





This is to certify that the

dissertation entitled

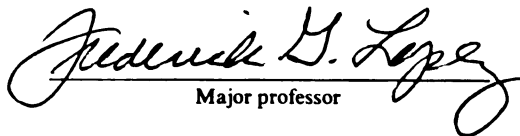
Congruence and Career Management
Self-Efficacy as Predictors of
Job Satisfaction in Adult Workers

presented by

Ellen Laurin Balkam Lent

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Counseling Psychology


Major professor

Date 2/13/92

LIBRARY
Michigan State
University

PLACE IN RETURN BOX to remove this checkout from your record.
 TO AVOID FINES return on or before date due.

DATE DUE	DATE DUE	DATE DUE
FEB 05 2007	_____	_____
AUG 16 1999	_____	_____
MAY 20 2000	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

MSU is An Affirmative Action/Equal Opportunity Institution

c:\circ\datedue.pm3-p.1

THE PREDICTIVE ABILITY OF CONGRUENCE AND CAREER SELF-EFFICACY
IN ADULT WORKERS: A STUDY OF JOB SATISFACTION

By

Ellen Laurin Balkam Lent

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Counseling, Educational Psychology,
and Special Education

1992

672-0000

ABSTRACT

THE PREDICTIVE ABILITY OF CONGRUENCE AND CAREER SELF-EFFICACY
IN ADULT WORKERS: A STUDY OF JOB SATISFACTION

By

Ellen Laurin Balkam Lent

This study explored the utility of two vocational constructs--job-person congruence and career self-efficacy--along with demographic and organizational variables in predicting job satisfaction in 168 professionals and managers. Novel measures of organizational opportunity, career success, and career self-efficacy were tested for internal consistency and test-retest stability. Three different methods of computing congruence were used and compared. Career success experiences, perceived organizational opportunity, and career self-efficacy were the most efficient predictors of job satisfaction in multiple regression analyses. Congruence moderated the predictive ability of these variables. Demographic variables were insignificant predictors of job satisfaction in all analyses. Some support for social-cognitive and person-environment theories was found, and an important relationship between theoretical variables is discussed.

Copyright By
Ellen Laurin Balkam Lent
1992

ACKNOWLEDGEMENTS

There are many people who supported and assisted my work on this study. I am grateful for the help I have received, and hope to continue to deserve such support, as a friend, relative, colleague, spouse, and parent. I also hope I will be called upon in the future by these and other important people when they need something from me, large or small. Now that this project is done, they will probably feel more optimistic about my speedy response.

Grateful thanks go to the following colleagues who encouraged the mounting of this study and who assisted in locating interested organizations: Joanne Jorz, John Cooper, Mary Jenkins, Kevin Hull, and Bob Gunn. Also, thanks to the decision-makers and risk-takers at the study sites, who allowed me in and shared so much with me: Don Burian, Joyce Sodergren, and Alice DeSantis.

Friends have generously contributed their enthusiasm, time, ideas, and often entirely empathic support: Ellen Sullivan, Betsy Hostetler, Carmen Gear, Margaret Beaver, Joanne Jorz, and John Woodard.

My parents, Robert and Laurin Balkam, have always encouraged but never tried to direct my intellectual development. They provided me with the tools, and let me flail away. I truly appreciate the intellectual openness and adventuresome spirit they modeled. They, and my sisters, brothers, and in-laws, Balkam and Lent, were always interested in my progress, and through mysterious family magic never asked about it at the wrong time.

The chair and members of my dissertation committee--Fred Lopez, Linda Forrest, Dan Ilgen, and Steve Raudenbush--have been enthusiastic, informed, creative, and collegial. They are consummate professional role models. Fred repeatedly found precious summer hours to consult with me, and provided invaluable creative and coordinating skills. Thanks also to Bill Schmidt, who offered timely and valuable methodological advice.

Randy Fotiu, with seemingly unlimited patience and good cheer, helped me fathom the MSU mainframe (from CDC through IBM) and SPSS (from original through -X).

My husband Bob has always gone an extra ten miles to help and support me through this process, from GRE practice exams (Minneapolis, 1984) through the final dissertation draft (East Lansing, 1992). His love, encouragement, and burden-sharing have literally and otherwise made my success possible. My hypothesis is that our high relationship congruence potentiates our marital happiness self-efficacy. And our beloved joint project, Jeremy Alan Balkam Lent, has provided his unique perspective-making contribution, for which I am forever grateful.

It is my great good fortune to be connected to all these people who have helped make this process exciting, humane, and human. Thank you, everyone.

TABLE OF CONTENTS

List of Tables.....	ix
List of Figures.....	x

CHAPTER I - STATEMENT OF THE PROBLEM

Introduction.....	1
Theoretical Issues.....	2
Practical Issues.....	2
The Proposed Study: The Theories.....	4
Holland's Person-Environment View.....	4
Congruence.....	7
Theory-derived Antecedents.....	7
The Social-Cognitive View of Bandura.....	8
Self-Efficacy.....	10
Theory-derived Antecedents.....	11
An Historical Postscript.....	12
The Present Study.....	12
The Hypotheses.....	13
Study Implications.....	13

CHAPTER II - REVIEW OF LITERATURE

Conceptual Works.....	16
Empirical Studies.....	22

CHAPTER III - STUDY METHODS

Participants.....	29
Procedure.....	30
Site A.....	30
Site B.....	31
Both Sites.....	32
Informed Consent.....	32
Privacy and Confidentiality Safeguards.....	32
Holland Code Assignment.....	33
Instruments.....	34
Design of Original Scales.....	34

Scale Features.....	34
Perceived Opportunity Scale and Career Success Scale.....	34
Job Description Scale.....	35
Career Self-Efficacy Scale.....	35
Description of Instruments.....	37
Job-Person Congruence.....	46
Analyses.....	47
Reliability.....	47
Exploratory Factor Analysis.....	47
Congruence.....	48
Initial Observation of Data.....	49
Aggregated Data.....	50
Multicollinearity Check.....	50
Multiple Regression.....	50
Post-Hoc Analyses.....	52
Congruence.....	52
Tests for Mediator Effects.....	53
Tests for Interaction Effects.....	54

CHAPTER IV - RESULTS

Original Scales.....	56
Aggregated Data.....	67
Job Satisfaction.....	68
Congruence.....	69
Descriptive Results.....	72
Research Hypotheses 1 through 4.....	76
Preparation for Multiple Regression Analyses.....	78
Multiple Regressions Predicting Job Satisfaction.....	79
Research Hypotheses 5 and 6.....	79
Post-Hoc Analyses.....	85
Perceived Opportunity.....	85
Career Success.....	85
Congruence.....	86
Test for Interaction: Low Congruence and Perceived Opportunity.....	89
Test for Interaction: Perceived Opportunity and Self-Efficacy.....	89
Review of Hypotheses.....	91

CHAPTER V - DISCUSSION OF RESULTS, LIMITATIONS, AND IMPLICATIONS

Intent of the Study.....	93
Major Findings.....	94
Operationalizing Constructs.....	95
Validity.....	95
Discriminant Validity for Self-Efficacy.....	96
Reliability.....	97
Subjects.....	97

Sampling.....	98
Relations Among Study Variables.....	98
Hypothesis 1.....	99
Hypothesis 2.....	99
Hypothesis 3.....	100
Hypothesis 4.....	101
Hypothesis 5.....	103
Hypothesis 6.....	103
Collapsing Data Across Sites.....	105
Post-Hoc Analyses.....	106
Tests for Mediating Effects.....	106
Test for Interaction: Perceived Opportunity and Self-Efficacy.....	106
Measures and Tests of Congruence.....	107
A Note on Gender Issues.....	111
Summary of Major Issues.....	112
Demographic Factors Not Significant.....	112
Congruence-Job Satisfaction Link Not Established.....	113
Reciprocal Interaction Approach Achieves Support.....	113
Boundaries and Limitations of the Study.....	114
Implications and Directions for Future Research and Practice...	115
Instruments.....	115
Demographics.....	116
Congruence and Self-Efficacy.....	116
Implications for Change.....	118
Career Success.....	118
Perceived Opportunity.....	118
Career Self-Efficacy.....	119
A Prevention Approach.....	119

LIST OF REFERENCES.....	121
-------------------------	-----

APPENDICES

A. Sample Executive Information Letter.....	132
B. Invitation to Participate in Study, Site A.....	134
C. Outline of Verbal Presentation to Potential Study Participants, Site A.....	135
D. Final Report to Site A.....	137
E. Request to Participate in Study, Site B.....	144
F. Final Report to Site B.....	145
G. Informed Consent Form.....	151
H. <u>General Information Survey</u>	152
I. <u>Perceived Opportunity Survey</u>	153
J. <u>Career Task Survey</u>	154
K. <u>Job Satisfaction Survey</u>	156
L. <u>Career Success Survey</u>	157
M. <u>Vocational Preference Inventory</u> , stimulus items.....	159
N. <u>Job Description Survey</u>	161

LIST OF TABLES

3.1	Positions and DHOC Codes.....	33
4.1	Scale Internal Consistency and Test-Retest Correlations - Site A.....	57
4.2	Scale Internal Consistency - Site B.....	58
4.3	Item-Total Statistics - <u>Career Success Survey</u>	60
4.4	<u>Career Success Survey</u> Item Ranks.....	62
4.5	Item-Total Statistics - <u>Organizational Opportunity Survey</u>	64
4.6	Item-Total Statistics - <u>Career Task Survey</u>	65
4.7	<u>Career Task Survey</u> : Factor Analysis Summary.....	66
4.8	<u>Job Satisfaction Survey</u> : Comparison of Results.....	68
4.9	Item-Total Statistics - <u>Job Satisfaction Survey</u>	69
4.10	Congruence Computations - Comparison of Results.....	71
4.11	Descriptive Results.....	72
4.12	Pearson Product-Moment Correlations Among Variables of Interest.....	77
4.13	Hierarchical Regression Predicting Job Satisfaction: A Test of Site.....	80
4.14	Hierarchical Regression Predicting Job Satisfaction: Trimmed Model.....	82
4.15	Hierarchical Regression Predicting Job Satisfaction: Age Restored.....	84
4.16	Zero-Order Correlations among Three Congruence Computation Methods.....	86
4.17	Stepwise Regression Predicting Job Satisfaction: A Comparison Across Levels of Congruence.....	88
4.18	Stepwise Regression Predicting Job Satisfaction: Interaction Variable (Perceived Opportunity by Career Self-Efficacy).....	90

LIST OF FIGURES

1.1	Holland's Hexagonal Model of Person and Environment Types.....	6
4.1	Relative Frequencies of Variables of Interest.....	73

CHAPTER I

STATEMENT OF THE PROBLEM

Introduction. Adult workers are the subject of much current inquiry by theorists and practitioners of vocational and industrial psychology (Phillips, Cairo, Blustein, & Myers, 1988; Slaney & Russell, 1987). Features of work settings and of the working population are changing quickly, with important implications for vocational theory and for the applicability of empirical findings. Widespread workforce reductions (Ginzberg, 1985; Kanfer & Hulin, 1985) and shrinking numbers of managerial/professional positions (Roth, 1988) make promotions scarce and limit expectations for upward mobility. The enormous age cohort of U.S. baby boomers is close to mid-career, providing even more competition for fewer promotional opportunities (Bardwick, 1986; Roth, 1988). Increasing numbers of persons in dual-career relationships are less able to make a geographic move at the employer's request (Campbell & Heffernan, 1983). The need is great for a more sophisticated understanding of adult career-related phenomena in this significantly changed environment. As Vondracek, Lerner, and Schulenberg (1986) state:

there is a growing interest among social and behavioral scientists, business and industry, and policymakers at all levels of government to develop a more thorough understanding of the processes that govern individuals' selection of occupations as well as their subsequent performance in those occupations (pp. 1-2).

A brief look at the theoretical and practical implications of this situation is given, and a study to address some of those issues is proposed.

Theoretical Issues. Why do people choose and remain in certain job fields? Is job or career satisfaction linked to workforce tenure, to expectations for promotion, to interesting work? What is the role of career success experiences? Theories of career attitudes and behavior attempt to answer such questions as these. There are, however, two important limitations in this inquiry. First, much of the theory development and testing in the vocational area has utilized college student subjects, or suffers from other sampling limitations (Sonnenfeld & Kotter, 1982; Spokane, 1985; Warren, Winer, & Dailey, 1981). A number of researchers have called for further inquiry using employed adult workers, to improve the validity of theories and the usefulness of their constructs (Blau, 1986; Hall & Lerner, 1980; Holland, 1985; Myers, 1988; Schein, 1986; Shullman & Carder, 1983; Slaney & Russell, 1986). Second, these theories have assumed that mobility within organizations (geographic and otherwise) is relatively unhindered, and that opportunities for upward movement are readily available. These assumptions can be challenged, especially in view of the aforementioned conditions: dual-career couples, the baby boom cohort, the large number of organizations experiencing slow or negative growth, and other environmental constraints. Therefore, the ability of current vocational theories to explain adult career behavior and attitudes may be limited by recent societal and workplace changes as well as by researchers' sample selections.

Practical Issues. In this context, questions of interest extend further than whether a particular vocational construct accounts for what the theory says it will. Rather, it is important to ask, under what

conditions might we predict an important outcome such as job satisfaction? Is the assumption of some career theories, that workers move toward improved "fit" with their work environment over time, valid in the case of prolonged restriction of job mobility? Can workers be satisfied in the absence of promotion opportunities? Answers to these questions can illuminate the relationships that vocational theories try to explain, and can help organizations and individuals better understand the complex links between workers and the workplace.

Many factors are probably related to job and career satisfaction: individual characteristics, job/organizational features, and environmental conditions. Arthur, Bailyn, Levinson, and Shepard (1984) state:

Careers emerge from a complicated interplay of peoples' views about the world and themselves, of career procedures in the organizations in which they work, and of constraints and opportunities provided by the social and economic climate in which they live. (pp. vii-viii)

At the level of the individual, the contributions of developmental psychology, and the specific tenets of career stage theories (e.g., Levinson, 1978, 1984; Super, 1980, 1984) highlight the potential significance of individual change in the understanding of vocational phenomena. Theories of vocational development propose intraindividual constructs to explain and predict career-relevant outcomes. Only recently, however, has significant attention also been given to changes in organizational and environmental conditions that might affect adult career behavior and attitudes (Hall, 1986; Phillips et al., 1988; Roth, 1988; Schein, 1986). In particular, Hall (1986) states,

"Retaining established strong performers in a low-opportunity organization is a major challenge of career management in the late 1980's" (p. 124).

One relevant implication of low-opportunity settings is the likelihood that workers might accept promotions into jobs of less intrinsic interest in order to increase their salary and prestige. This tendency is particularly common in engineering and other technical professions: with few chances to move up in the technical ranks, workers will accept managerial positions (Bailyn, 1982; Steiner & Farr, 1986). If job satisfaction is based in part on the work itself, such a situation might be troublesome for individual workers and for the organization.

The Proposed Study: The Theories. Specifically, this study asked: what predictive relationships might be found among two key vocational constructs, their antecedents, and job satisfaction for managers and professionals in two U.S. government worksites? The inquiry explored this question from two different perspectives: the person-environment trait theory of John Holland (1966, 1985c) and the self-referent cognitions view of Albert Bandura (1982, 1986). These theories represent different assumptions about career behavior and propose unique constructs which contribute to job satisfaction.

Holland's Person-Environment View

The theory of vocational types advanced by John Holland falls in the category of trait and factor, or individual differences views of human nature. His hypotheses are generated from four propositions:

1. In our culture, most persons can be categorized as one of six types: realistic, investigative, artistic, social, enterprising, or conventional.
2. There are six model environments: realistic, investigative, artistic, social, enterprising, and conventional.
3. People search for environments that will let them exercise their skills and abilities, express their attitudes and values, and take on agreeable problems and roles.
4. Behavior is determined by an interaction between personality and environment. (Holland, 1985c, pp. 2-4)

Thus, this theory proposes that persons and work environments can, in the main, be classified into one of six vocational "types"--a type being a descriptive category including personality tendencies, contextual demands, and behavioral cues. The six types, named above, are defined as follows:

Realistic--explicit, ordered, or systematic manipulation of objects, tools, machines, or animals; encouragement of technical competencies and achievements; encouragement of mechanical ability, seeing the world in simple, tangible, and traditional terms; few opportunities to develop skill in human relations.

