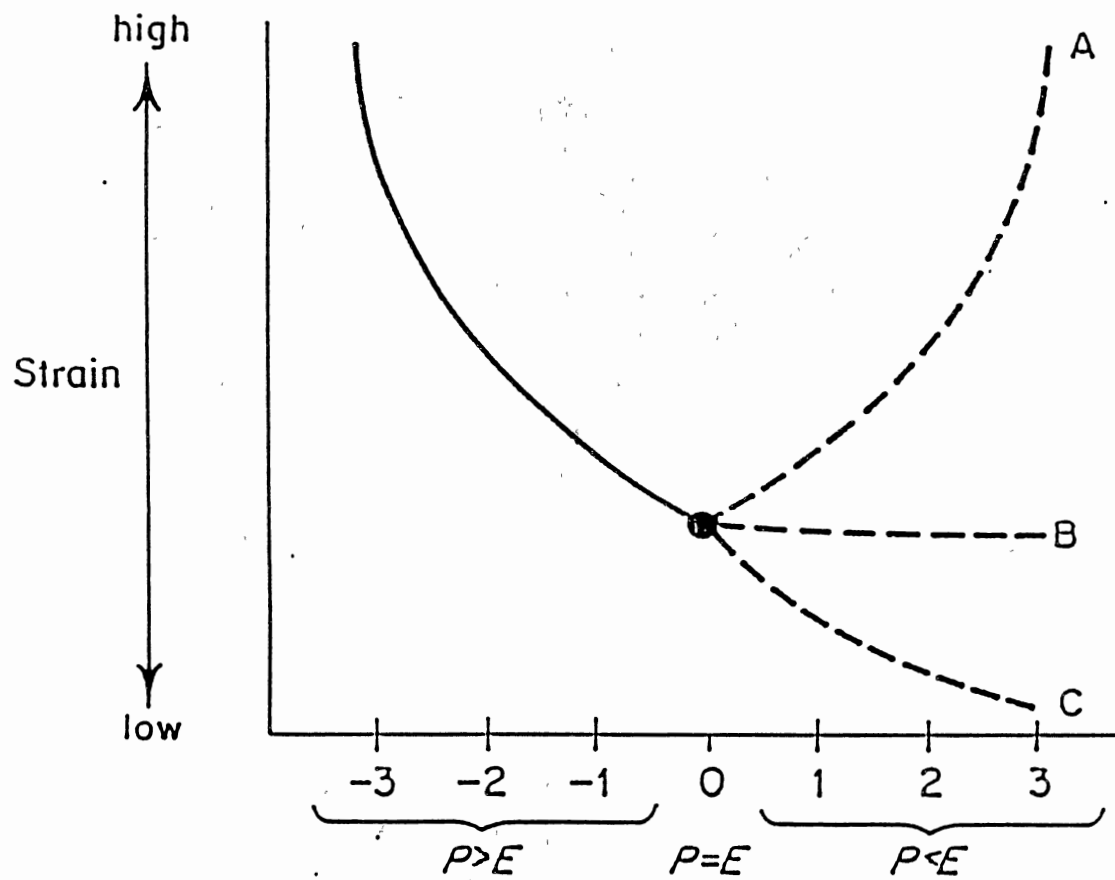


Figure 4. Hypothetical Shapes of P-E Fit

INDIVIDUAL INFLUENCES

DOMAIN-RELEVANT SKILLS	CREATIVITY-RELEVANT SKILLS	TASK MOTIVATION
<p><u>Includes:</u> Knowledge about the domain Technical skills Special domain-relevant talent</p> <p><u>Depends On:</u> Cognitive abilities Perceptual & motor skills Formal & informal education</p>	<p><u>Includes:</u> Appropriate cognitive style Knowledge of heuristics for generating novel ideas Conducive work style</p> <p><u>Depends On:</u> Training Experience Personality traits</p>	<p><u>Includes:</u> Attitudes toward the task Self-perceptions of work motivation</p> <p><u>Depends On:</u> Initial level of intrinsic motivation for task Presence/absence of extrinsic constraints Ability to cognitively minimize extrinsic constraints</p>

ORGANIZATIONAL INFLUENCES

RESOURCES IN TASK DOMAIN	SKILLS IN INNOVATION MANAGEMENT	MOTIVATION TO INNOVATE
<p><u>Includes:</u> People Funds Material resources Systems of production Market research resources Personnel training Data bases of related information</p>	<p><u>Includes:</u> Management skills & styles conducive to individual creativity and organizational innovation Balance between freedom & constraint Feedback Communication</p>	<p><u>Includes:</u> Basic orientation of the organization to innovate Orientation toward risk Corporate vision Organizational climate toward innovation</p>