Investigative--observation and symbolic, systematic, creative investigation of physical, biological, or cultural phenomena; encouragement of scientific competencies and achievements; encouragement of scholarly traits, scientific and mathematical ability, seeing the world in complex, abstract, original, and independent ways; few opportunities to develop leadership skills.

Artistic--ambiguous, free, unsystematized activities and competencies to create art forms or products; encouragement of artistic achievements; encouragement of traits such as expressiveness, originality, intuitiveness, nonconformity, and independence, and abilities such as acting, writing, and speaking; seeing the world in complex, independent, unconventional, and flexible ways.

Social--involvement with others to inform, train, develop, cure, or enlighten; encouragement to engage in social activities, encouragement of traits such as helpfulness, understanding, cooperativeness, sociability, and persuasiveness; encouragement of social values; seeing the world in flexible ways.

Enterprising--involvement with others to attain organizational or self-interest goals; encouragement to engage in enterprising and leadership

activities; encouragement of traits such as aggressiveness, popularity, self-confidence, sociability, leadership, and speaking ability; seeing the world in terms of power, status, and responsibility.

Conventional--explicit, ordered, systematic manipulation of data, such as keeping records, filing and reproducing materials, organizing written and numerical data according to a prescribed plan; encouragement of recording and organizing data or records; encouragement of traits such as conformity, orderliness, and dependability. (Holland, 1985c, pp. 36-40) See Figure 1.1.

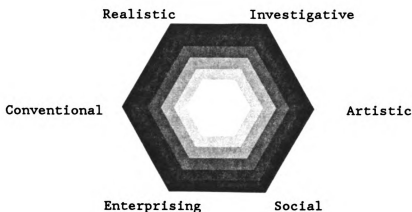


Figure 1.1. Holland's Hexagonal Model of Person and Environment Types. Reproduced and adapted by special permission of the Publisher, Psychological Assessment Resources, Inc., 16204 North Florida Avenue, Lutz, Florida 33549, from the Vocational Preference Inventory by John L. Holland, Ph.D., Copyright 1978, 1985, by PAR, Inc.

Type is variously denoted by a single-, double-, or triple-letter code using the first letters of the six terms. For example, CES, used to describe a person or a work environment, defines that entity as primarily Conventional with secondary Enterprising and tertiary Social features. The theory provides several validated methods and measures to

identify type codes of individuals and environments.

Congruence. A key construct in this theory is congruence, or psychological fit, between person and work setting. Congruence is strongest when the person's "activities, competencies, perceptions, and values" (Holland, 1985c, p. 36) match and are supported by the characteristics of the work environment. The closer the person's characteristics match the work environment--that is, the higher the congruence--the greater the opportunity for job satisfaction. Person and setting are thus portrayed in a relationship of reciprocity, each supporting the other's needs and purposes. In this study, job satisfaction serves as the expected outcome of congruence.

Congruence can be computed several ways; a recommended method is to compare three-letter person and environment code types for the degree of match (Spokane, 1985). Another method, the Environmental Assessment Technique (Holland, 1985c), compares individuals' codes with the modal code obtained by employees in the work setting. A third, more recent feature of congruence computations, includes input from the job incumbent or supervisor regarding the job's degree of similarity to each of the six types.

Theory-derived antecedents. In Holland's view, congruence reflects the extent of "match" between person and job characteristics. High congruence, therefore, should be related to the person's tenure in the workforce, since the job-person match is said to improve as the person moves closer to the ideal work environment.

Another factor which should be linked to congruence is the amount of job mobility, or opportunity for job change, that individuals

perceive in their workplace. If 1) new job opportunities are plentiful, 2) competition is not daunting, 3) discrimination based on age, sex, or other factors is absent, and 4) dual-career partners do not object, people should be able to seek and obtain new positions increasingly more consonant with their abilities and preferences. This situation would result in greater congruence over time.

While Holland's theory allows for some plasticity--settings are defined by the people in them; persons may change to better fit with their environment or may choose to leave it--it is essentially a stable trait theory perspective. Person type is said to be established between the ages of 18 and 30.

The Social-Cognitive View of Bandura

A different perspective is offered by Albert Bandura (1982; 1986), in the theoretical traditions of cognitive behaviorism and social cognition. In this view, human behavior is explained by a mutual causation system of behaviors (B), internal or person variables, such as preferences and attitudes (P), and environmental factors, or external constraints (E). These three factors affect and are affected by one another reciprocally. When E constraints are low, person factors are most salient in this system. Behavior is goal-directed, and is partially determined by cognitive variables, including a self-perceived ability to perform a certain behavior. In this way, the notion of self-regulation by ability judgments (among other internal factors) is invoked to help explain behavioral choices. In Bandura's view, then, thoughts and feelings regarding personal abilities are proposed as

predictable mediators of individual behavior, along with environmental factors and specific behaviors.

Bandura notes "in passing" (1986, p. 25) that components within each category can reciprocally interact: for instance, in the Person category, judgments can affect, and be affected by, beliefs, emotions, preferences, and future expectations. The present study examines relations among several Person components in detail, and relies upon this assumption of reciprocity at the micro, as well as macro, levels. This issue will be returned to later.

Since self-perceived competence partly determines important behavioral outcomes, it follows that career-related self perceptions should affect Behavior factors such as personal career management, job performance, and organizational longevity. Since there are relations among Person factors themselves, individual perceptions of competence or agency presumably would impact upon affective outcomes such as job stress and other mental health-related events. A relation between these agency perceptions and "self-administered rewards and punishments" (Bandura, 1986, p. 354) in the career area would also be expected.

It should be noted that perceived ability or agency is distinguished from outcome expectations; the latter represents the likely consequences of a chosen behavior. Perceived organizational opportunity, a variable reflecting outcome expectations in the career domain, is included in this study.

Not unlike Holland, Bandura states that people contribute social and interpersonal qualities to their work environments, and tend toward consistent behavior within those settings. Unlike Holland, he asserts

that person traits are not sufficient to understand variation in individual behavior across situations. Rather, the interaction among the three factors--behavior, person, and environment--is the route to understanding individual behavior and choices.

Self-efficacy. Self-efficacy, a major construct in the Person category of social cognitive theory, is defined as "peoples' judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). This percept is a product of prior personal experience, observation of others in similar situations, credible persuasion by others, and emotional arousal cues such as increased heart rate or feelings of relaxation. Self-efficacy is hypothesized to regulate effort and persistence (i.e., behavior) independent of actual competence in the designated behavior.

Career management self-efficacy, for the purposes of this study, is defined as the constellation of individual beliefs, judgments, and emotions regarding managing one's career. Included in this concept are such components as: beliefs about one's ability to perform well on the present job and in future jobs; expectations about the personal utility of career decisions; preferences for certain careers; and level of anxiety regarding one's ability to reach career goals. (To date, career self-efficacy has most often been operationalized in terms of career choices.) According to Bandura, high career self-efficacy should predict appropriate career choice and management behaviors as well as persistence and satisfaction. In this study, job satisfaction is the criterion of interest.

Career management self-efficacy (referred to hereafter as career self-efficacy) does not substitute for knowledge and skills, and does not influence behavior if minimal competence in a particular situation is lacking. It cannot overcome all situational constraints; for instance, high career self-efficacy will not contribute to receiving a promotion if there are no promotions available.

Theory-Derived Antecedents. Social-cognitive theory implies that positive career-related cognitions and affect derive in part from prior experiences of success and competence in work situations. Therefore, career self-efficacy should be affected by past career success events.

Length of time spent in the workforce might also be important in understanding career self-efficacy and its correlates. Workforce tenure is a behavioral variable that should impact on individuals' judgments about their competence in the career area. Presumably, as one builds up years in the workforce, one's confidence in the career domain increases.

The belief in one's opportunity to obtain other desirable jobs in one's current organization could affect both a willingness to seek new positions and a belief in one's competence in the career domain. Perceived opportunity, as conceived here, incorporates situational and personal components: it captures information about 1) availability of jobs and amount of competition; and 2) persons' beliefs about their mobility based on their gender, ethnic status, sex, educational level, and dual-career status. This factor is expected to be related to career self-efficacy, and these two constructs are both expected to predict job satisfaction.

An Historical Postscript. It is interesting to note the milieu in which these theories developed. The trait or "differentialist" (Holland & Gottfredson, 1976) tradition in vocational research in the U.S. dates from the turn of the century, with Parsons' (1909) work in matching persons with jobs. The prevailing view of relevant psychological assessment was deductive and reductionistic; many of the underlying assumptions in Holland's theory represent a similarly strict empirical, positivist stance. Social cognitive theory, in Bandura's formulations, has matured in a zeitgeist full of challenges to the positivist tradition, and his constructs inevitably reflect this more epistemologically heterogeneous environment. An example of a difference between the two theories is Bandura's incorporation of the concept of personal agency in his theoretical writings (1986). This construct is a relative newcomer in the counseling psychology literature (e.g., Howard, 1984, 1987), and promises to challenge some long-standing assumptions about the prediction of behavior. Holland's hypotheses do not specifically include agentic concepts such as self-reward and self-regulation as motivators of behavior.

The Present Study. The contributions of the congruence and career self-efficacy constructs in accounting for satisfaction in working adults in diverse occupational settings are minimally understood. Research with college student populations is far more frequently reported in both the Holland (Spokane, 1985) and the Bandura (Lent & Hackett, 1987) traditions. The present study explored the efficiency of congruence and career self-efficacy in predicting job satisfaction through multiple regression analyses. The antecedents mentioned above--

perceived opportunity, workforce tenure, and prior career success events--were included in the analyses. In addition, demographic factors were tested for mediating effects.

The Hypotheses. Based on the discussion above, and on previous research findings, the major research hypotheses were:

H1. Dual-career status will be negatively associated with perceived opportunity.

H2. Workforce tenure will be positively associated with congruence.

H3. Career success event frequency will be positively correlated with career self-efficacy.

H4. Perceived opportunity will be positively correlated with career self-efficacy and with congruence.

H5. After demographic and antecedent variables are accounted for, career self-efficacy will contribute unique incremental variance to the prediction of job satisfaction.

H6. After demographic and antecedent variables are accounted for, congruence will contribute unique incremental variance to the prediction of job satisfaction.

Study Implications. Retaining productive, healthy employees and maintaining a supportive work environment is an important task for employers, given the challenges of adjustment and socialization (e.g., Jones, 1986), job insecurity (e.g., Kanfer & Hulin, 1985), and other

workplace stresses. If these findings suggest procedural and/or job-related changes that can reasonably respond to employees' unique job and career needs, employers can hope to save important financial and human resources through enhancing job satisfaction and its antecedents. Just as important, individuals can benefit from work environments more attuned to their needs for job involvement, recognition and emotional well-being.

The known correlates of job satisfaction in individual workers and organizations are summarized by Locke and Latham (1990):

Employees who are satisfied are more likely to stay on the job and to engage in citizenship behaviors such as helping coworkers or customers and doing extra work...; those who are dissatisfied are more likely to quit the job, be absent, file grievances, join unions, go on strike, protest to higher management, engage in substance abuse and illegal acts, and put forth less effort. (p. 244)

It has also been reported that work-related attitudes contribute importantly to indices of well-being and mental health (Wiener, Vardi, & Muczk, 1981; Caplan, 1987; Moos, 1987). Another series of studies imply a link between work satisfaction and measures of well-being, somatic complaints, and anxiety (Meir & Melamed, 1986; Meir, Melamed, & Abu-Freha, 1990). More research to ascertain the contributions of psychological variables to job satisfaction has been called for, in the interests of both individual well-being and organizational productivity (e.g., Heesacker, Elliott, & Howe, 1988).

Finally, these results may provide more insight into the usefulness of theoretical hypotheses relating to individual job satisfaction. Better understanding of attitudinal variables in

vocational theories is imperative for the continued vitality of such theories. As assumptions about people and environments change, so must the theoretical formulations designed to explain and predict their interactions.

CHAPTER II

REVIEW OF LITERATURE

Works of vocational psychology, industrial psychology, and career development provide much material relevant to this proposed study. The studies and conceptual works mentioned here are chosen for relevance to the particular issues already outlined--the changing nature of persons and work environments, the limitations of extant theories in explaining career behavior, and efforts at further conceptualizations of adult career phenomena.

Conceptual Works. Jepsen (1984) contributed an important distinction between vocational theories by defining two types: structural and developmental. He suggested that structural theories such as Holland's build their hypotheses on the assumption that "development results in the establishment of stable qualities (e.g., interests, abilities, and personality traits" (p. 178); and, alternatively, that theories in a developmental tradition "emphasize the development of qualities that undergo orderly change (e.g., the conceptualization of self as worker, the capacity to work)" (p. 178). While Jepsen cited the works of Super and Tiedeman, among others, as examples of the latter theory type, it also seems reasonable to include Bandura's social cognitive approach in this category. Self-efficacy cognitions, in Bandura's view, undergo orderly change over time in the face of new success experiences, chances for vicarious learning, social persuasion, and affective states. This distinction serves to highlight

the potential differences between the two theories and will inform discussion of the study's results.

Deeper understanding of the theories' tenets is aided by the authors' references to key underlying conditions. For instance, Holland made clear his reliance on the assumption that persons have unrestricted job mobility in defining his terms:

In the theory, development over the entire life course can be understood as a long series of person-environment interactions in which people are modified and stabilized as they select, pass through, or avoid behavior situations that reject, select, and encourage some behavioral or personality repertoires more than others (1985, p. 52).

Holland published data in 1973 documenting 5,812 lifetime job transitions for 757 men aged 30 to 39 (Holland, 1985, p. 129); these workers averaged over seven transitions before the age of 40. In such high-mobility conditions, Holland's predictions about movement into more congruent settings were acceptable and documented. However, the nature of the vocational "opportunity structure" cited by Gottfredson and Becker (Holland, 1985, p. 129) may have changed sufficiently to require a revised view of Holland's hypotheses. The theory also rests on data obtained from large groups of "socioeconomically mobile workers" (Holland, 1985, p. 131), and may not apply with equal accuracy to workers not so classified.

Interestingly, one of the Holland theory's major outcomes, career satisfaction, is consistently cited but not given operational definition. It is left to interested parties to define it in research and theory analysis. With Holland's emphasis on career behavior, and his call for more studies in work settings (1985, p. 152), this omission

is glaring.

Some possible problems also arise in Bandura's formulations. He stated that the self-efficacy construct and its related activity should be measured closely in time;

(p)roximal self-percepts more accurately represent existing relations to behavior than earlier ones, if they have been revised in the interim (1986, p. 396).

This raises the unappealing prospect of continuous measurements in the quickly-changing work milieu of reciprocal influences between person, behavior, and environment. The alternative may be a reliance on outdated efficacy percepts, yielding insignificant relationships with important outcomes.

Second, Bandura emphasized that:

To regulate effort effectively, performers must have some idea of the performances they are seeking to attain and have at least some information about what they are doing (1986, p. 398).

In the sometimes disorganized processes of job description, performance feedback, and employee development planning, an individual may not receive such information, or may receive it at a level of abstraction not easily translated to the personal level. Even with increases in career self-efficacy, therefore, individuals' behavior may not show change if the above feedback condition is not met.

Third, "career success" is a key outcome in Bandura's theory, but is not operationally defined. To learn whether higher career self-efficacy indeed leads to greater career success, investigators might test different manifestations of this construct, and might disagree over their varying definitions. Salary level, for instance, does not necessarily equal job satisfaction.

Vondracek, Lerner, and Schulenberg faulted all current vocational theories in their failure to "integrate completely current knowledge on vocational and career development (1986, p. 2). Their contextual perspective requires that influences from the work organization and the outside environment, as well as those within the individual, be included in a fully integrated statement. They supported Bronfenbrenner's view that theories of development give short shrift to environmental factors in behavior and change (1986, p. 40), and asserted that new advances in career development theory will depend on such a perspective. Further, they cited the connections between conditions of work and the mental and physical health of workers, stating that better understanding of career development phenomena will contribute to improved health and well-being. This position was also taken in Brown's (1984) discussion of the effects of job dissatisfaction on mental health (p. 411), and in Schlossberg's (1984) work on therapeutic interventions with adults in transition.

Campbell and Heffernan (1983), in their chapter on adult vocational behavior, listed many so-called "external" influences they believe should be included in theory-building and -refining. These include the demographic phenomenon of the baby-boom generation, and social trends such as

high divorce rates, the instability of the economy, changing job opportunities, changing family patterns, the proliferation of educational opportunities, new life-styles, and the rise of women in the labor force (1983, p. 223).

Especially pertinent to the present discussion is their citing of the challenge faced by dual-career couples in making job- and promotion-related decisions, and the need to consider lateral moves when one's

employer cannot offer continual upward mobility. Klein (1988) also cited dual-career couples as important factors in adult career decisions, defining them as "two persons pursuing and highly committed to both an occupation and domestic relationship" (p. 255). In addition, flattened organizational structures and the large numbers of the baby-boom cohort are cited by Stout, Slocum, and Cron (1988) as influential in the recent phenomenon of reduced employee mobility.

A thoughtful review of theory and research in organizational settings by Shullman and Carder (1983) covered some issues relevant to this discussion. They noted that the baby-boom generation is reaching mid-career, feeling increasing concerns about job challenge, obsolescence, and work-related contributions. They cited the phenomena of organizational and individual plateaus and their potential for reduced job involvement and satisfaction; they also called for more tests of existing vocational theories in organizational contexts.

Other points related to demographic features of the work force were raised by Schlossberg (1984). She cited the "pyramidal squeeze" experienced by workers in a large age cohort (p. 171), and discussed the implications of a thirteen-year longitudinal study on the relationship of age to promotional offers. Specifically, employees over the age of forty were much less likely to receive promotions, which raises concerns about mental health, job satisfaction, and organizational productivity for this age group (p. 166). These findings could bear on the development of percepts such as career self-efficacy, as well as the ability of workers to choose environments of increasing congruence over time.

Increased interest in career issues facing workers in mid-life has been expressed by many authors (Bailyn, 1982; Brown, 1984; Dalton, Thompson, & Price, 1982; Derr, 1982; Hall, 1986; Levinson, 1984; Schein, 1986). In this age range (approximately 35 - 45 years old) workers in high-mobility environments were found by Bailyn (1982) to express high work aspiration and success orientation; those experiencing low mobility were concerned mainly with job security. As if in response to limited technical promotion opportunities, almost fifty per cent of the 957 engineers in Bailyn's study occupied managerial or entrepreneurial positions ten years after graduation, eschewing technical challenges for presumably higher-paid, higher status jobs. Interestingly, however, above-average incomes in this sample were not positively correlated with high job satisfaction. Also, "people orientation", a quality not highly characteristic of engineering in Holland's typology, was associated with higher income in these engineers.

There are many questions still to be answered about the subjects of study in vocational investigations. According to a study of age and performance in engineers conducted by Dalton et al. (1982), performance ratings began to show a negative correlation with age after the mid-30's, suggesting various time-sensitive barriers to maintenance of work interest and enthusiasm for career promotion. In a related vein, Hall wondered what accounted for some workers remaining in a "continual learning or exploratory mode" regardless of age, and suggested further research on "trigger events and influences that stimulate various types of changes" in one's career (1986, p. 125). Schein (1986), noting an ongoing need to better understand the working population, encouraged the

continued application of descriptive studies in the efforts to refine career theory.

Also, authors suggest that terms should be carefully defined. Arthur defined the individual career as "the evolving sequence of a person's work experiences over time (1984, p. 4). Schein (1971, cited in Dalton et al., 1984) provided an organizational or external definition of career: "the set of expectations held by individuals inside the organization which guide their decisions about who to move, when, how, and at what speed" (p. 149). These views converge less than they diverge. Schein's definition emphasizes the concept of job mobility, and is focused on the organization's needs for talent. By contrast, the individual definition (and others like it) implies planning, self-direction, and a developmental aspect to work experiences. Differing implications such as these must be made explicit in any treatment of career-related behavior, as Collin and Young (1986) advised. Further, Hall and Lerner (1980) encouraged researchers to incorporate both individual and organizational perspectives of career into their inquiry.

Empirical Studies. A number of empirical studies of career phenomena based in Holland's and Bandura's theories also provide important guidance for the proposed study. Studies of congruence with working adults and retired populations show mixed results on outcomes such as job satisfaction, achievement, and stability. Measured congruence in five code types was significantly related to job satisfaction for a variety of occupations (Hener & Meir, 1981; Meir, Melamed, & Abu-Freha, 1990; Mount & Muchinsky, 1978; Wiggins, 1984;

Wiggins, Lederer, Salkowe, & Rys, 1983). For all codes but Conventional, congruence was related to longest full-time job in a retrospective study of retirees (Warren, Winer, & Dailey, 1981). But high levels of congruence were not associated with achievement as measured by accountants' salary level (Schwartz, Andiappan, & Nelson, 1986). Heesacker et al. (1988) found no relationship between congruence and job satisfaction in female factory workers. Weiner and Klein (1978) found a significant relationship between congruence and job satisfaction for managers with long tenure, but not for those with short tenure. And congruence may inadequately encompass the complex person-environment relationships that have been found in many contemporary work settings, with diverse task forces and work teams operating outside normal work-group boundaries, and many employees working at home or at satellite work sites with few or no direct colleagues nearby ("Staying Away in Doves", 1987).

So far, there have been only a few empirical studies of self-efficacy with working adults. Self-efficacy in research and service tasks was studied in university faculty, and causal models were designed to identify significant antecedents (Landino & Owen, 1988). Another construct-testing study was conducted with male and female academics (Schoen & Winocur, 1988). They found that self-efficacy strength, a theoretically proposed dimension, varies with faculty rank and sex. Job search self-efficacy was found to be related to re-employment in hospital workers following layoff (Kanfer & Hulin, 1985).

The ability of sales-related self-efficacy beliefs to predict work performance in a group of insurance salesmen was studied by Barling and

Beattie (1983). Self-efficacy beliefs, separate from education level and tenure with the employer, accounted for small but significant amounts of variance in performance indicators such as sales volume and number of sales calls completed. An experimental program to increase self-regulated job attendance with blue-collar workers showed significantly higher levels of perceived self-efficacy in the treatment group over a group of controls (Frayne & Latham, 1987). Coping with the stress of an employment interview was found to be positively related with job interview efficacy beliefs (Stumpf, Brief, & Hartman, 1987). Jones (1986) found that job self-efficacy predicted job satisfaction and intention to quit in newly-hired professionals. Workers facing retirement reported lower anxiety about that transition when retirement self-efficacy was strong (Fretz, Kluge, Ossana, Jones, & Merikangas, 1989). In a descriptive study, Hackett, Betz, and Doty (1985) contributed an annotated listing of career competencies of professional women which could be used in future tests of the career self-efficacy construct and its effects on career behavior. Self-efficacy beliefs related specifically to managing one's career over time have had little, if any, attention up until now.

Other studies of Holland's congruence construct and its relation to job or career satisfaction with working adults are available (e.g., Adler & Aranya, 1984; Aranya, Barak, & Amernic, 1981; Elton & Smart, 1988; Feldman & Meir, 1976; Heesacker et al., 1988; Meir, Keinan, & Segal, 1986; Meir & Yaari, 1988; Peiser & Meir, 1978; Smart, Elton, & McLaughlin, 1986; Swaney & Prediger, 1985). Because of different operational definitions of the dependent variable--job or career

satisfaction--these studies cannot all be compared directly. The only common operationalization used in more than one of these studies was a one-item self-report measure of satisfaction: a variant of the question, "How satisfied are you with your vocational choice?"

Jobs were most often classified using the Dictionary of Holland Occupational Codes (Gottfredson, Holland, & Ogawa, 1982); person type was determined by measures including the Self-Directed Search (Holland, 1985), the Strong-Campbell Interest Inventory (Hansen, 1985), other interest inventories, and self-report measures of job fit. Correlations between congruence and satisfaction ranged from "trivial" (Aranya et al., 1987) to .77 (Meir et al., 1986). Additionally, Conventional and Enterprising subjects (often the type codes of engineers and managers) showed lower congruence-satisfaction relationships than the other four types (Feldman & Meir, 1976), and older Conventional subjects showed significantly lower levels of satisfaction, regardless of congruence, than younger subjects (Adler & Aranya, 1984).

This brief review finds results comparable to those of Spokane's (1985) extensive study: he found that, of 40 congruence-satisfaction correlational studies, "20% found no significant relationship, 42% found mostly positive results, and 38% had mixed findings" (p. 328). In the majority of these studies, person-job congruence was measured by first-letter agreement between subject and job code type; further, no one congruence index was consistently associated with greater predictive power. Spokane encouraged researchers to use uniform methods of determining congruence, and to use standardized satisfaction measures with high construct validity and reliability. He also warned of low

incongruence base rates and the limitations of one-time-point designs in capturing significant relationships. The need for continuing refinement of congruence measurement, especially with working populations, was emphasized.

Tests of self-efficacy in related career domains are fairly limited in number, as mentioned above. Reviews by Lent and Hackett (1987), Slaney and Russell (1987), and Phillips et al. (1988) cite important efforts at defining career self-efficacy and correlating it with its theoretically-predicted outcomes. The situational nature of self-efficacy requires that unique measures be constructed for specific arenas; academic performance and persistence have been studied by several researchers to date (e.g., Campbell & Hackett, 1986; Hackett & Betz, 1981; Lent, Brown, & Larkin, 1986, 1987). Rotberg, Brown, and Ware (1987) and Nevill and Schlecker (1988) studied self-efficacy for choosing career options in college students. In workplace settings, researchers have studied self-efficacy percepts related to strategies for task completion (Locke, Frederick, Lee, & Bobko, 1984); re-employment after layoff (Kanfer & Hulin, 1985); employee attendance (Frayne & Lathan, 1987); and newcomers' adjustment and intention to stay in the organization (Jones, 1986). Self-efficacy measures follow a fairly standard format in these studies: statements of ability to complete domain-specific activities were rated on a scale ranging from "not at all confident" to "very confident" in demonstrating successful performance. Test-retest reliabilities over periods of one to eight weeks ranged from .60 to .94. School-related outcomes with which self-efficacy was correlated included mathematics task performance, academic

grades, range of perceived career options, and persistence in chosen undergraduate field. Outcomes in work settings included task performance, finding new jobs after layoff, independent adjustment to a new work setting, and intention to quit. A pattern of correlation (and in some instances prediction) between high self-efficacy and successful outcome in the theory-predicted direction has been established. The investigators attempted to limit the self-efficacy construct to particular tasks or domains, in an effort to conceptually limit the phenomenon measured and to isolate significant effects.

A recent review of the status of self-efficacy research in many domains (Lent & Hackett, 1987) defines career self-efficacy as "judgements of personal efficacy in relation to the wide range of behavior involved in career choice and adjustment". The inclusive nature of this definition reflects the bundling together of career preparation, academic performance, and on-the-job behaviors in one domain-specific construct. It may be that this burden is too great for one concept to bear. The existence of a career competencies taxonomy for professional women (Hackett et al., 1985) demonstrates that outcome behaviors for workers are greatly different than those used in investigations with students. It is also possible that career self-efficacy in employed adults is less sensitive to change over time than it is in students, given the increased number of consistent life experiences and accumulating history that characterize the world of work. (This hypothesis contributed to the development of a novel career management self-efficacy measure for the present study, described in the next chapter.)

Lent and Hackett concluded:

On balance, this research literature is promising but still in its formative stages, and a great deal of work remains to be done in clarifying the explanatory and predictive potential of self-efficacy in the career domain. Research demonstrating causal links between self-efficacy and career behavior have been especially sparse to this point: further inquiry on this question is needed before definitive conclusions can be reached regarding the reciprocal impact of self-efficacy and career behavior. (p. 17)

They also recommended that self-efficacy's contribution to career-relevant outcomes be empirically separated from outcome expectations, as Bandura (1986) has also suggested. Major challenges face investigators working on this relatively new line of research; the career-related study proposed here will attempt to make a useful contribution to further understanding of this brand of self-efficacy.

The literature reviewed above provides a reasonable basis for conducting a descriptive and predictive study of the two theoretical constructs with respect to important demographic and environmental variables. The need for a greater understanding of the attitudinal factors related to job persistence is often cited. Many writers have urged that data be collected in bona fide work environments, and that further descriptive work is needed to clarify our understanding of such constructs before proceeding to full-scale causal investigations. Hopefully, this study's results will contribute to more sophisticated hypotheses and conclusions about the conditions under which high congruence and career self-efficacy coexist with their predicted desirable outcomes, furthering the well-being of worker and organization alike.

CHAPTER III

STUDY METHODS

Participants

Subjects for the study were solicited at two U.S. government agencies located in a midwestern city. At Site A, data were collected from 64 subjects. Positions held included engineer, chemist, manager, and executive. The mean age range at Site A was 30-39 years (an equal number of subjects fell into the 30-34 and 35-39 ranges; exact ages were not requested in order to protect anonymity). Subjects reported the number of years in their current job, in their present organization, and in the workforce as a full-time worker. The means for Site A were: job tenure, 4.9 years; organizational tenure, 9.5 years; workforce tenure, 12.5 years. There were 47 males and 17 females, and 1 subject reporting ethnic minority status. Sixty-four per cent reported dual-career status, that is, having a partner whose career decisions affected and were affected by the subject's career. Education levels were: 10% post-high school, 31% undergraduate degree, 59% graduate courses or graduate degree.

One hundred and four subjects participated at Site B. Positions at this worksite included staff nurse, research nurse, clinical specialist, manager, and executive. The mean age range was 40-44 years. Tenure means were: job tenure, 5.7 years; organizational tenure, 10.9 years; workforce tenure, 17.4 years. There were 93 females and 11 males, and two subjects reporting ethnic minority status. Fifty-nine per cent reported dual-career status. Education levels were: 21%

post-high school, 48% undergraduate degree, and 31% graduate courses or graduate degree. The total number of subjects was 168; Ns are less for some analyses because of missing data.

Procedure

At both worksites, a detailed presentation of research goals and organizational benefits was provided to relevant executives. (See Appendix A for an outline of this presentation.) Privacy and anonymity safeguards were designed and agreed upon, necessitating a change in the research protocol. Specifically, archival data from subjects' personnel files was not made available, so all data on career success events had to be based on self-report. Other data collection procedures, and methods of feedback to individuals and to the organization, were arranged at each worksite.

Site A

The human resources director and relevant executives hoped the study would shed light on the continuing high job turnover among their junior professionals. Exit interviews often revealed low job satisfaction, which had not often been expressed during employees' tenure. Executives agreed to support the study by providing work time for survey completion, and by not attending the on-site meetings, to avoid seeing who participated. A memorandum was sent via internal mail to all scientific, engineering, and management employees (one hundred sixteen), describing the study goals and inviting them to attend an on-site informational meeting (See Appendix B). Forty-six attended, and

heard a short presentation about the study (see Appendix C for an outline). All present remained to complete the surveys. Seventy packets were mailed to those not at the meeting, and one reminder memo with packet was mailed to nonresponders. Packets were returned to the human resources office, labeled only with subject I.D. numbers. A total of 64 usable packets was obtained, for a response rate of 55%. Five months later, all 64 subjects completed the three novel measures a second time at an on-site meeting or through the mail. One reminder memo was mailed to non-responders. All subjects were invited to attend a group meeting to learn of the aggregate results and to receive a confidential listing of their individual results. These meetings were attended by over two-thirds of the participants, and engendered lively discussion about the findings and potential interpretations. A final report was provided (see Appendix D).

Site B

Study approval was given by the director of nursing education, the director of research, and the chief of the nursing service. These executives wished to learn more about the work-related attitudes of their professional staff. No personal contact was made with potential subjects. A cover memo signed by the executives was prepared, and attached to survey packets with a study description and instructions for completion (see Appendix E). They were sent via internal mail to 265 employees on three work shifts. Completed packets, labeled with I.D. numbers only, were returned via internal mail to the investigator's office. Two follow-up reminders were sent. One-hundred four subjects

(39%) returned usable packets. Response percentages ranged from 50% to 75% among managers, research nurses, and clinical specialists working with outpatients. Lower response percentages occurred in direct patient care settings: intensive care units, operating rooms, and nursing floors. A measure of incumbents' job similarity to the six Holland code types was administered later to 104 subjects via mail; 44 usable surveys were returned after two mailings. Sixteen subjects (15%) requested feedback of their individual results; this was provided by mail. A final report was presented (see Appendix F).