Figure 5. Influences on Creativity

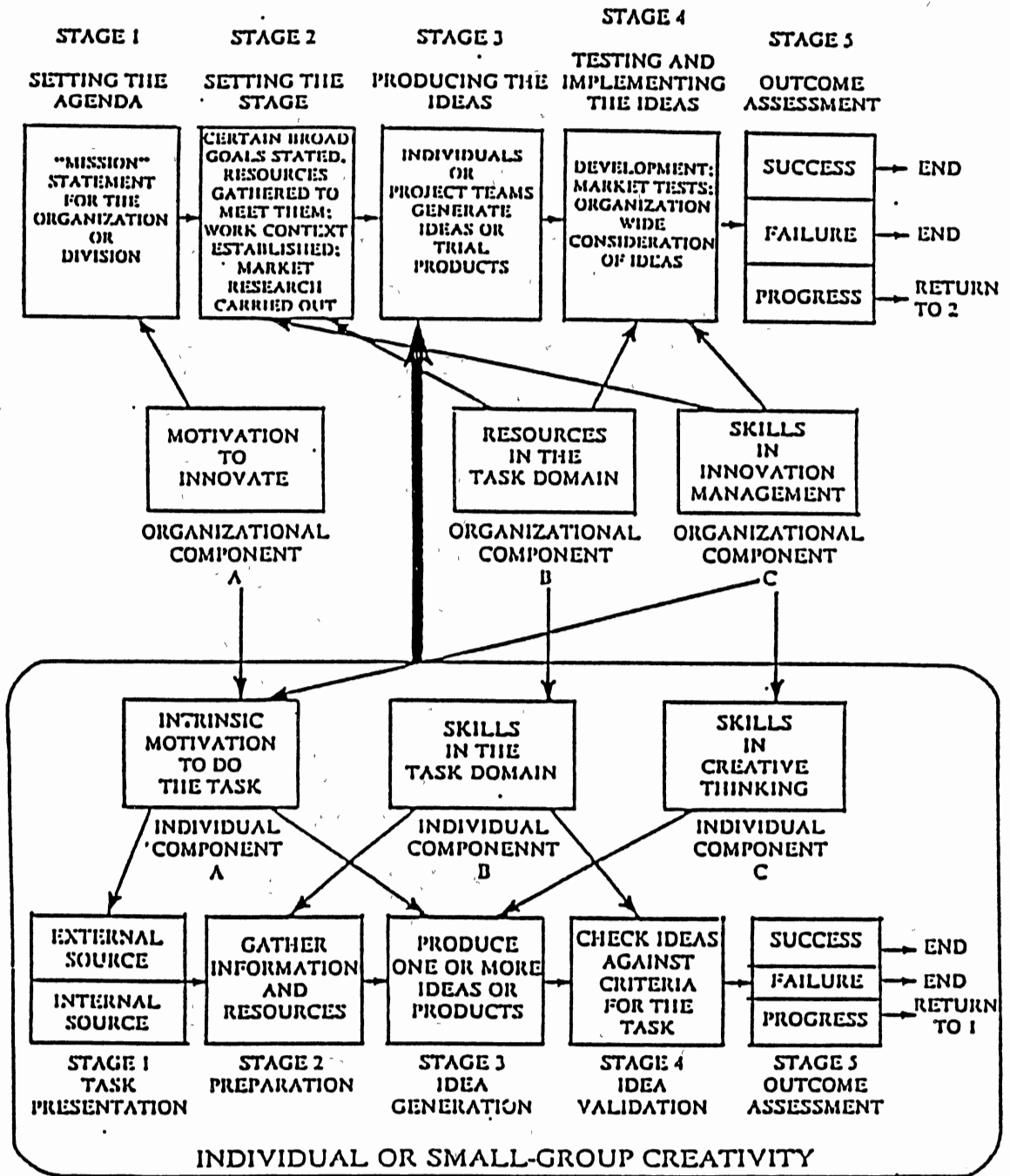


Figure 6. Model of Organizational Innovation

PERSON		ENVIRONMENT	
VALUES	ABILITIES	SUPPLIES	DEMANDS
<u>Scale:</u> Work Environment Inv. (Amabile et al., 1990) <u>Respondents:</u> Supervisors in each department	<u>Scale:</u> Intrinsic Task Motivation (Warr et al., 1979) Innovativeness Scale (Hurt et al., 1977) <u>Respondents:</u> Supervisor of each subordinate	<u>Scale:</u> Motivation to Innovate Task-Domain Resources Innovation Management Skills (Author Developed) <u>Respondents:</u> A panel of 4 creativity experts and 4 managers	<u>Scale:</u> Intrinsic Motivation Task-Relevant Skills Creativity-Relevant Skills (Author Developed) <u>Respondents:</u> A panel of 4 creativity experts and 4 managers
<u>Scale:</u> Work Environment Inv. (Amabile et al., 1990) <u>Respondents:</u> Employees	<u>Scale:</u> Intrinsic Task Motivation (Warr, et al., 1979) Innovativeness (Hurt et al., 1977) <u>Respondents:</u> Employees	<u>Scale:</u> Work Environment Inv. (Amabile et al., 1990) <u>Respondents:</u> Employees	<u>Scale:</u> Intrinsic Task Motivation (Warr et al., 1979) Innovativeness (Hurt et al., 1977) <u>Respondents:</u> Employees

Figure 7. Summary of Measures: Person and Environment Components

STRAIN	JOB SATISFACTION	PERFORMANCE
<p><u>Scale:</u></p> <p>Anxiety-Stress Questionnaire (Miles, 1975)</p> <p><u>Respondents:</u></p> <p>Employees</p>	<p><u>Scale:</u></p> <p>General Job Satisfaction (Hackman & Oldham, 1975)</p> <p>Job Descriptive Index (Smith, Kendall & Hulin, 1969; modified by Gregson, 1987)</p> <p><u>Respondents:</u></p> <p>Employees</p>	<p><u>Scale:</u></p> <p>Overall Performance (Hackman & Lawler, 1971)</p> <p>Creative Performance (Adapted from Amabile, 1990)</p> <p><u>Respondents:</u></p> <p>Supervisors</p>