Both sites

Informed Consent Subjects were advised of the nature of the study, of their participation, and of the privacy/confidentiality safeguards. The consent form used at both sites appears in Appendix G.

Privacy and confidentiality safeguards. In advance of initiation of the study, all proposed methods and procedures were reviewed and approved by the MSU Committee on Research Involving Human Subjects (UCRIHS). Subject selection was done by job title; all employees in the selected positions were invited to participate. A mailing list of subject names was created, and subject identification codes assigned. These lists were in the sole possession of the investigator. Survey packets were identified by subject I.D. only. Participants were not required to inform their immediate supervisors of the nature of the study. The investigator's telephone number and address were provided in case subjects had questions about the study.

Holland code assignment. Position descriptions for subjects' job titles were obtained from the respective personnel offices, and were matched with job descriptions in the Dictionary of Occupational Titles (DOT). Those titles were then located in the Dictionary of Holland Occupational Codes (Gottfredson et al., 1982). This procedure yielded the DHOC-designated Holland codes for all positions. See Table 3.1 for a listing of job titles and Holland codes.

Table 3.1. Positions and DHOC Codes

REI	supervisory chemist, supervisory mechanical engineer, supervisory mechanical engineering technician, supervisory environmental protection specialist, supervisory environmental scientist
IER	supervisory general engineer, general engineer, environmental engineer
IRE	environmental protection specialist, mechanical engineer, chemical engineer, environmental scientist
SIE	staff nurse, head nurse
SEI	nursing supervisor, clinical coordinator
SEC	clinical specialist, research nurse
SCI	nursing instructor

Note. R - realistic; I - investigative; A - artistic; S - social; E - enterprising; C - conventional

Instruments

Design of Original Scales

To obtain measures of organizational opportunity, career success, and career self-efficacy, three novel scales were constructed for this study. For a post-hoc data collection, a fourth scale was designed. Construction of these scales was undertaken following principles outlined by Dawis (1987) and Anastasi (1982).

Scale Features. All new scales were designed to yield interval data. Answers are in the form of numbers, representing concepts such as "a few times", "very difficult", and "complete confidence". Except for the job description scale, all scales are subject-centered (Dawis, 1987); that is, responses represent individual characteristics on the dimension of interest. This scale is also termed an individual differences scale. The job description scale is stimulus-centered (Dawis, 1987); the response format is a ranking of descriptive statements in relation to each other.

Perceived Opportunity Scale and Career Success Scale.

Construction of the perceived opportunity scale and the career success scale was aimed at gathering confirmable data, such as how often the subject has applied for transfer or promotion in the current organization, and how frequently the subject has received a higher than average salary increase. It had originally been planned to check perceived opportunity and career success results against archival data in personnel records. This process would have yielded a measure of construct validity (and, incidentally, a test of self-report accuracy). It was impossible to obtain permission for this, so no traditional

construct validity comparison is available for these two scales. This should not seriously compromise the usefulness of these scales in an exploratory study, since they do not purport to measure abstract psychological concepts.

Job Description Scale. This scale contains descriptions of Holland's six work environments, with minor grammatical changes, taken directly from his recent theory statement (Holland, 1985c, pp. 36-40). Its construct validity should be similar to that of the constructs themselves, which has been amply reported (Holland, 1985b, 1985c; see below, Vocational Preference Inventory). One way to check its validity was to compare congruence scores based on VPI-JDS comparisons to the congruence scores produced by the other two techniques--DHOC and EAT. This was done in a three by three correlation matrix as a post-hoc analysis.

Career self-efficacy scale. Dawis (1987) advises that a new scale be designed with an eye to

"some theory of the scale that includes a well-articulated definition of the psychological variable to be measured...Definition includes distinctions (what the variable is and is not), dependencies (how the variable is a function of more basic or previously defined terms) and relations (how the variable is related to other variables)." (p. 481)

This admonition was taken into account in the design and construction of the career self-efficacy scale. Significant design effort was applied to the scale content (see below for further discussion). Dawis also provides guidance on issues of scale format: he recommends care in representing variables, considering the nature of respondents and administration conditions, and planning for analyses. Specific content

and format issues are addressed below. Some general issues that were considered in designing the career self-efficacy scale, related to Dawis' suggestions, are described here.

As noted in Chapter One, self-efficacy encompasses judgments about personal ability, situational demands, and action required. It makes allowance for, but does not represent, actual skills and knowledge. It does not include outcome expectations or self-esteem; these constructs have been shown to be distinct from self-efficacy (Lent & Hackett, 1987). As Bandura (1986) has defined it, self-efficacy is a function of reciprocal input of information from the situation and the individual. Important antecedents, according to theoretical formulations, include prior personal experiences and observation of others in the domain. In this study, it was expected that career management self-efficacy would be correlated with measures of these two antecedents (career success and perceived opportunity, respectively). Further, it was not expected that self-efficacy would be related to job-person congruence. In view of these hypotheses, self-efficacy scale items were designed for maximum face validity. That is, the items attempt to capture personal judgments about specific capabilities in the job/career domain, and minimize references to antecedent constructs.

It is well demonstrated that career choice self-efficacy is related to college major choice (Hackett & Betz, 1981; Lent et al., 1986; Lent & Hackett, 1987) and career entry behaviors (Betz & Hackett, 1986; Hackett & Betz, 1981), but less is known about its relation to other variables germane to organizational settings. As mentioned in Chapter One, career self-efficacy varied according to seniority and sex

(Schoen & Winocur, 1988) and state anxiety (Fretz et al., 1989).

Investigating the relation of career self-efficacy, as operationalized in this study, to other variables was deliberately planned. Using an original scale for a key theoretical construct necessarily lent an exploratory feature to the present study.

Dawis also discusses the choice between homogeneous and heterogeneous item content. If items are similar, the variability in the scale should reflect differences among respondents. With dissimilar items, there may be an important item effect. In the self-efficacy scale, the aim was to create a homogeneous group of items, to maintain construct consistency and to maximize subject variability. An exploratory factor analysis was completed on this scale. These results, presented below in Chapter Four, address the item homogeneity issue and can assist in determining the usefulness of this scale for future investigations.

The response format of the self-efficacy scale is ten rating points, anchored by "no confidence" to "complete confidence". This format is recommended by Dawis for its potential to capture individual differences. He also notes that, for investigators' convenience, categories of responses can be reduced after data are collected, but a spread of ten points cannot be later created out of five.

Description of Instruments

1. Demographic and dual-career information was gathered by items modified from a survey used by Pond and Geyer (1987). The demographic items include age range, sex, education level, ethnic status, job title,

and tenure in the workforce. Dual-career status is defined as "having a life partner whose career decisions affect you, and who is affected by your career decisions". These items, contained in the General Information Survey, appear in Appendix H.

2. Perceived Opportunity. Five items, contained in the Perceived Opportunity Survey, captured subjects' perceptions of their potential for applying for and successfully moving to new positions in their current organization. Included are perceptions of mobility based on the subject's educational level, age, sex, ethnic status, and dual-career status. The five-point scale is anchored by 0 - "very difficult" and 4 - "very easy". Values are summed and divided by 5. (Originally, the research design included an independent review of personnel files to determine subjects' actual mobility; but this was later deleted.) See Appendix I.

3. Career management self-efficacy. In a review of the literature, no suitable career management self-efficacy measure for non-faculty adults was located. Following Bandura's (1986) recommendations, a scale was designed to tap subjects' cognitions about their ability to perform specific career-related tasks. The thirty items included statements about job performance, organizational demands, professional development, and career and life planning. These four categories directly address all but one career competency (adaptive cognitive strategies) proposed by Hackett et al. (1985) in their career taxonomy. The competency areas included here are: communication skills, interpersonal skills, political skills, organizational skills, general career planning and management skills, career advancement skills, and

job-specific skills. It was thought that the act of measuring subjects' self-percepts in these areas would tap their cognitive strategies in the career domain, therefore incorporating adaptive cognitive strategies in the process of scale administration.

Examples of items are: "Perform with excellence in my current job"; "Understand myself and my career plans"; "Communicate my ideas effectively to others at work"; "Deal appropriately with hostile subordinates and/or colleagues". Items were scored on a 0-9 scale, anchored by "Cannot do this task" (0) and "Certain I can do this task" (9). One score was computed--the mean of all item responses, ranging from 0 to 9. Higher scores indicate higher career self-efficacy.

The 0-9 response scale is identical to several other self-efficacy measures reported in the literature (Campbell & Hackett, 1986; Schoen & Winocur, 1988). It should be noted that a review of response scales for self-efficacy measures discovered scale point ranges of 5, 7, 9, 10, and 100, with numbers of items varying from 3 to 78 (Campbell & Hackett, 1986; Frayne & Latham, 1987; Hill, Smith, & Mann, 1987; Lent et al., 1986, 1987; Schoen & Winocur, 1988; Stumpf, Brief, & Hartman, 1987). The 0-9 scale offers subjects a wide range of choices in level of confidence, and was selected with an eye toward ensuring variability of responses.

There seems to be no emerging standard in the self-efficacy literature for number of items per scale. Lent and Hackett (1987) discuss psychometric properties of self-efficacy scales without mention of this issue. They address it indirectly in their treatment of construct validity, calling for a "moderate" level of task specificity

in measuring the construct (p. 366) and recommending that investigators strive for validity by tapping specific, domain-related behaviors, and avoiding high correlations with measures of similar constructs such as career maturity. On a related topic, they suggest that internal consistency reliability is the major property of interest in self-efficacy scales, and that test-retest reliabilities over time might be low, since domain-specific behaviors may change quickly. (With adults, however, career self-efficacy beliefs may be rooted in a broad range of relevant work experiences and thus may exhibit greater stability over time.)

An attempt was made to incorporate tasks of intermediate specificity. To achieve this mix, thirty items were written, covering tasks related to job performance, organizational expectations, professional development, and career and life planning. Examples of skills likely to comprise some of these tasks can be found in the career competencies taxonomy of Hackett et al. (1985). Items were designed with variability in presumed difficulty level. This reflects Bandura's (1986) recommendation that self-efficacy be operationalized as judgments of actions that are attainable by some persons, avoiding the extremes of very difficult and very easy tasks. See Appendix J.

Self-efficacy scores were submitted to a principal components analysis with oblique rotation. This analysis was selected because of its appropriateness for exploratory tests (Tinsley & Tinsley, 1987), and because it does not require orthogonality of factors. The principal components technique analyzes all types of variance between and among scores, and reduces as much error variance as possible. Scale means

were substituted for missing values. The initial communality estimates were squared multiple correlation coefficients.

On the first analysis, the oblique rotation failed to converge in 25 iterations. After this attempt, it was decided to compute a varimax rotation, and this analysis converged in 25 iterations.

4. Job Satisfaction. This measure, similar to one used in Pond and Geyer (1987), is a more faithful modification of the original scale (Quinn & Shepard, 1974) than Pond and Geyer's version. It contains in written form five questions from the original verbal interview protocol. These items are meant to measure "facet-free job satisfaction", defined by Quinn and Shepard as "a worker's general affective reaction to the job without reference to any specific job facets" (1974, p. 50). Items are answered using a response scale from one to five. Item responses are summed to produce a total score, with higher scores denoting greater satisfaction. The sole modification (aside from wording changes needed for written administration) is the addition of the word "qualified" in item 2. See Appendix K for a copy of this measure.

Quinn and Shepard (1974) reported summary statistics on this scale. With a diverse population of 2027 working adults, the internal consistency reliability was .72 (unchanged between administrations in 1969 and 1973); the mean was 3.79, standard deviation 1.00. Pond and Geyer (1987), using six items with 226 employees, reported a coefficient alpha of .90, mean of 3.49, and SD of .86.

Support for the validity of their job satisfaction measure is given by Quinn and Shepard. Items were based on

"previous factor analytic studies of job satisfaction and the response categories previously used to code an open-ended

interview question dealing with attributes of an 'ideal' occupation" (1974, p. 51).

They attempted to avoid what they perceived as historical problems in measuring job satisfaction: references to specific occupations or work environments, complicated language, and time-consuming administration. For the complete measure, they categorized factors of job satisfaction found in the extant literature in the following manner: promotional opportunities, content of job, supervision, financial rewards, working conditions, co-workers, and resources to perform job. These were incorporated into "facet-specific" items. Comment on the validity of the five facet-free items is brief:

"These five questions were not new, for they had, with various modifications, been used in many previous studies. Their precise origins are lost in antiquity." (p. 52)

It was decided to use only the facet-free items for the current study, since the seven specific factors mentioned above might contribute nuisance variance across sites.

The decision was made not to use the well-known and psychometrically sound Job Descriptive Index (Smith, Kendall & Hulin, 1969) to measure job satisfaction. Although the JDI is a good choice for many investigations, its negative scoring of characteristics associated with Conventional work environments may make it unsatisfactory for use in a study of congruence (Mount & Muchinsky, 1978). Subjects with conventional job tasks would necessarily appear dissatisfied, even if their values and abilities were highly congruent with their responsibilities.

5. Career Success. Career success items tap perceived overall career success, and presence and frequency of specific on-the-job success-related indicators. These indicators include above-average performance rating and salary increase; earlier than expected promotion; high-visibility job assignment; spontaneous praise from manager; and receiving financial support for professional development. Originally, an independent review of subjects' personnel files to corroborate this self-report measure was planned. This plan was not approved by the participating sites.

Other objective measures of career success used in recent studies include salary level (Schwartz et al., 1986) and management level (Forbes, 1987). These were thought to be too limited in their definition. A self-report measure of career success was used by Childs and Klimoski (1986); it covered factors such as career identification, career progression, budget responsibilities, and an objective measure of occupational prestige. This is an interesting composite measure, and it provides some justification for designing a global index of career success. However, Childs and Klimoski's measure shows an evident bias toward managerial tasks, which would put professionals outside supervisory roles at a disadvantage. Responses to career success items are summed to produce a total score, with higher scores indicating greater success. See Appendix L.

6. Vocational Preference. Individual Holland codes were determined using the VPI, a research instrument with eleven scales: the six Holland personality types, three trait scales, and two response scales--infrequency and acquiescence. It consists of 160 occupational

titles; respondents answer "yes" if the occupation interests or appeals to them, and "no" if the occupation is uninteresting or unappealing. No answer is given if the respondent is unsure. The eighth revision (Holland, 1985b) includes four item changes and wording revisions, largely to improve gender neutrality. Reported equivalency coefficients between the seventh and eighth revisions are .89 to .96 for males (n=60) and .93 to .97 for females (n=89). The VPI is one of several measures which yields Holland code types; others include The Self-Directed Search (Holland, 1985a) and the Strong-Campbell Interest Inventory (Hansen, 1985).

Seventh revision internal consistency statistics (KR 20) range from .85 to .91 for males (n's = 171-192) and .86 to .91 for females (n's = 161-187). Sixth revision test-retest reliability for the type scales is reported for two groups: 26 college freshmen at a one-year interval, .61 to .86; 636 male and female high school seniors at a four-year interval, .45 to .61. Split-half reliability for the type scales is reported also: 108 employed adult males, .28 to .86; 328 employed adult females, .72 to .89; 12,860 male and female college students, .64 to .89.

Holland (1985b) cites much research showing that VPI content is an acceptable operationalization of personality type. He states that the choice of an occupation is an expression of personality; that people perceive occupations in stereotyped ways; and that the choice of a favored occupation is a measure of an individual's insight and understanding. Concurrent validity tests show moderate to good discrimination between groups, including satisfied and unsatisfied

workers, graduate students' major fields, and high school students' career goals. Predictive tests are not as strong; vocational preference showed only a 35% to 60% accuracy in predicting students' choice of major and occupation over a two-year period (Holland, 1985b).

Results of construct validity studies on the personality scales are mixed. There is a moderate relationship to Strong-Campbell scales and to scales of the Kuder Occupational Interest Survey (Kuder, 1974). The VPI scales are weakly to moderately related to scales of the Minnesota Multiphasic Personality Inventory, Edwards Personal Preference Scale, California Personality Inventory, and the Omnibus Personality Inventory (Holland, 1985b).

For the current study, the VPI offered several benefits. It can be administered quickly and easily; directions are simple; manual scoring is very fast; and it avoids the self-scoring errors of The Self-Directed Search, which occur in up to 60% of administrations (J. C. Hansen, personal communication, May, 1987). Also, it generates little data beyond the personality codes, so subjects are not as likely to request extensive feedback on the results as with other measures. After a review of the statistical properties of the instrument, and consideration of administration factors, it was decided to use the VPI to obtain three-letter Holland type codes for individual subjects. The VPI appears in Appendix M.

7. Job Description. Subjects ranked descriptions of the six Holland job types (Holland, 1985c, pp. 36-40) in order of similarity to their own work environment. This was undertaken as a post-hoc exploration of the congruence-job satisfaction relationship, which was

originally significantly negative. Holland states that thorough descriptions of work environments should incorporate many pieces of data, including "the person's perception of his or her environment" (1985c, p. 36). This was an attempt to capture that perception. Since it was administered only once, there was no opportunity to test its reliability. See Appendix N.

Job-person congruence. This variable is the computed product of two variables mentioned above: vocational preference results and the assignment of Holland codes to all job descriptions. Three-letter codes for jobs were obtained from organizational job descriptions and from the Dictionary of Holland Occupational Codes (Gottfredson, Holland, & Ogawa, 1982) as described above; codes for subjects were obtained from individual vocational preferences. There are many congruence calculation techniques in use, with the number of congruence levels ranging from 2 to over 14,000 (Spokane, 1985). (Clearly, level of congruence is an artifact of empirical studies, computed for investigators' convenience. The construct as Holland describes it appears to be a continuous variable.) The agreement index of Wolfe and Betz (1981), using three levels, was selected for this study. They compared occupational and personality codes in the following manner:

Subjects whose personality and occupational choice codes were exactly alike, had the same first two letters in the same order, or had the same three letters but in different order were designated congruent. Subjects whose codes had the same first letter or had the first two letters of one code contained in any order in the second code were designated as partially congruent. All other subjects were designated as incongruent. (p. 47)

There were three reasons for using this index of congruence. First, a fair amount of variation was possible with this index system,

more so than with only two congruence levels (the choice of the majority of investigators). Second, the Dictionary of Holland Occupational Codes noted that first-letter code types for engineers vary across studies from I to R, even in the same engineering specialty (Gottfredson et al., 1982). With such predictable variation, it was considered unwise to use a two-level computation scheme which would reduce variability and depress congruence levels. Third, the risk of restricting some variation on this important variable, by using only three levels, seemed a reasonable tradeoff in view of the labor required to compute congruence on a large subject sample.

Analyses

Reliability. Cronbach interitem consistency and Pearson product-moment correlation coefficients were obtained on perceived opportunity career self-efficacy, and career success. Correlation coefficients were computed on data gathered at two time points, to provide a measure of test-retest reliability. Interitem consistency reliability on the three original scales was also performed with data from Site B. This is recommended by Dawis (1987) since scale performance is affected not only by item content but also by samples of respondents.

Descriptive statistics (e.g., mean, range, and standard deviation) were computed on the job satisfaction scores to compare sample to published norms.

Exploratory factor analysis. A factor analysis was performed on career self-efficacy results. First, Bartlett's test of significance was completed. Then an exploratory principal components analysis was

performed. Squared multiple correlations were used as the initial communality estimates, and the estimates were iterated. A varimax rotation was performed on all factors satisfying Kaiser's criterion.

Congruence. Congruence was originally computed using subjects' job descriptions, DHOC codes, and vocational preferences. Person-job congruence scores (full congruence, partial congruence, noncongruence) were then computed using job and person data. Values of 3, 2, and 1 were assigned to full, partial, or noncongruence respectively, using the agreement index of Wolfe and Betz (1981).

A second computation of congruence was also done, using the Environmental Assessment Technique (EAT) (Holland, 1985b, p. 40-41). EAT scoring is calculated by assessing the vocational preferences of every worker, computing frequencies of first-letter codes, and finding a modal three- or six-letter code for the work setting. This method uses no job codes: it compares each subject's code to the modal subject code in the work setting. Congruence is then computed in the same manner as described above. The rationale for this technique holds that individual characteristics (values, interests, attitudes) produce a work environment reflecting the personalities of the incumbents. Holland recommends its use when the raw congruence data are suspected to be incomplete.

A third computation of congruence was completed with 44 subjects' data. Incumbents coded their own jobs, using the job description scale; these were compared with individual codes to yield a third set of congruence scores. A three by three correlation matrix ($N = 44$) was

computed to explore the degree of similarity among the three computation procedures (DHOC, EAT, and individual ranking).

Because only 44 of the original 168 subjects had three separate congruence scores, congruence based on the individual ranking method could not be used in overall analyses. It was therefore necessary to select one congruence score from the two remaining procedures. The EAT method was chosen over the DHOC method. This was done because Holland (1985b) recommends using an environmental typing method that incorporates as much information as possible. It was decided that, since there was so much disparity between the modal person code (at both sites) and DHOC codes, it was a better risk to ignore the questionable job description data and accept Holland's hypothesis that person type contributes importantly to the characteristics of the work environment. A second rationale for this decision is the potential for error in the present DHOC - DOT system: that is, many positions (such as engineer and staff nurse) are assigned codes without regard for important features such as job setting. This might contribute to a classification method too gross for the level of detail needed in such computations.

Initial observation of data. Descriptive statistics were generated on all variables, and zero-order correlations among all variables were completed. These analyses were done on data from individual sites, and on the aggregate data. A plot of residuals and a distribution histogram were created for the criterion variable. One variable (ethnic status) was deleted from further analysis because of its low frequency.

Aggregated data. Combined data were entered in a multiple hierarchical regression analysis with job satisfaction as the criterion variable. After all other predictors were entered, site did not contribute significant variability. As a result, data were collapsed across sites for the remainder of the analyses.

Multicollinearity check. Correlated predictor variables were examined to check for multicollinearity. The variables of interest were: career self-efficacy, workforce tenure, career success, organizational mobility, age, sex, and education level. Following Lewis-Beck (1980), each variable was regressed on a combination of all other variables, to show that "none of the independent variables is perfectly correlated with another independent variable or linear combination of other independent variables" (p. 60). If any of the multiple correlation coefficients were close to 1.0, high multicollinearity would exist and the regression results could be compromised.

Multiple regression. Several assumptions for regression inferences were examined (Weiss & Hassett, 1982; Lewis-Beck, 1983). First, the assumption that the X-Y relationship is linear was examined. This regression line assumption was checked by visually examining the cluster of data points in scatterplots of variable pairs. No gross violations of linearity were observed. The next assumption was that the variances of Y-values are constant for all values of X. This assumption of homoscedasticity was checked by observing the configuration of data points for unequal scatter around an imaginary regression line. Attenuated or expanded scatter distributions at one end of the regression line would challenge this assumption. Third, the

independent variable should be uncorrelated with error; this was checked by observing the correlation table for significant relationships between demographic variables and job satisfaction. Variables such as sex, age, and education level can sometimes contribute systematic variation not related to the theoretical predictors under study. Fourth, perfect multicollinearity between predictor variables must not obtain. This condition occurs when there is a near-perfect correlation between two predictor variables, or between one variable and a combination of other variables. This condition is discernible when each variable is regressed on a combination of the other predictor variables. Simply checking for high intercorrelations between variables may not be sufficient (Lewis-Beck, 1983).

Other important conditions, some less easy to demonstrate, were also considered in the study design. Specification error should be minimized; that is, no relevant predictors should be excluded, and no irrelevant predictors should be included. The review of theoretical formulations and the trimming of the regression model were attempts at meeting these two conditions. Measurement error should be avoided through accurate instrumentation and techniques of data collection. The qualities of the scales--reliability, validity, and factor structure--and concern about privacy/confidentiality and method of administration contributed to avoidance of measurement error. Finally, the error term is assumed to be normally distributed. This assumption can be checked by observing the distribution of Y for normality. (The distributions of Y and e [error] are the same.)

Multiple regression on the combined data was performed, with job satisfaction as the criterion. Predictors were entered in three blocks: demographic (age, sex, education level, dual-career status); antecedent (career success, workforce tenure, and organizational opportunity); and finally theoretical (career self-efficacy and congruence). This order assured a conservative test of the theoretical predictors, allowing other potential predictors to explain as much variance as possible.

Post-hoc Analyses

Congruence. The failure of congruence to impact job satisfaction was disappointing. To test it a different way, new congruence variables were produced following Lewis-Beck's recommendation (1983). When an ordinal variable has (G) levels, Lewis-Beck suggests creating (G minus 1) dummy variables for use in regression analyses. New variables of High congruence and Medium congruence were entered into regression analyses, in hopes of enhancing the statistical variation across levels of the variable. There was no change in significance using this method. Next, congruence was tested as a moderator in the following manner: three separate regressions were mounted for the three congruence levels (high, medium, and low) with significant antecedent variables entered first, and career self-efficacy entered next, using job satisfaction as criterion.

In addition, a correlation matrix was produced to examine the relationships among the three congruence computation methods. This

would potentially provide support for the validity of congruence measures in the study.

Tests for Mediator Effects. Shortened regression analyses were performed to examine the effect of antecedent variables, perceived opportunity and career success, on job satisfaction. These analyses would demonstrate if either antecedent were mediated by self-efficacy; that is, if the effects of perceived opportunity or career success on job satisfaction were entirely explained by the operation of career self-efficacy. If the ability of either antecedent variable to predict job satisfaction were reduced to zero or near zero in a hierarchical regression equation after self-efficacy entered, this would be concluded. The procedure followed the recommendations of Baron and Kenny (1986).

First, an equation predicting job satisfaction was performed with all demographic variables entered in a block at Step One; at Step Two, perceived opportunity was entered. Controlling for demographic variables, perceived opportunity reached significance as a predictor of job satisfaction. Next, a new equation predicting job satisfaction was performed; at Step One, all demographic variables were entered. At Step Two, career self-efficacy was entered. It also reached significance in predicting job satisfaction. This completed Baron and Kenny's first stage--to show that each variable of interest is a significant predictor of the outcome variable.

At the second stage, the two variables of interest were entered in the same equation, one after the other. First, an equation predicting job satisfaction was produced with demographics entered in a block at

Step One, followed by career self-efficacy at Step Two, and finally perceived opportunity at Step Three. A fourth equation was performed, identical to the third, except that the order of entry was demographics at Step One, perceived opportunity at Step Two, and career self-efficacy at Step Three.

Identical analyses were then conducted, replacing perceived opportunity with career success.

Tests for Interaction Effects. The possible interaction of perceived opportunity and career self-efficacy in predicting job satisfaction was also tested. The rationale for this was drawn from previous research results showing that self-efficacy varied with other cognitively-derived constructs or structure of opportunity perceptions. Also, it was attempted since both variables had reached significance in the original hypothesis tests. It was thought that self-efficacy might be variously effective in predicting job satisfaction given individuals' beliefs about their career opportunities. A new variable was computed to test the possibility of an interaction between perceived opportunity and career self-efficacy.

Another post-hoc analysis involved a test for a possible interaction between level of congruence and perceived opportunity. This was undertaken because the beta coefficients in the previous analyses showed an interesting pattern: in the low congruence condition, the beta for perceived opportunity was almost zero; in the medium and high conditions, the betas were much larger and almost equal. This raised the interesting possibility that congruence level might act in a step-

function, or threshold, manner in potentiating other psychological variables.

CHAPTER IV

RESULTS

In this chapter, the results of congruence computations and statistical analyses will be presented. First, technical information on the three original scales is given. Measurement of job satisfaction, Holland type code, and congruence is then examined. Descriptive results are presented, then multicollinearity diagnostics and analyses of variance and multiple regression are described. The rationales for post-hoc analyses are also given.

Original Scales

Reliability statistics were computed on the novel measures completed at Site A. Table 4.1 shows internal consistency coefficients (coefficient alpha) and test-retest reliability coefficients for career success, perceived opportunity, and career self-efficacy.

Table 4.1

Scale Internal Consistency and Test-Retest Correlations - Site A

<u>n</u>	<u>Variable</u>	<u>Coefficient Alpha</u>
57	Career success	.84
56	P opportunity	.72
60	Self-efficacy	.89

Test-Retest Reliability

54	Career success	.81
55	P opportunity	.66
57	Self-efficacy	.69

Note. P opportunity - perceived opportunity

Test-Retest interval - 5 months.

Internal consistency coefficients for the novel measures at Site B were also computed. This is recommended by Dawis (1987) because sample results can vary substantially. The following results were obtained: career success, .90; perceived opportunity, .80; career self-efficacy, .95 (n 's = 87 to 99). These values show greater inter-item consistency than those from Site A. (See Table 4.2.)

Table 4.2

Scale Internal Consistency - Site B

<u>n</u>	<u>Scale</u>	<u>Coefficient Alpha</u>
94	Career success	.90
87	P opportunity	.80
99	Self-efficacy	.95

Note. P opportunity = perceived opportunity.

Individual item statistics were also produced to observe scale characteristics. The following discussion reflects Site B results (n 's = 87 to 99).

1. Career Success. Item means provide an index of how frequently each success event occurred to the respondents. Items 2K and 2B, "Made presentations at meetings", and "Received a higher performance appraisal

rating than others with whom I work", were the most frequent events at Site A. Items 2I and 2J, "Offered lateral reassignment" and "Offered a promotion sooner than expected", occurred least often. Correlations between item and total scores ranged from .14 (offered lateral reassignment) to .72 (received a higher than average salary increase). See Table 4.3.

Table 4.3

Item-Total Statistics - Career Success

Item	Item Mean	Item-Total Correlation	Alpha if Item Deleted
2A	2.00	.26	.84
2B	2.27	.68	.81
2C	1.04	.72	.81
2D	1.62	.48	.83
2E	1.29	.43	.84
2F	1.71	.52	.83
2G	1.95	.62	.82
2H	1.87	.41	.83
2I	.62	.14	.84
2J	.67	.46	.83
2K	2.21	.63	.81
2L	1.87	.60	.82

Note. Overall coefficient alpha = .84; n = 57

To assist in future norming, subjects at Site A were asked to select the five events most important in signalling career success in their workplace. These results appear in Table 4.4.

Table 4.4

Career Success Item Ranks

NUMBER ENDORSED	ITEM
55	Offered a promotion sooner than expected
53	Received an exciting or high-visibility job assignment
47	Received a higher performance appraisal rating than others with whom I work
31	Received a higher than average salary increase
30	Chosen to substitute when manager is away
29	Selected above others (for)...task force assignments
25	Received a step increase or merit increase
17	Spontaneous/voluntary praise from manager
11	Made presentations at meetings
9	Scheduled to go to workshops or seminars
6	Offered lateral reassignment
3	Received financial support for attending conferences

Note. Number Endorsing - total number of subjects selecting the item.

N = 62.

2. Perceived Opportunity. Item statistics for this scale were computed twice: once with all seven items, and once with the last five. This was done because Items 1 and 2 refer to actual events, while the others tap attitudes about such events. Item-total correlations on Items 1 and 2 were quite low (.13 and .14), and the scale alpha coefficient with seven items was barely lower than with five-- .71 versus .72. Items 1 and 2 were thus deleted from subsequent analyses. The item-total correlations for the revised POS appear in Table 4.5.

Table 4.5

Item-Total Statistics - Perceived Opportunity

Item	Item Mean	Item-Total Correlation	Alpha if Item Deleted
3A	2.30	.54	.65
3B	2.05	.48	.67
3C	2.40	.51	.66
3D	3.67	.58	.63
3E	1.90	.30	.74

Note. Overall coefficient alpha = .72; n = 56

3. Career Self-Efficacy. Unlike career success and perceived opportunity, this scale attempted to tap a single psychological construct. Anchors on this scale were 0-9; the smallest item mean was 4.45. The CTS achieved a coefficient alpha of .86. See Table 4.6.