Figure 8. Summary of Measures: Dependent Variables

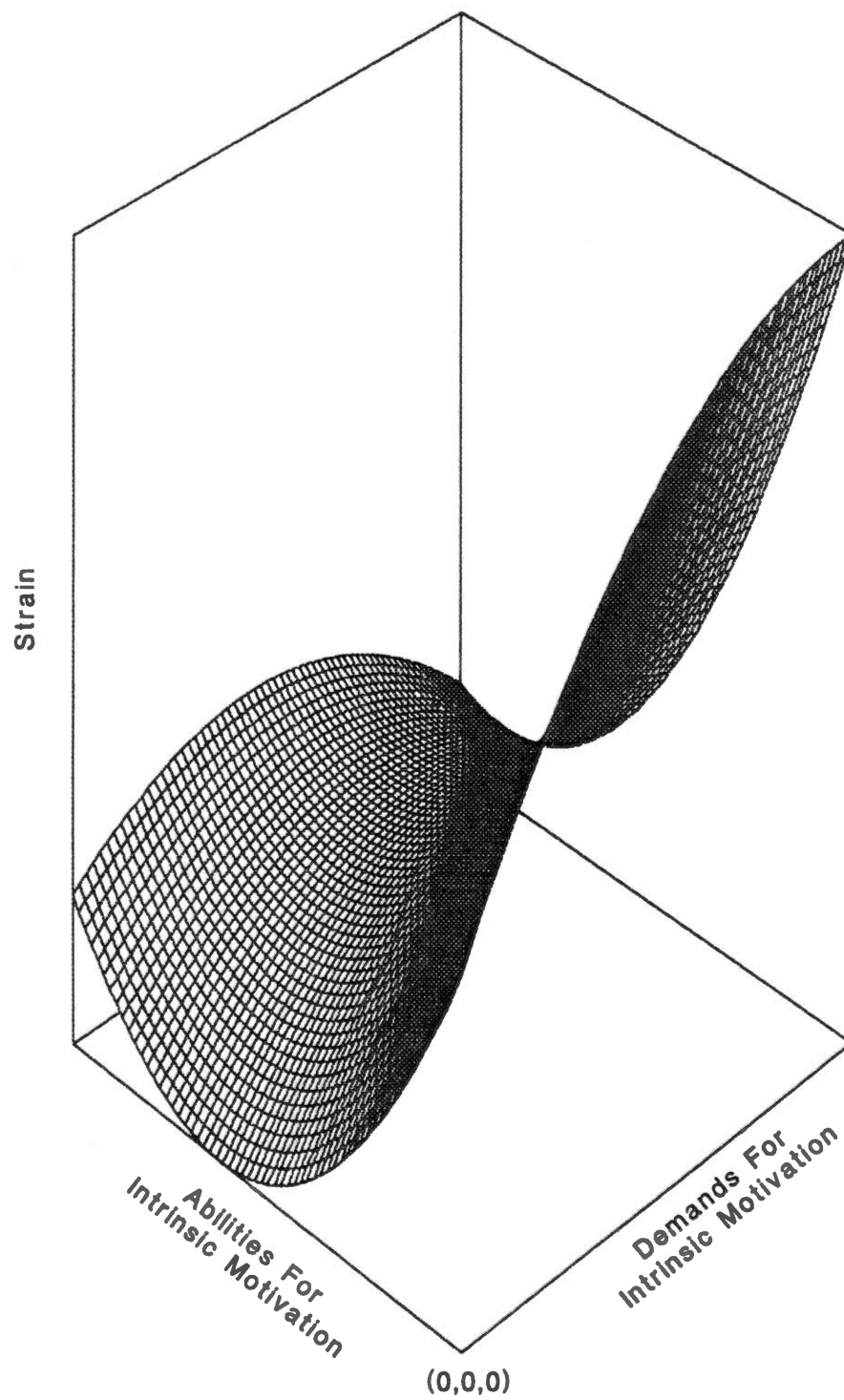


Figure 9. Intrinsic Motivation Demand - Ability Fit and Strain

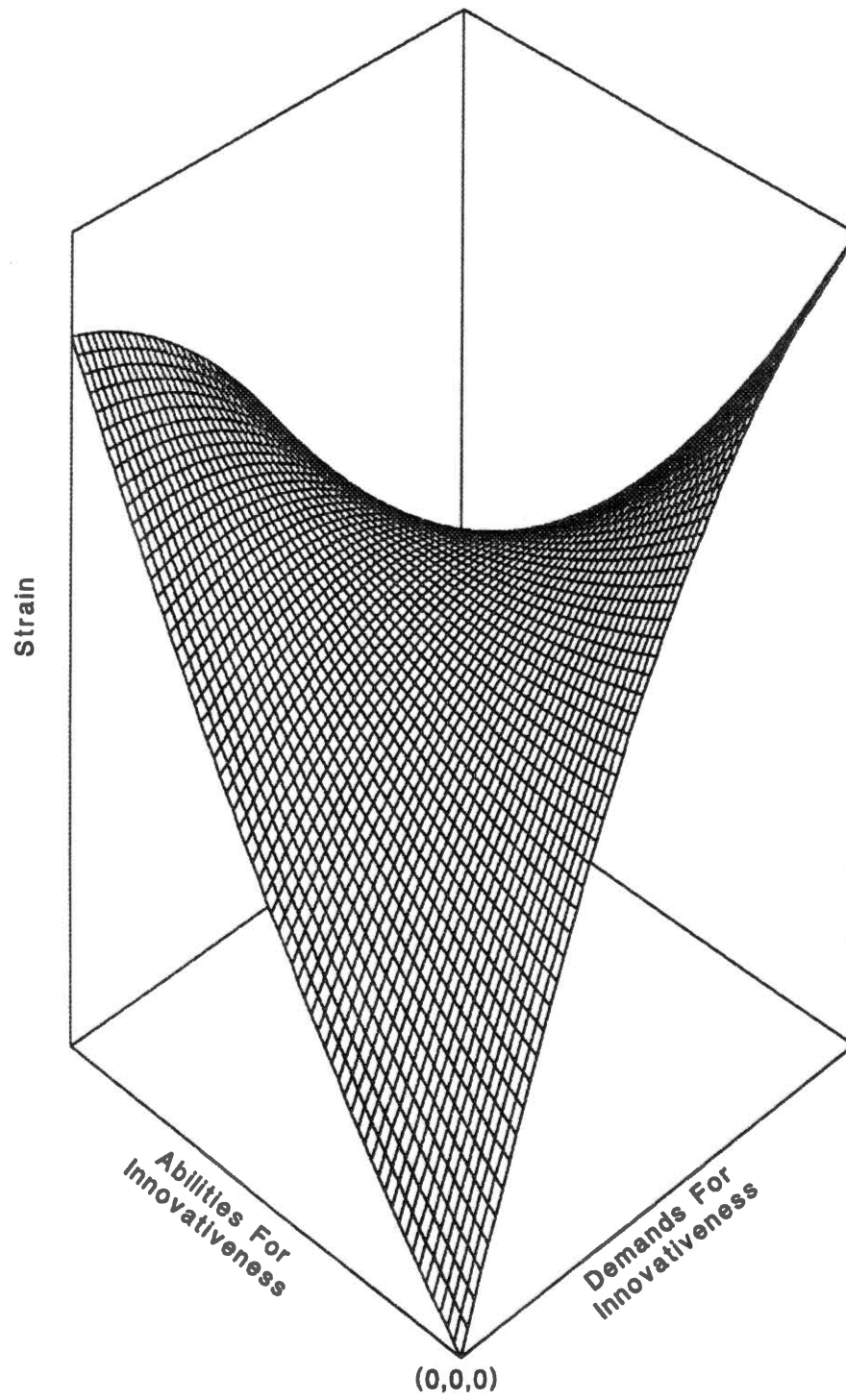


Figure 10. Innovativeness Demand - Ability Fit and Strain

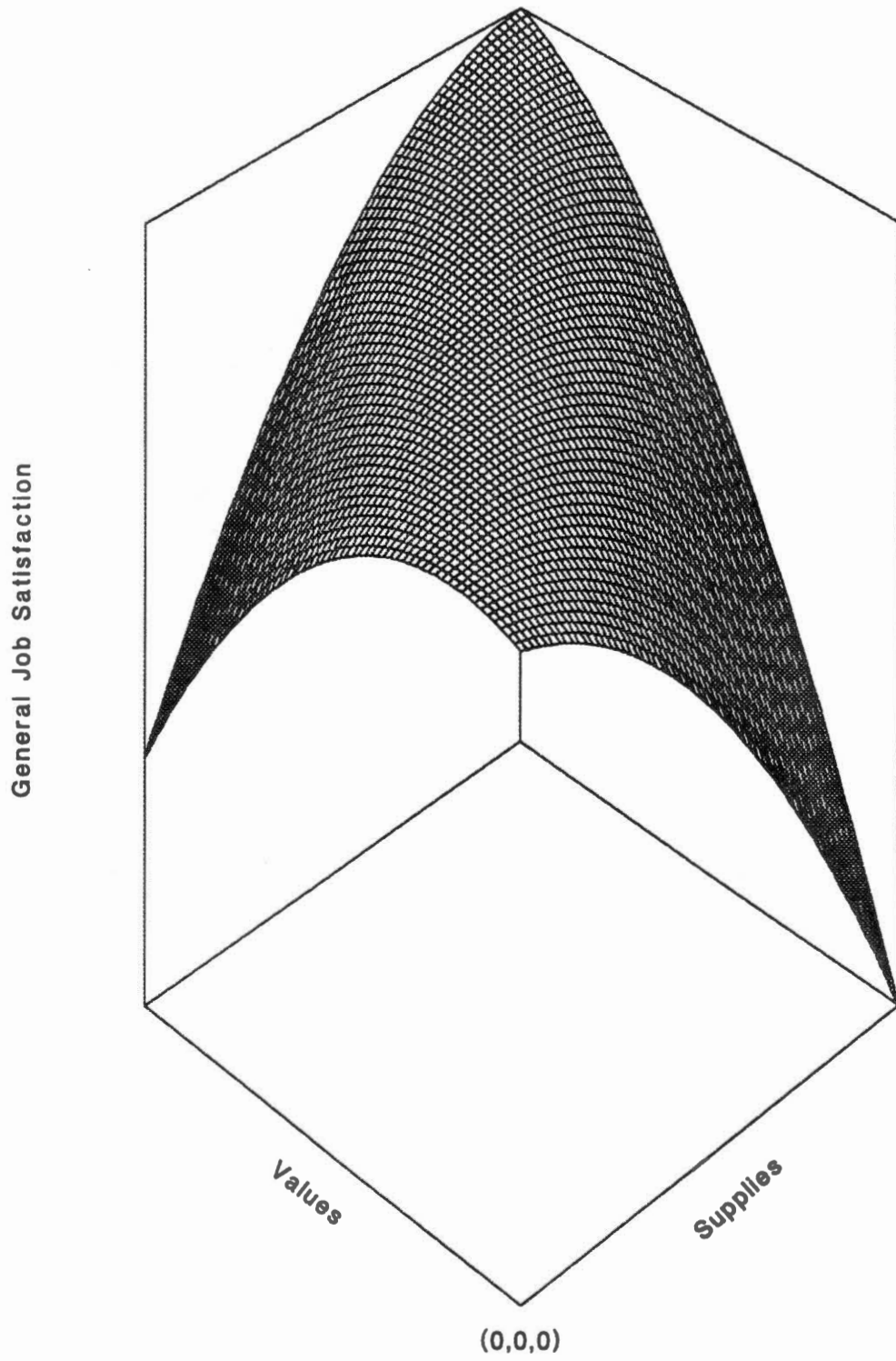


Figure 11. Supply-Value Fit and General Job Satisfaction

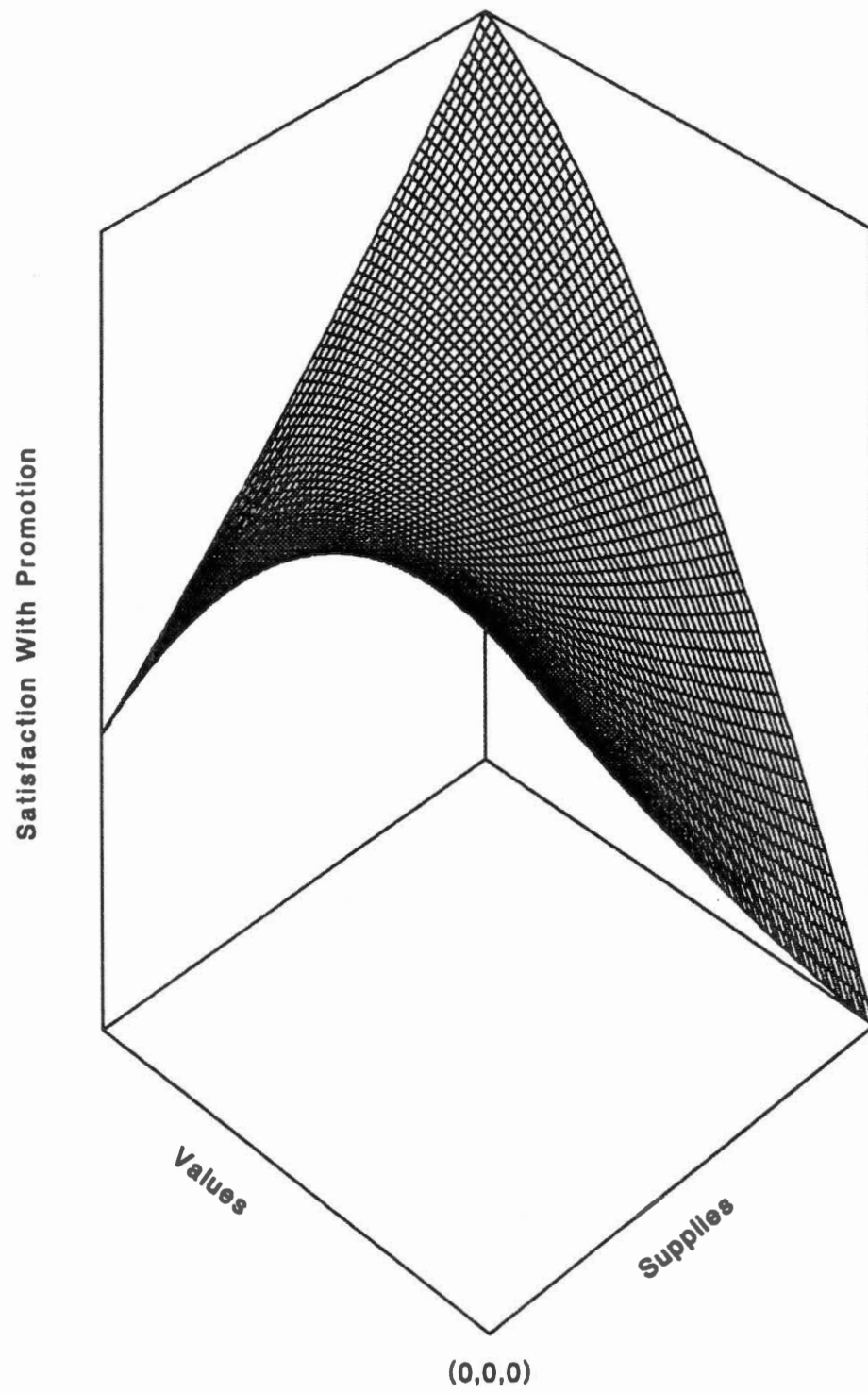