Table 4.6

Item-Total Statistics - Career Self-Efficacy

Item	Item Mean	Item-Total Correlation	Alpha if Item Deleted
1	7.66	.36	.84
2	7.36	.20	.85
3	6.67	.02	.86
4	6.58	.43	.84
5	7.16	.48	.84
6	7.05	.57	.84
7	6.45	.22	.85
8	6.58	.24	.85
9	6.17	.45	.84
10	6.77	.50	.84
11	5.73	.48	.84
12	4.45	.21	.84
13	6.50	.10	.85
14	7.06	.24	.85
15	7.17	.47	.84
16	6.42	.31	.84
17	5.36	.50	.84
18	6.98	.53	.84
19	5.33	.35	.84
20	6.64	.50	.84
21	6.59	.61	.84
22	7.39	.61	.84
23	7.31	.35	.84
24	6.73	.27	.85
25	7.22	.39	.84
26	4.70	-.01	.86
27	6.55	.62	.83
28	6.58	.41	.84
29	6.68	.44	.84
30	7.19	.54	.84

Note. Overall coefficient alpha = .86; n = 64

A factor analysis was completed on the thirty-item self-efficacy scale. Review of the eigenvalues showed, and a scree plot confirmed, that a single factor was responsible for a large proportion of the variance (40.8%) in this measure. This is an acceptable proportion of variance accounted for (Tinsley & Tinsley, 1987). Therefore, it was concluded that the self-efficacy items in large part represented a single self-efficacy factor. Table 4.7 shows eigenvalues and the percentage of variance accounted for by each of six factors.

The self-efficacy scale obtained a coefficient of variation of .14, which represents the standard deviation divided by the mean. A range between .5 and .15 indicates adequate score variation (Snedecor, 1946, cited in Dawis, 1987).

Table 4.7

Career Self-Efficacy: Factor Analysis Summary

FACTORS	1	2	3	4	5	6
Eigenvalue	10.21	1.86	1.59	1.21	1.12	1.05
Percentage of						
Variance	40.8	7.5	6.3	4.8	4.5	4.2

Note. N = 166

The relation between self-efficacy scores and other measures was examined for indications of construct independence. As expected, significant correlations existed between career self-efficacy and the two antecedent variables, perceived opportunity ($r = .17$, $p < .05$) and career success ($r = .32$, $p < .01$). In addition, career self-efficacy was significantly correlated with workforce tenure ($r = .27$, $p < .01$). At first glance, it appeared that career self-efficacy might be a function of other variables. However, the multicollinearity diagnostic test provided support for its independence. In a multiple regression analysis, workforce tenure was the only correlated variable which entered as an efficient predictor of career self-efficacy ($\beta = .29$, $t = 4.27$). This analysis showed that career self-efficacy is not a function of the other theoretical variables with which it is correlated. In similar analyses, career self-efficacy did not enter as a predictor of career success or of organizational opportunity.

Aggregated Data

Results were collapsed across sites for most of the remaining analyses, since site did not contribute significant variability in a multiple regression with job satisfaction as the outcome variable, after all other predictors had been entered. (See below, Table 4.13.) It was not expected that results from the two sites would be similar, and their differences were not germane to the research questions.

Job Satisfaction

The mean for job satisfaction was not significantly different from that obtained from Quinn and Shepard's (1972) norm group of 2,027 workers. Means and standard deviations for these groups, and that of Pond and Geyer (1987) appear in Table 4.8.

Table 4.8

Job Satisfaction: Comparison of Results

	<u>Mean</u>	<u>SD</u>
Study Sample (n=168)	3.39	.99
Quinn & Shepard (n=2027)	3.79	1.00
Pond & Geyer (n=226)	3.49	.86

The skewness coefficient for job satisfaction was $-.61$, with more values falling in the right side of the distribution. This was confirmed by observing that the mean is 3.383 , with a score range of 1 to 5. The kurtosis coefficient was $-.63$, indicating a somewhat flattened but relatively even distribution of scores (Ghiselli, Campbell, & Zedeck, 1981).

Table 4.9 gives item means, item-total correlations, and coefficient alpha for job satisfaction scores at Site B.

Table 4.9

Item-Total Statistics - Job Satisfaction

Item	Item Mean	Item-Total Correlation	Alpha if Item Deleted
1	3.90	.83	.91
2	3.66	.81	.92
3	3.15	.83	.91
4	3.44	.85	.91
5	3.54	.82	.92

Note. Overall coefficient alpha = .93; n = 103

Congruence

VPI - EAT congruence was computed using the agreement index of Wolfe and Betz (1981), which produced three congruence levels (high, medium, low) based on the match between person and job type codes. The six type codes are Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. (See Chapter One for type code descriptions.) This yielded nonsignificant positive correlations with job satisfaction ($r = .01$ for Site A, $.17$ for Site B, $.11$ for aggregated data).

The variability in congruence was: for Site A, 10% high, 42% medium, and 46% low. For Site B, it was 31% high, 42% medium, and 25%

low. Interestingly, the modal vocational type code for both sites was IAR (Investigative-Artistic-Realistic), although the worksites and jobs seemed quite different.

A third exploratory congruence computation was done at Site B, comparing 44 incumbents' classifications of their jobs to their VPI codes, using incumbents' responses to the Job Description Survey. These results produced congruence levels lower than EAT, and slightly higher than DHOC. This effort was based on Holland's (1985c) suggestion to capture incumbents' perceptions of the characteristics of their own jobs, when research results seem confusing or contradictory. See Table 4.10 for comparisons of congruence results at Site B.

Table 4.10

Congruence Computations: Comparison of Results

	<u>DOT-DHOC*</u>			<u>EAT*</u>			<u>JDS**</u>		
	H	M	L	H	M	L	H	M	L
Number	3	21	80	33	44	27	4	14	26
Percent	2	20	76	31	42	25	9	31	59

Note. DOT-DHOC - Dictionary of Occupational Titles and Dictionary of Holland Occupational Codes; EAT - Environmental Assessment Technique; JDS - Job Description Survey rankings. Number - number of subjects at this congruence level; percent - percent of subjects at this congruence level. H - high, M - medium, L - low.

* : N = 104; ** : N = 44

Descriptive Results

Means, standard deviations, and score ranges were computed on all variables (see Table 4.11). Relative frequency of categorical and interval variables were also plotted (see Figure 4.1).

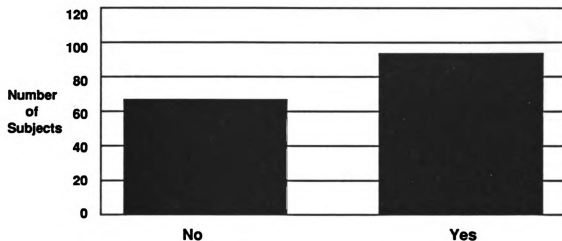
Table 4.11

Descriptive Results

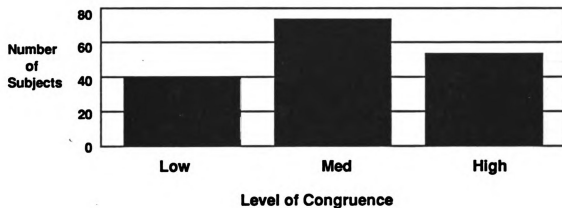
Variable	Mean	SD	Min.	Max.
1 Age range			0	8
2 Education level			2	4
3 Workforce tenure	15.49	9.41	1	42
4 Congruence	2.08	.72	1	3
5 Career success	1.71	.77	.00	3.75
6 P opportunity	2.49	.78	.00	4.00
7 Career SE	7.10	1.04	3.76	9.00
8 Job satisfaction	3.39	.99	1.00	5.00

Note. Age ranges are: 0 - under 25, 1 - 25-29, 2 - 30-34, 3 - 35-39, 4 - 40-44, 5 - 45-49, 6 - 50-54, 7 - 55-59, 8 - 60 or over. Education levels are: 1 - high school or below, 2 - some college, 3 - undergraduate degree, 4 - graduate work or degree.

P opportunity - perceived opportunity; Career SE - career self-efficacy

DUAL-CAREER STATUS

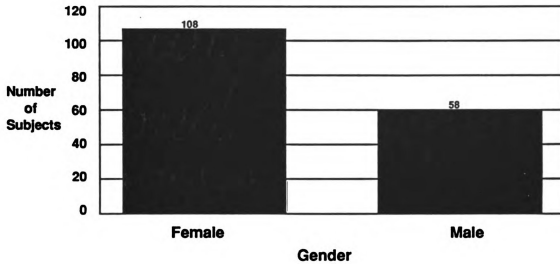
Note: N = 167

CONGRUENCE

Note: N = 165

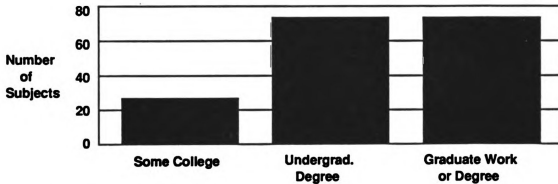
Figure 4.1. Relative Frequencies of Variables of Interest

Gender



Note: $N = 166$

Educational Level

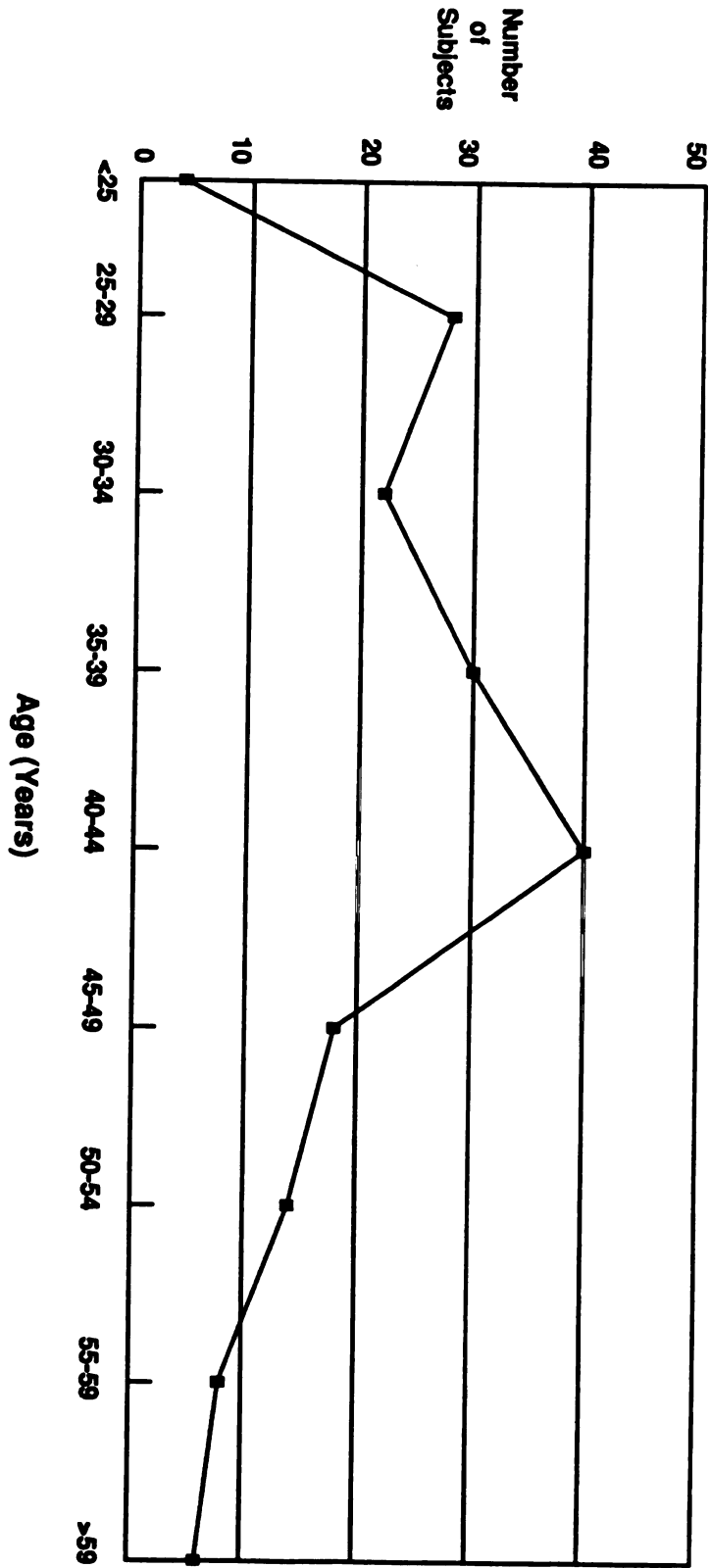


Note: $N = 163$

Figure 4.1 (cont'd)

Figure 4.1 (cont'd)

Age Range



Note: N = 168

Research Hypotheses 1 through 4. Zero-order correlations among all variables revealed significant positive correlations ($p < .01$) for the following variables: age and workforce tenure; age and career success; age and career self-efficacy; gender (female) and career self-efficacy. Significant positive correlations ($p < .05$) obtained between the following: gender (female) and age; and gender (female) and career success. A significant negative correlation ($p < .05$) obtained between education level and workforce tenure, and education level and gender. The latter result indicates that men have reached higher levels of education than did women in this sample. Workforce tenure and organizational opportunity were significantly positively correlated with career success, and with career self-efficacy at the $p < .01$ level. Job satisfaction showed significant ($p < .01$) positive correlations with organizational opportunity, career success, and career self-efficacy. See Table 4.12.

Table 4.12

Pearson Product - Moment Correlations Among Variables of Interest

	1	2	3	4	5	6	7	8	9	10
1. Age										
2. Sex	.17									
3. DCS	-.07	.10								
4. WT	.85**	.08	-.10							
5. EL	-.12	-.19*	.09	-.18*						
6. PO	.02	.10	-.02	.01	.02					
7. PO X CSE	.12	.18*	-.05	.11	-.04	.93**				
8. CS	.31**	.14	.01	.28**	.05	.19*	.27**			
9. Congruence	-.06	-.13	.09	-.03	-.07	.15	.10	.07		
10. CSE	.23**	.27**	-.04	.27**	-.12	.17*	.51**	.32**	-.04	
11. JS	.01	.13	-.01	-.01	-.03	.28**	.40**	.35**	.14	.42**

Note: DCS = Dual Career Status

WT = Workforce Tenure

EL = Education Level

PO = Perceived Opportunity

CS = Career Success

CSE = Career Management Self-Efficacy

JS = Job Satisfaction

*: $p \leq .05$ **: $p \leq .01$

For Dummy Coded Variable Gender, 0 = Male, 1 = Female

Dual-career status and congruence showed nonsignificant correlations with all demographic and theoretical variables, and with each other. This result was unexpected, since both were hypothesized to predict job satisfaction. To explore the significance of dual-career status in a different way, two levels of dual-career status (yes and no) were established. They were entered as separate predictors of job satisfaction, along with all other predictors, in new multiple regression equations. No significance was reached for either level of dual-career status. However, it was included in several other analyses mentioned below.

Preparation for Multiple Regression Analyses

Each predictor variable was regressed on a combination of all other correlated predictors to investigate for multicollinearity. Variables were entered in a forward fashion with an F-to-enter probability of .05. No regression coefficients were worrisome, with the exception of age regressed on workforce tenure ($R^2 = .73$). These variables would be expected to covary, since length of time in the workforce would naturally increase with age. Age was omitted in a second analysis to compare the error term to the original regression model. If the standard error of estimate were greater in the model including age, that would argue for eliminating the age variable (see below, Tables 4.14 and 4.15).

A normal probability plot of standardized residuals on the criterion variable, job satisfaction, revealed all points closely

clustered around the diagonal. A histogram of residuals approximated a normal curve.

Five scatterplots were visually examined. These consisted of the five predictors correlated with job satisfaction, plotted against job satisfaction. In all cases, no gross non-linear trends were observed.

Multiple Regressions Predicting Job Satisfaction

Research Hypotheses 5 and 6. The first multiple regression analysis was computed using all predictor variables, entered in four blocks. The first block included all demographic variables: age, gender, education level, and dual-career status. The second block consisted of antecedent theory-predicted variables: workforce tenure, perceived opportunity, and career success. The two main theoretical constructs, career self-efficacy and congruence, were entered in the third block. This order was used as a conservative test of the main constructs: demographic and antecedent variables were allowed to account for as much variance as possible before self-efficacy and congruence were entered. Site was entered last, since location differences were of little interest. This analysis revealed (as expected from correlation tests) no predictive utility for dual-career status or congruence. T-ratios over 2.00 indicate significant slopes: only three variables--perceived opportunity, career success, and career self-efficacy--exceeded this value. The squared multiple regression coefficient (R^2) for this model was .34. See Table 4.13.

Table 4.13

Hierarchical Regression Predicting Job Satisfaction: A Test of Site

Predictor set	Step	β	SE	R	R ²	F change chg
Demographics	1			.14	.02	<1.00
Dual-career status		-.07	.07			
Age		.01	.08			
Education level		-.01	.08			
Gender		.13	.08			
Antecedents	2			.45	.18	11.31***
P opportunity		.21	.07			
Career success		.37	.08			
Workforce tenure		.01	.14			
Theoretical Constructs	3			.58	.13	14.42***
Congruence		.07	.07			
Career self-efficacy		.39	.07			
Site	4	-.04	-.10	.58	<.01	<1.00

Note. N = 155. The following variables were dummy coded: Age (0 = under 25, 1 = 25-29, 2 = 30-34, 3 = 35-39, 4 = 40-44, 5 = 45-49, 6 = 50-54, 7 = 55-59, 6 = 60 or over); Gender (0 = Male, 1 = Female); Education level (1 = High school or less; 2 = Some college; 3 = Undergraduate degree; 4 = Graduate work or degree); Dual-career status (0 = no, 1 = yes). P opportunity = perceived opportunity. SE = standard error of

beta coefficient. Standardized beta weights given for each variable in the full model.

*** $p < .001$.

A revised model was then tested. Workforce tenure was placed in the first block, since it could be considered a demographic variable. Age was removed, since it showed high multicollinearity with workforce tenure. Job tenure and organization tenure also entered in this block. (These last two variables, obtained for convenience, were not hypothesized to affect job satisfaction.) In the first block, the F change was small and not significant. Antecedent variables were entered in the second block. Here, career success and perceived opportunity remained efficient predictors. Career self-efficacy, entered in the third block, demonstrated significance. Congruence did not contribute significantly to the analysis. Overall, 36% of the variance in job satisfaction was accounted for by this model ($R^2 = .36$). See Table 4.14.

Table 4.14

Hierarchical Regression Predicting Job Satisfaction: Trimmed Model

Predictor set	Step	β	SE	R	R ² chg	F change
Demographics	1			.17	.03	<1.00
Dual-career status		-.08	.08			
Job tenure		-.07	.10			
Gender		.13	.08			
Education level		.01	.08			
Workforce tenure		-.07	.10			
Org'l tenure		.15	.12			
Antecedents	2			.47	.19	17.79***
P opportunity		.21	.07			
Career success		.37	.07			
Theoretical constructs	3			.60	.14	16.01***
Congruence		.09	.07			
Career self-efficacy		.42	.07			
Site	4	.01	.10	.60	<.01	<1.00

Note. N = 155. The following variables were dummy coded: Age (0 = under 15, 1 = 25-29, 2 = 30-34, 3 = 35-39, 4 = 40-44, 5 = 45-49, 6 = 50-54, 7 = 55-59, 6 = 60 or over); Gender (0 = Male, 1 = Female); Education level (1 = High school or less; 2 = Some college; 3 = Undergraduate degree; 4 = Graduate work or degree); Dual-career status (0 = no, 1 =

yes). Org'l tenure = organizational tenure. P opportunity = perceived opportunity. SE = standard error of beta coefficient. Standardized beta weights given for each variable in the full model.

*** $p < .001$.

To test the hypothesis that high multicollinearity existed, a slightly different model was then produced. Age was restored to the demographic block. The R^2 was almost identical (.36), and the standard error of estimate was .8286, compared with .8261 for the model omitting age. Therefore, it appeared that the correlation between age and workforce tenure did not contribute substantially to the standard error in this equation. See Table 4.15. In any case, age was deleted from all subsequent analyses.

Table 4.15

Hierarchical Regression Predicting Job Satisfaction: Age Restored

Predictor set	Step	β	SE	R	R ²	F change chg
Demographics	1			.17	.03	<1.00
Age		-.03	.10			
Dual-career status		-.08	.08			
Education level		.01	.08			
Gender		.13	.08			
Job tenure		-.08	.10			
Organization tenure		.12	.12			
Antecedent Variables	2			.47	.19	11.98***
P opportunity		.21	.07			
Career success		.37	.07			
Workforce tenure		-.11	.15			
Theoretical constructs	3			.60	.14	15.88***
Congruence		.09	.07			
Career self-efficacy		.42	.07			
Site	4	.01	.10	.60	<.01	<1.00

Note. N = 155. The following variables were dummy coded: Age (0 = under 15, 1 = 25-29, 2 = 30-34, 3 = 35-39, 4 = 40-44, 5 = 45-49, 6 = 50-54, 7 = 55-59, 6 = 60 or over); Gender (0 = Male, 1 = Female); Education level (1 = High school or less; 2 = Some college; 3 = Undergraduate

degree; 4 = Graduate work or degree); Dual-career status (0 = no, 1 = yes). SE = standard error of beta coefficient. P opportunity = perceived opportunity. Standardized beta weights given for each variable in the full model.

*** $p < .001$.

Post-hoc Analyses

Perceived opportunity. Shortened regression analyses were performed to examine the effect of the antecedent variable, perceived opportunity, on job satisfaction. These results showed that perceived opportunity still accounted for important variance after controlling for the effect of career self-efficacy, and that career self-efficacy was a significant predictor of job satisfaction after perceived opportunity had been accounted for. Therefore, it could be concluded that the effect of perceived opportunity on job satisfaction was not mediated by career self-efficacy. Indeed, although perceived opportunity was hypothesized as a contributor to the development of self-efficacy in career management, it still was able to independently predict job satisfaction with the present sample.

Career Success. Identical analyses were then conducted, replacing perceived opportunity with career success. As with the first antecedent variable, career success had an independent contribution to the prediction of job satisfaction, after controlling for demographics and career self-efficacy. Therefore, it can be concluded that, for this

sample, the effects of career success on job satisfaction were not entirely mediated by career self-efficacy.

Congruence. A correlation matrix was produced to observe the relations between DHOC, EAT, and JDS methods of computing congruence. The number of cases was 44, since this was the total number of usable responses from Site B on the job description questionnaire. No significant correlations were found in this analysis. See Table 4.16 for these results.

Table 4.16

Zero-Order Correlations among Three Congruence Computation Methods

	1	2	3
1 <u>DHOC</u>		-.15	.14
2 <u>EAT</u>			-.22
3 <u>JDS</u>			

Note. DHOC - Dictionary of Holland Occupational Codes; EAT - Environmental Assessment Technique; JDS - Job Description Survey.

N = 44

All correlations are nonsignificant.

Results of three hierarchical regression analyses based on level of congruence were also examined. Predictor variables were perceived opportunity, career success, and career self-efficacy. These results suggest that congruence had an indirect effect on the prediction of job satisfaction: when congruence was low, the endogenous or "internal" predictors (perceived opportunity and career self-efficacy) failed to reach significance. When congruence was medium or high, these endogenous variables significantly predicted job satisfaction. Table 4.17 gives values for these analyses.

Table 4.17

Hierarchical Regression Predicting Job Satisfaction: A Comparison
Across Levels of Congruence

Predictor Set	Step	β	R	R ² Change	F Change
<u>Low Congruence:</u> n = 41					
Perc'd. Oppty.	1	-.01	.00	.00	<1.00
Career Success	2	.28	.28	.12	5.17*
Career SE	3	.17	.14	.02	<1.00
<u>Medium Congruence:</u> n = 74					
Perc'd. Oppty.	1	.28	.15	.15	12.72***
Career Success	2	.21	.22	.07	6.63**
Career SE	3	.32	.32	.10	9.91***
<u>High Congruence:</u> n = 50					
Perc'd. Oppty.	1	.25	.10	.10	5.05*
Career Success	2	.23	.19	.10	5.56*
Career SE	3	.30	.28	.09	5.40*

Note. Perc'd. Oppty - Perceived Opportunity; SE - Self-efficacy.

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

Test for interaction: low congruence and perceived opportunity.

Because the beta coefficient for perceived opportunity in the low congruence condition was small compared to those in the medium and high conditions, a further analysis was produced. A centered dummy variable for low congruence was computed, and it was used in interaction with perceived opportunity in a regression on job satisfaction. It was entered after all other predictor variables, including congruence. This new interaction variable was insignificant, so it was deleted from further consideration.

Test for interaction: perceived opportunity and self-efficacy. A

new variable was computed to test the possibility of a meaningful interaction between perceived opportunity and career self-efficacy. It could be that persons who see little chance for mobility in their present setting have low job satisfaction even if their efficacy beliefs are strong. This test proved significant: the interaction variable contributed significant variance to the prediction of job satisfaction after the other predictors had entered into the equation. See Table 4.18.

Table 4.18

Hierarchical Regression Predicting Job Satisfaction: Interaction
Variable (Perceived Opportunity by Career Self-Efficacy)

Predictor set	Step	β	SE	R	R ² chg	F change
Demographics	1			.15	.02	<1.00
Dual-career status		-.04	.08			
Education level		-.01	.08			
Gender		.13	.08			
Job tenure		-.10	.10			
Organization tenure		.07	.10			
Antecedent Variables	2			.45	.17	11.53***
P Opportunity		.21	.07			
Career success		.35	.08			
Workforce tenure		-.14	.10			
Theoretical Variables	3			.57	.12	14.14***
Career self-efficacy		.38	.07			
Congruence		.12	.07			
Interaction	4			.58	.02	3.69*
PO X CSE		.85	.44			
Site	5	.04	.10	.58	.01	<1.00

Note. N = 158. The following variables were dummy coded: Gender (0 = Male, 1 = Female); Education level (1 = High school or less; 2 = Some college; 3 = Undergraduate degree; 4 = Graduate work or degree); Dual-career status (0 = no, 1 = yes). P opportunity = perceived opportunity; PO X CSE = interaction of perceived opportunity and career self-efficacy. SE = standard error of beta coefficient. Standardized beta weights given for each variable in the full model.

*** $p < .001$; ** $p < .01$; * $p < .05$

Review of Hypotheses

Based on these results, the validity of the study hypotheses can be considered.

H1. Dual-career status will be negatively associated with perceived opportunity. This hypothesis was not supported; this correlation was insignificant.

H2. Workforce tenure will be positively correlated with congruence. This also did not occur: congruence failed to correlate significantly with any variable.

H3. Career success event frequency will be positively correlated with career self-efficacy, lending support to its status as an antecedent variable. This correlation coefficient was .30, $p < .01$.

H4. Perceived opportunity will be positively correlated with career self-efficacy and with congruence. The first correlation coefficient was .17, $p < .01$; the second was nonsignificant.

H5. After demographic and antecedent variables are accounted for, career self-efficacy will contribute unique incremental variance to the prediction of job satisfaction. Career self-efficacy was the most efficient predictor, showing significance beyond the .001 level in all regression analyses.

H6. After demographic and antecedent variables are accounted for, congruence will contribute unique incremental variance to the prediction of job satisfaction. This hypothesis was not supported, since congruence failed to correlate significantly with any variables.

The implications of these findings, and those of the post-hoc analyses, will be discussed in the final chapter.

CHAPTER V

DISCUSSION OF RESULTS, LIMITATIONS, AND IMPLICATIONS

In this chapter, the purpose of the study will be restated and the major findings summarized. Issues of construct operationalization and subject sampling will be discussed, and results of analyses among the variables will be reviewed in light of other recent findings. Specific attention will be given to the computations of congruence, with suggestions for enhancing that process. Rationales and discussion of post-hoc analyses will be provided. Prediction of job satisfaction, and its implications for adult workers and organizations, will be addressed. Limitations of the study, and its contribution to present knowledge and inquiry, will be reviewed. Finally, suggestions for future research in instrumentation, theory testing, and applications will be proposed.

Intent of the Study

Given the impact of recent events--reduced job mobility, more dual-career couples, and the mid-career population bulge--on adults' working lives, two theoretical constructs which purport to predict job satisfaction were examined. These two constructs, job-person congruence and career self-efficacy, were tested along with theory-derived antecedents in a multiple regression study of job satisfaction. Four novel measures were constructed in support of this project. The contribution of job satisfaction to the overall quality of workers'

lives was assumed to be an important factor in the prevention of workplace stress and other mental health problems, and in the vitality and productivity of U.S. organizations.

Major Findings. Of the two main theoretical constructs, self-efficacy alone was a unique, significant predictor of job satisfaction. Congruence, however, played an important moderator role: when congruence was low, otherwise significant variables failed to predict job satisfaction. Further, an interaction effect was found between perceived opportunity and career self-efficacy: depending upon the level of mobility perceived, career self-efficacy variously predicted job satisfaction.

No demographic variables were significantly correlated with job satisfaction. Several significant relationships did obtain with other variables in the sample, however: men had higher levels of education than women; women were older; and women reported greater career self-efficacy relative to men. Significant correlations also obtained between several other sets of predictor variables: age and career self-efficacy; workforce tenure and career success; workforce tenure and career self-efficacy; perceived opportunity and career success. The outcome variable, job satisfaction, was significantly positively correlated with perceived opportunity, career success, and career self-efficacy.

Operationalizing Constructs

In this section, the reliability and validity characteristics of the study measures are examined.

Validity. Development of four novel measures was necessary to conduct this study, and success in construct operationalization can be judged only tentatively here. This is so because validity checks are largely absent, and reliability statistics are available only on small samples. Nonetheless, some efforts at validation were made. The perceived opportunity scale had a category titled "Other", to stimulate subjects' own contributions to the list of factors affecting perceived opportunity. This was used by only seven of sixty-four subjects at Site A, suggesting that the list of items was fairly inclusive.

The career self-efficacy scale was designed with an eye to self-efficacy's main tenets, and with reference to Hackett et al.'s (1985) taxonomy of career competencies. Items covered all but one of the taxonomy categories. Factor analysis lent support to its construct homogeneity. Studies of construct validity such as those recommended by Robbins (1985) could clarify the usefulness of this scale.

The above two measures were reviewed by managers from three organizations for face and content validity. The perceived opportunity scale incorporated only demographic factors, so did not account for perceptions of opportunity based upon factors such as workplace skills and experience. The job description scale, used at Site B to recompute congruence, had adequate content validity, but its construct validity

and reliability are untested. Also, the face validity must be improved, since a number of subjects misunderstood the directions for ranking items.

The absence of high multicollinearity among the first three measures supports their construct independence. The presence of positive correlational links between some variables bears discussion, however. The significant correlation between career success and self-efficacy could be explained by the presumed function of success as an antecedent to self-efficacy. In addition, this relationship could be seen as an "apples and oranges" comparison. The career success measure is a frequency list of externally verifiable events, while career self-efficacy is proposed as a psychological or internally constructed variable.

The relationship between career success and perceived opportunity could also be understood in two different ways. First, these two variables are presumed to contribute to formation of self-efficacy. As such, their correlation is understandable. Second, the correlation can also be seen as apples and oranges: career success being an external, and perceived opportunity an internal variable.

Discriminant validity for self-efficacy. Several studies provide some evidence of the discriminant validity of the self-efficacy construct in academic and career choice domains. Taylor and Popma (1990) found no relationship between career decision-making self-efficacy (CDMSE) and career salience in college students. They also found a moderate negative relationship between CDMSE and locus of control (with low scores denoting internal locus of control). Hackett,

Betz, O'Halloran, and Romac (1990) found that task interest was not significantly correlated with self-efficacy for traditional occupational choices (but the correlation was significant for the nontraditional choices variable).

Reliability. Novel measures demonstrated adequate reliability in most instances: internal consistency values for the three measures ranged from .72 to .86; test-retest reliability at a five-month interval ranged from .66 to .81. This interval length, not under the investigator's control, may have contributed to these somewhat lower-than-expected values.