Figure 12. Supply-Value Fit and Satisfaction With Promotion

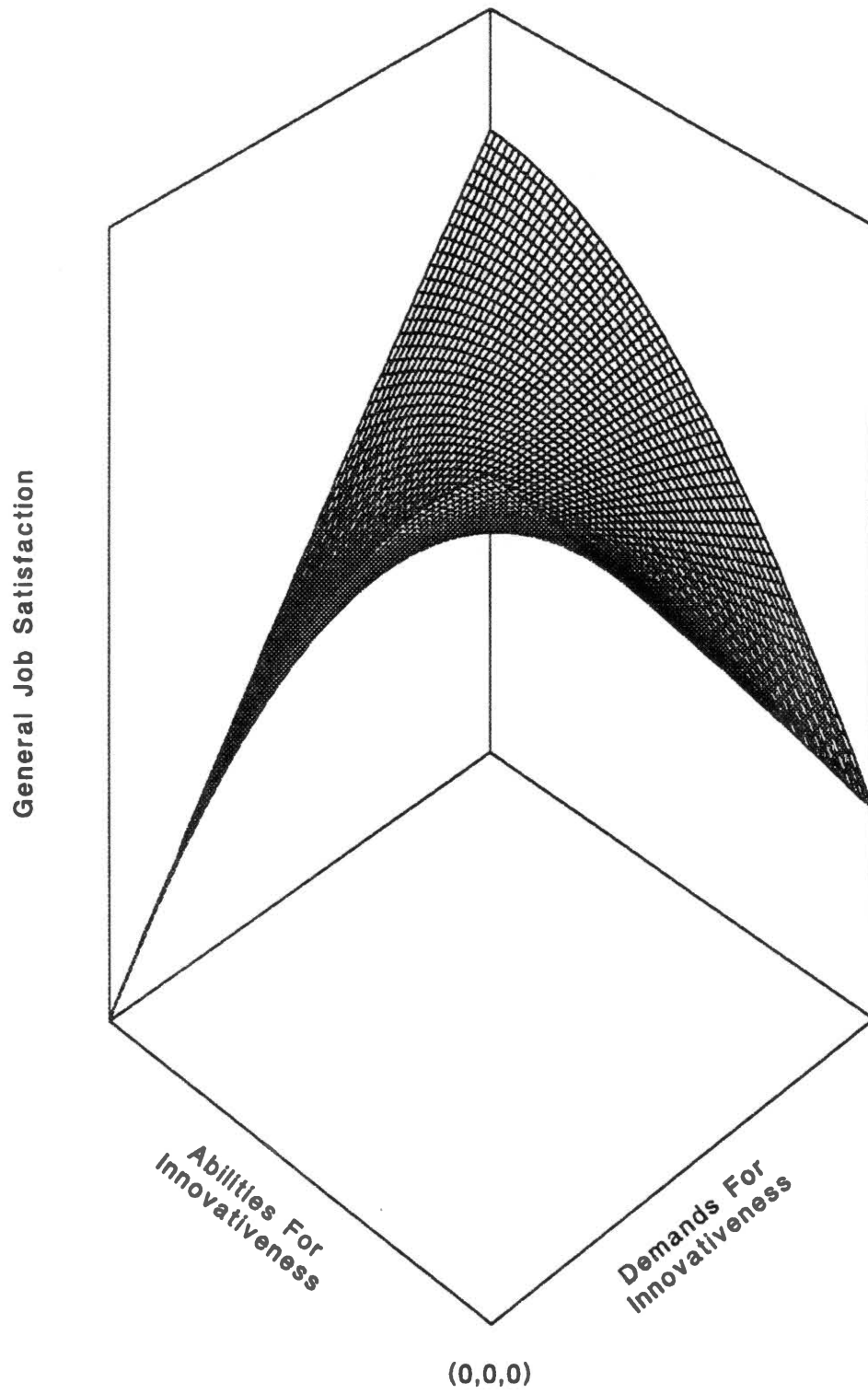


Figure 13. Innovativeness Demand - Ability Fit and General Job Satisfaction

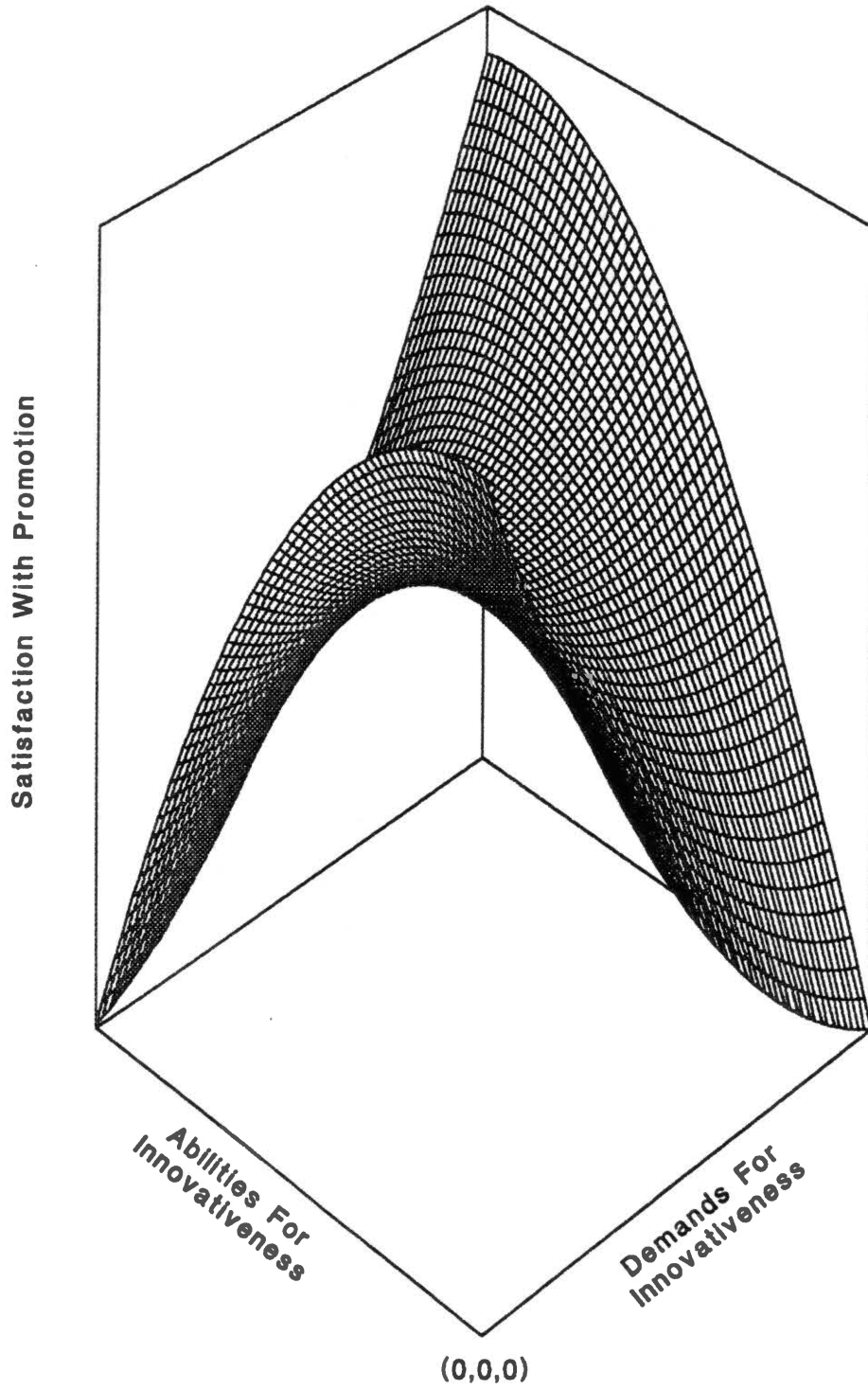


Figure 14. Innovativeness Demand - Ability Fit and Satisfaction With Promotion

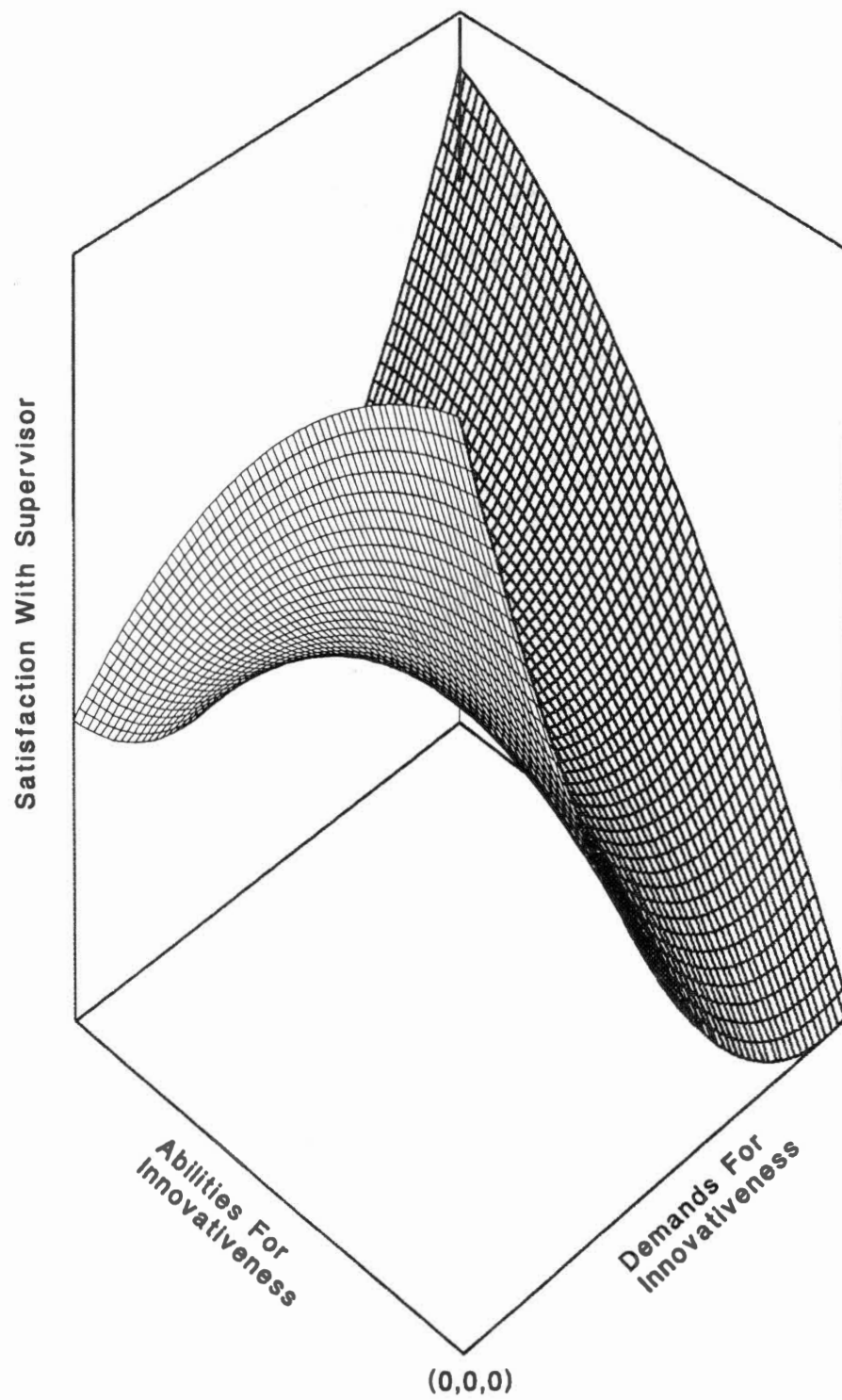


Figure 15. Innovativeness Demand - Ability Fit and Satisfaction With Supervisor

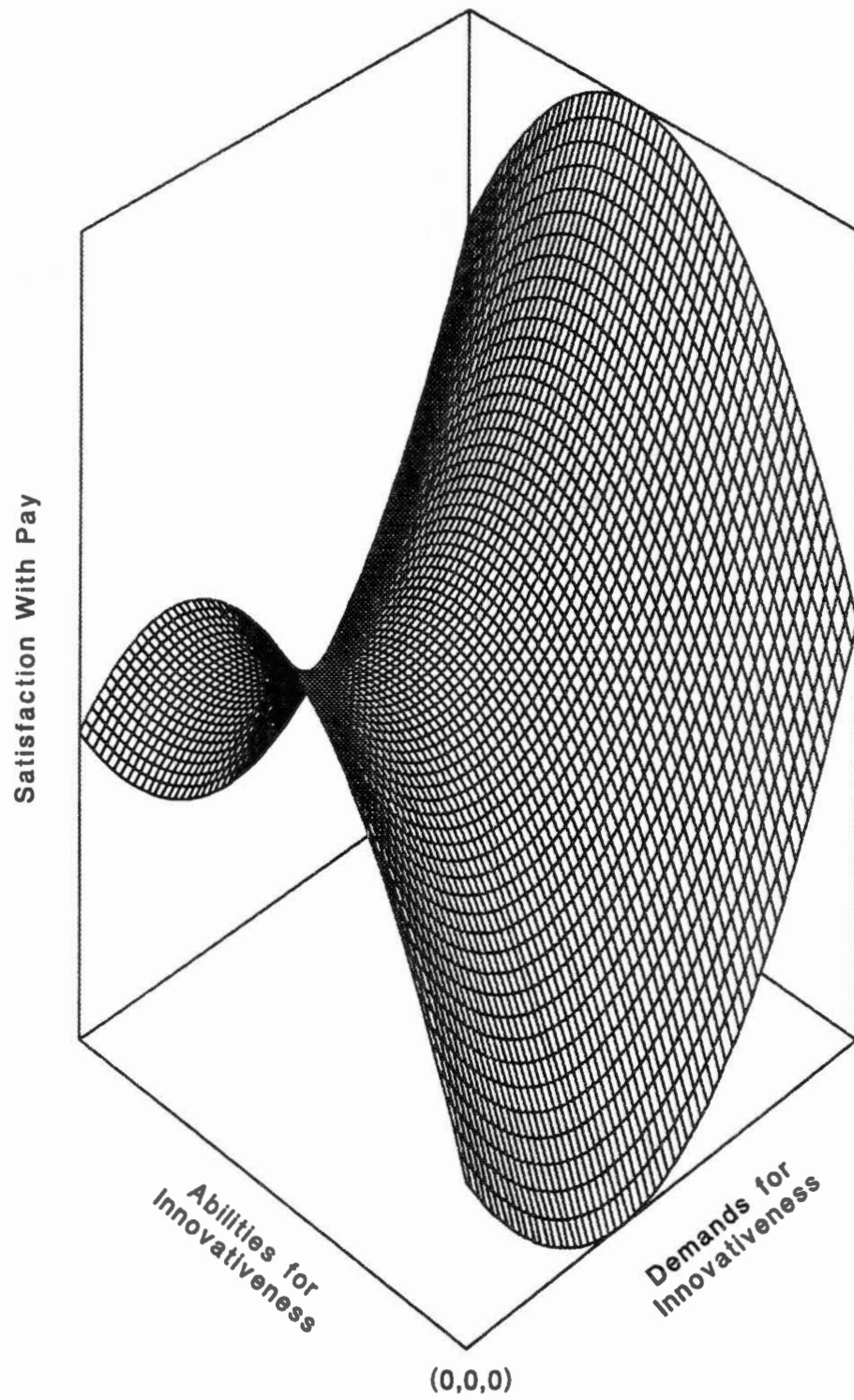


Figure 16. Innovativeness Demand-Ability Fit and Satisfaction With Pay

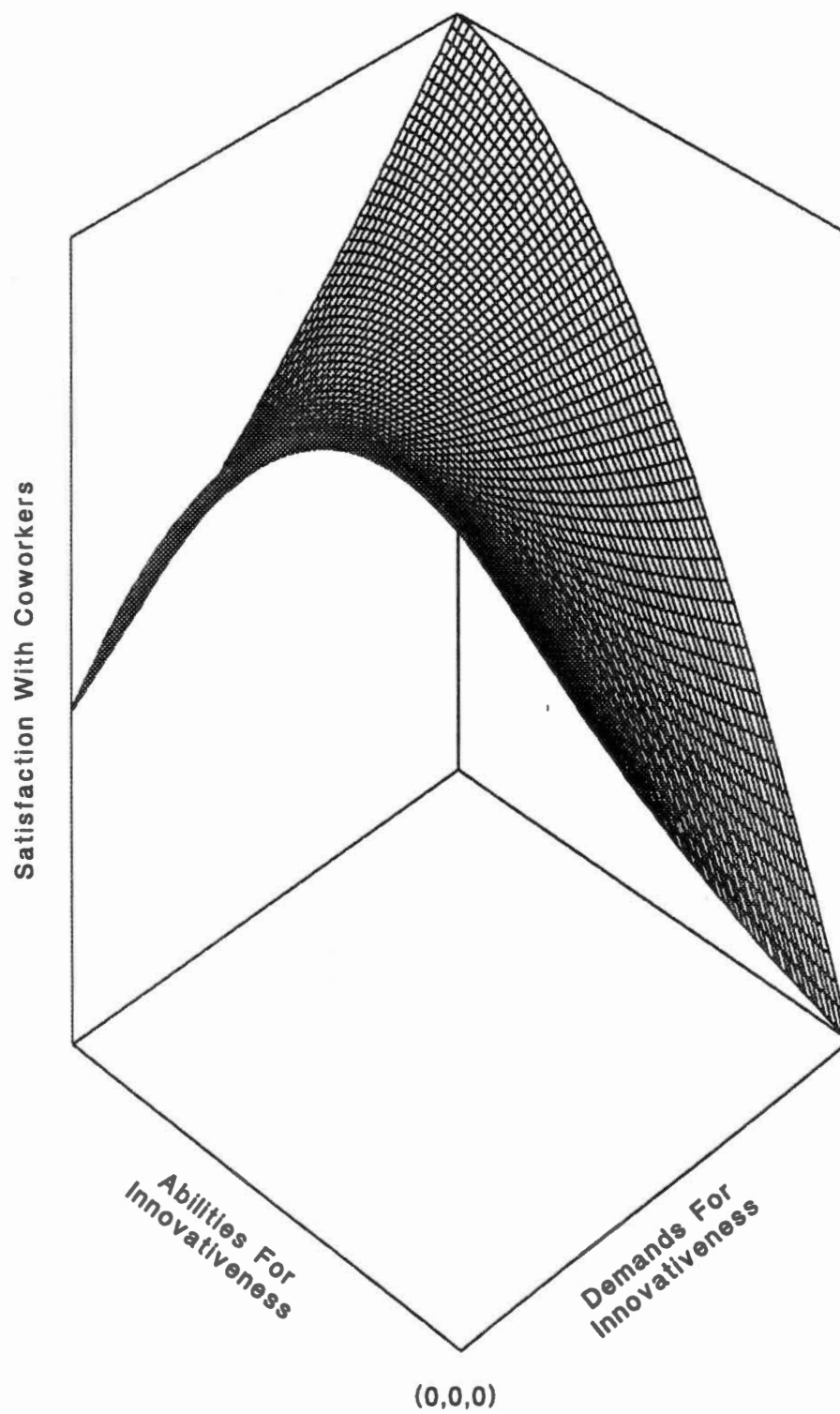


Figure 17. Innovativeness Demand - Ability Fit and Satisfaction with Coworkers

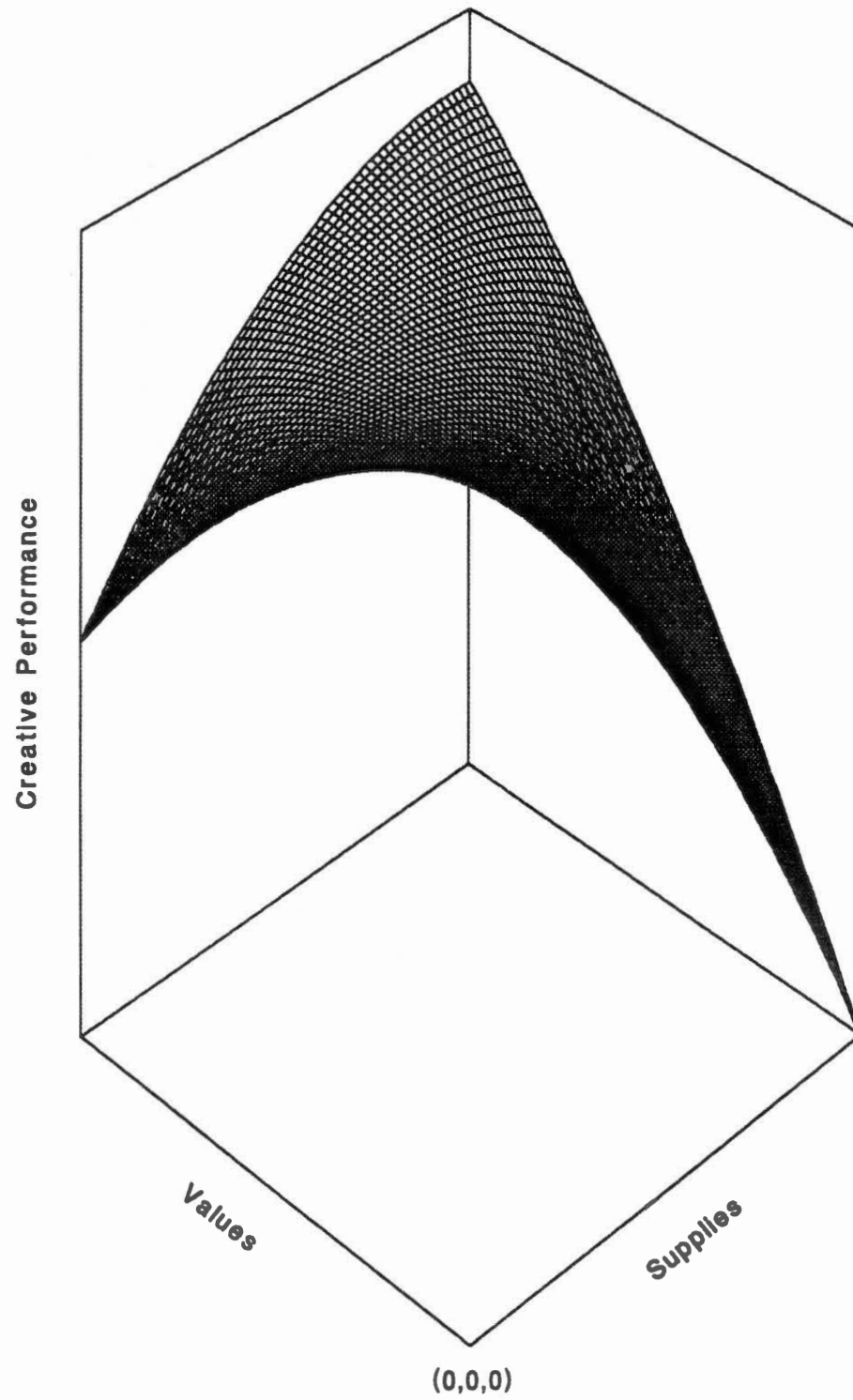


Figure 18. Supply-Value Fit and Creative Performance

VITA ²

Linda A. Livingstone

Candidate for the Degree of

Doctor of Philosophy

Thesis: PERSON-ENVIRONMENT FIT ON THE DIMENSION OF CREATIVITY:
RELATIONSHIPS WITH STRAIN, JOB SATISFACTION AND PERFORMANCE

Major Field: Business Administration

Biographical:

Personal Data: Born in Norman, Oklahoma, May 1, 1960, the daughter of Doyle K. and Charlotte A. Parrack.

Education: Graduated from Perkins-Tryon High School, Perkins, Oklahoma, in May, 1978; received Bachelor of Science Degree in Management and Economics from Oklahoma State University, Stillwater, Oklahoma in May, 1982; received Master of Business Administration Degree from Oklahoma State University in May, 1983; completed requirements for the Doctor of Philosophy degree at Oklahoma State University in May, 1992.

Professional Experience: Research Assistant, Department of Management, Oklahoma State University, 1988-1989; Graduate Teaching Associate, Department of Management, Oklahoma State University, 1987-1991; Assistant Professor, Department of Management, Baylor University, August, 1991 to Present; Member of Academy of Management, Southern Academy of Management, Southwest Academy of Management, Organizational Behavior Teaching Society, Phi Kappa Phi, Beta Gamma Sigma and Omicron Delta Kappa; Academy of Management OB/OD/OMT Doctoral Consortium Participant, 1989; Received a Richard T. Irwin Doctoral Dissertation Fellowship, 1990-1991.