Factor analysis of the career self-efficacy measure revealed a single factor responsible for a large proportion of the variance. Internal consistency for the job satisfaction measure achieved a satisfactory level (Nunnally, 1978, p. 230). The job satisfaction scale mean did not differ significantly from the published norms.

Subjects

As mentioned in Chapter One, many studies of vocational constructs have failed to sample working adults. Given the delays and challenges of gathering data in organizations, it is now clearer to this investigator why that might be so. However, the utility of going to the source appears to outweigh the procedural disadvantages. In fact, the study required employed subjects: it would have been impossible to operationalize antecedent variables such as career success and perceived opportunity with a non-working population.

Sampling. The study design originally called for a systematic random sampling technique, which was later discarded. Available populations were too small to attempt random sampling. For this reason, subjects were voluntary participants. The only information about nonparticipants, cited in Chapter Three, was their job category. At Site A, a majority of available professionals (56%) and a minority of available managers (47%) participated. It is possible that, because of the high interest in new-hire job turnover at this site, managers believed their participation was unimportant. At Site B, employees in direct patient care settings had lower participation rates than those in management, research, and outpatient positions. This could imply that more physically demanding or time-sensitive work settings (such as operating rooms and intensive care units) yield lower response rates for an optional paper-and-pencil survey packet.

It is also possible, however, that nonresponders differed from responders on one or more study variables. These differences could have influenced individuals' decisions about voluntary participation. The generalizability of the present results is in any event limited because of lack of random sampling.

Relations among Study Variables

This section will discuss the outcomes of the research hypotheses H1 through H6, then will address further issues explored in post-hoc tests. Relations among antecedent and theoretical variables will be examined in view of their theory-expected performance.

H1. Dual-career status will be negatively associated with perceived opportunity. Partners in dual-career couples were expected to perceive (and have) fewer opportunities for mobility. It was assumed that they would seek and accept fewer job changes, given their family commitments. Further, even if perceived mobility did not suffer, they were expected to show lower congruence, since job-person fit should increase with time and actual job mobility (actual mobility being presumed to be lower). This hypothesis was not supported: indeed, dual-career status did not correlate significantly with any other variable studied, and did not contribute to the prediction of job satisfaction.

This measure was originally conceived as purely a demographic entity, based on status of the subject in a variety of categories, e.g., gender and ethnic background. Non-demographic factors such as organizational commitment, job performance, and intention to quit were not included in the conceptualization of perceived opportunity. It may be that the construct is broader than originally conceived, and if the measure were redesigned, different findings might result.

H2. Workforce tenure will be positively associated with congruence. This relation was posited because determining one's own fit with a position requires time; locating and changing positions requires time; and thus congruence is presumed to increase with time. It was decided to use tenure in the workforce instead of age, to allow for subjects who might have gaps in employment. Workforce tenure was considered an important antecedent of congruence, especially given recent conditions of low mobility, and was expected to contribute to the

prediction of job satisfaction through the congruence variable. This did not occur, so the congruence model was not supported by this result.

Workforce tenure did show a significant negative correlation with education level. This could help in explaining the failure of the tenure-congruence hypothesis. It might be that opportunities for improving the job-person match end early in the careers of some professionals possessing the minimum educational credentials. Co-workers who pursue further degrees may move on, and those who remain may retain less harmonious job matches, failing to achieve higher congruence even as their tenure in the workforce increases.

Workforce tenure showed significant positive correlations with career success and career self-efficacy. The former is understandable, since the number of career success events likely builds up over time. The latter relationship is explainable with a caveat. Persons with a fairly successful job history, marked by positive career experiences, would be expected to report increases in career self-efficacy over time in the workforce. Likewise, persons who meet with frustration and repeated disappointments in the career arena would likely develop increasingly negative efficacy percepts over time. However, the tenure-efficacy correlation might not fully account for the percepts of those whose career would be termed "checkered": marked by important successes and failures, with approximately even doses of each over the course of their career. Perhaps a measure of career disappointments or failures might illuminate this relationship further.

H3. Frequency of career success events will be positively associated with career self-efficacy. This hypothesis was supported,

with a significant correlation beyond the .01 level. This lends support to the standing of career success as an antecedent of career self-efficacy. Bandura's (1986) postulates suggest that prior performance accomplishments are the most important factors in the development of self-efficacy, so this finding is supportive of the theory being tested.

H4. Perceived opportunity will be positively associated with career self-efficacy and with congruence. It was anticipated that beliefs about job mobility would be related to both theoretical variables. In the self-efficacy framework, perceived opportunity can represent an outcome expectation: if one is confident of performing well at work in the face of challenges (self-efficacy), opportunities for new tasks and more desirable positions might appear. In the congruence framework, perceived opportunity could be associated with ongoing willingness to seek better job-person matches: the higher one's expectations for successfully changing jobs, the greater likelihood of the attempt, and the better the chance for increasing congruence. Only the first of these relationships, perceived opportunity with self-efficacy, was significant.

If perceived opportunity is viewed as an outcome expectation, the positive opportunity-efficacy correlation is supportive of self-efficacy theory. Specifically, Bandura (1986) states

"In social, intellectual, and physical pursuits, those who judge themselves highly efficacious will expect favorable outcomes, self-doubters will expect mediocre performances of themselves and thus negative outcomes." (p. 392)

Results consistent with this view were obtained by Rotberg et al. (1987), who found that expected career self-efficacy predicted total

number of career options considered by community college students.

The lack of intercorrelation between perceived opportunity and congruence could have at least two explanations. First, it might be not the perception of opportunity, but the actual structure of opportunity, that is associated with job-person congruence. That is, no matter how mobile people believe themselves to be, the actual chances to make job changes could be more important in understanding how congruence develops. The original design of this study proposed the gathering of an independent measure of actual mobility from human resource files. This was not possible, so a measure of perceived mobility was devised. The differences between these two variables at a given site may be large.

A second explanation for the failure of this hypothesis could be measurement-related. The limitation of the perceived opportunity scale has already been mentioned; perhaps a broader set of items would result in a different finding. Also, the congruence variable has only three levels; it might be that a congruence index with more variation would perform differently in a correlation analysis. (The latter issue could appropriately be raised regarding the performance of congruence throughout the study. See below, Tests and Measures of Congruence, for a discussion of this topic.)

In a recent study, a four-item measure of perceived employment alternatives was used by Gottfredson and Holland (1990) in a study of newly hired bank tellers. This construct, similar to the perceived opportunity variable used in the present study, failed to achieve significance in a multiple regression study of employment persistence at

a four-month follow-up. Employment persistence, similar to workforce tenure, can be seen as an antecedent to congruence. Perceived employment alternatives in the Gottfredson and Holland study therefore failed to contribute to an antecedent variable in the congruence model. This result is partially consistent with the present findings.

H5. After demographic and antecedent variables are accounted for, career self-efficacy will contribute unique incremental variance to the prediction of job satisfaction. This hypothesis was supported beyond the .001 level in multiple regression analyses. This provides important support for self-efficacy theory, showing that, for this sample, unique variance in a major outcome variable is accounted for by this theoretical construct. Results similar to this were reported by Fretz et al. (1989): enhanced self-efficacy for adjusting to retirement predicted low preretirement anxiety and depression.

H6. After demographic and antecedent variables are accounted for, congruence will contribute unique incremental variance to the prediction of job satisfaction. This hypothesis was not directly confirmed in the first regression analyses. This is partially inconsistent with a recent study by Meir, Melamed, and Abu-Freha (1990), who found positive intercorrelations between two circumscribed congruence variables and several measures of career-related satisfaction. Of note, however, is their samples' insignificant relationship between overall vocational congruence and work satisfaction. Also, in this study, congruence was computed using only the first two letters in the typology (e.g., IE instead of IER). Gottfredson and Holland (1990) found a link between congruence and expected job satisfaction in a four-month longitudinal

study of newly-hired bank tellers. However, this study did not operationalize actual job satisfaction with longer tenured workers.

Congruence served an important moderating role in the prediction of job satisfaction in subsequent analyses. For high and medium congruence subjects, career success, perceived opportunity and self-efficacy significantly predicted job satisfaction. With low congruence subjects, only prior career success events predicted job satisfaction. This suggests that, in the presence of adequate congruence, the intrapersonal or "psychological" variables were strong enough to operate in the expected direction. It may be that congruence potentiated other psychological variables in the prediction of job satisfaction. The comment by Wiggins (1984) that "the VPI could be used to predict low levels of job satisfaction for persons whose (job-person) codes are clearly not congruent" is relevant here. Another related finding is reported by Elton and Smart (1988), who found that high congruence women in a Social work environment (such as nursing) had lower satisfaction with income, fringe benefits, and promotion opportunities than low congruence women.

With a poor match between subjects' attitudes, preferred skills, and values, and the characteristics of the work setting, positive percepts about work failed to contribute to a positive affective reaction. In fact, with low congruence subjects, only the external feedback of tangible success events predicted satisfaction with the job. It appears that job satisfaction is more often present among workers in congruent work settings who have allies such as self-efficacy in their psychological toolkit, than among those workers whose congruence with

their work environment is low and who must therefore rely on external sources for their attitudes about work.

Collapsing data across sites. Research site failed to reach significance as a regression predictor after all other predictors had been entered. Site selection was haphazard; eleven sites to which the investigator had access received study proposals, and data were gathered at the two organizations who expressed interest. Coincidentally, they were both U.S. government agencies. The study design did not call for specific types of organizations; it was expected that investigator access and organizational interest would determine the site.

It could be argued that organizations interested enough to consent would be more similar to one another than those not interested, thus reducing the potential variation in study variables. Specifically, it could be that worksites with serious concerns about job satisfaction might be more willing to sponsor this study than those with no such concerns. If this were the case, generalizability of these findings would be correspondingly limited. Although this may be actually true, the reasons that the two organizations gave for sponsoring the study were different. Site A was interested in the implications of the findings for their recruitment of college graduates, and for their high turnover after a short time on the job. Site B expressed curiosity about the organization culture and the differences in values and interests apparent in their workforce. On the surface, then, it did not appear as if decision-makers at the sites had similar rationales for participating in the study.

Because of the nonsignificance of site, it was decided to aggregate the data for most analyses, which allowed for a larger sample size and increased the chances for significant findings. Reliability analyses were the main exception to data aggregation.

Post-Hoc Analyses

Tests for mediating effects. Two antecedent variables, perceived opportunity and career success, were found to operate independently of career self-efficacy in the prediction of job satisfaction. Self-efficacy in turn accounted for significant variance after controlling for these two variables. These results add support to the usefulness of the antecedent variables in the study of self-efficacy; and provide support for the robustness of self-efficacy as it was measured here.

Test for interaction: perceived opportunity and self-efficacy. The interaction between perceived opportunity and career self-efficacy explained significant incremental variance in the prediction of job satisfaction. This implies that strong efficacy beliefs may not be associated with satisfaction when the structure of opportunity appears limited. For this sample, it was shown that high career self-efficacy does not predict job satisfaction when perceived mobility is low. The construct-related constraints of the perceived opportunity variable have been mentioned; it represents beliefs about mobility based only on the subject's demographic characteristics. This was done by design, to tap perceptions about mobility and acceptance of diversity in the workplace. This finding could provide an environmentally-based rationale for the

limitations of self-efficacy's role in explaining satisfaction with one's job. If a person believes that, by reason of age, ethnic status, or level of education, she or he has little chance for job mobility, job satisfaction might suffer even if career self-efficacy percepts are strong.

Gottfredson and Holland (1990) hypothesized that perceived employment alternatives would moderate the effect of congruence on job satisfaction. They used a four-item scale of "perceived employment alternatives" to test for its moderating effect. They found no support for this hypothesis in a multiple regression analysis. Possible limiting factors in their study included the use of the JDI with employees in a Conventional setting (see Chapter Three, Job Satisfaction Survey); and the measurement of expected job satisfaction after only four months on the job. No multiple regression was attempted with congruence predicting job satisfaction.

Bandura's (1991) statement about external constraining factors is a propos here:

Perceived environmental constraints and opportunity structures alter how efficacy and outcome information are cognitively processed. (p. 159)

Measures and Tests of Congruence. The computation of Holland congruence is hazardous duty. Consensus is lacking on 1) method of measuring personality type; 2) source of information for defining job type; 3) method of measuring job type; 4) number of congruence levels; 5) number of letter codes which comprise a type; 6) whether congruence is dichotomous or continuous; and 7) use of subspecialties in coding job

types. The present study represents a string of decisions on these factors which certainly affected the validity, reliability, and practical utility of the findings. The fact that congruence level moderated other variables' effects in a logical fashion provides some measure of credence for its operationalization and performance. However, several observations raise questions about the validity of the present measure of congruence.

The lack of significant correlations among the three congruence computation methods is somewhat disturbing. It is true that this result represents scores from only one-fourth of the entire sample. Nevertheless, this raises serious questions about the validity of different congruence computation methods, and the possibility of differential performance in the body of research on Holland's theory. In fact, the lack of unanimity in studies of congruence (Spokane, 1985) may in part be explained by invalid computation methodology.

One potential source of measurement problems is the DHOC itself. For instance, it was impossible in the present study to distinguish between staff nurses in operating rooms from those on patient wards in the assignment of DHOC job codes. Survey return rates were different among these two categories of nurses; and discrepancies between DHOC and incumbent-ranked job codes were most pronounced among subjects in operating room settings. It may be that the DHOC provides insufficient specificity based on job setting, and that this contributed to congruence computations that did not match the reality experienced by some subjects.

Although the DHOC method of computing congruence appears problematic, the EAT method does not seem to be the final answer to this quandary. By using only the modal preferences of incumbents, the EAT fails to include any information about job characteristics separate from qualities contributed by persons in the setting. This computation method, therefore, is potentially too limited.

One way to improve upon this situation is suggested by the use in this study of incumbent rankings of job environment. The revised process would include three steps. Step One: determine three-letter job code using the DHOC. Step Two: ask job incumbent to agree or disagree with the DHOC code, based on the six environmental descriptions. Incumbents disagreeing would compute their own three-letter job codes. Step Three: to settle discrepancies, use supervisors and/or human resource specialists familiar with the incumbents' work environments. The job codes resulting from this process would then be entered into congruence computations with person codes derived from the VPI or other personal preference measure.

Another source of concern was that the correlation of congruence with other constructs varied based on the computation method. DHOC congruence was significantly negatively correlated with job satisfaction; this correlation dropped to insignificance when EAT congruence was substituted. As mentioned above, neither of these congruence variables incorporated direct judgments of environmental type via incumbents' views of their job environments, or job analysis data, as Holland (1985c) recommends.

Also, VPI type scales were not indexed by value, such that two IAR persons with quite different profiles could have been coded identically (e.g., Person A: I = 12, A = 11, R = 4; Person B: I = 3, A = 2, R = 1). Gati (1989) recommends enhanced procedures to accurately reflect discrepancies like these.

The computation of congruence by subspecialty, as recommended by Meir (1988), was incompletely achieved. Engineering and scientist positions at Site A received unique DHOC codes, depending upon the subspecialty area. Nursing positions at Site B received less precise scrutiny; DHOC codes were in large part determined based upon setting (e.g., staff nurse vs. outpatient specialist vs. manager) rather than specialty (e.g., psychiatry, emergency, surgery). Previous studies suggest that the greater specificity in assigning codes, the greater chance for demonstrating theory-predicted relationships.

Increasing the precision of construct measurement is one important outcome of research programs. The lessons learned in this process might point toward improved measurement precision in future congruence studies. In addition to the suggestions above, the following steps are recommended. 1) Decide a priori the method for computing congruence, incorporating as many sources of information as feasible. 2) Use the measure of person type to its fullest advantage--for example, utilize the vocational preference score profile in a more sophisticated manner to account for levels of scale strength. 3) Adopt a single set of parameters for classifying jobs, preferably one which reflects the most detailed description, such as subspecialty characteristics. 4) Utilize a type code that represents the fullest detail possible: e.g., three

letters instead of two or one. 5) Strive to incorporate many sources of information into the environment analysis: modal personality type, objective job descriptions, job analyses, incumbents' perceptions, the perceptions of supervisors and other professionals, and DHOC descriptions.

Finally, the potential of the work group's moderating influence in person-job matching was not tested (Meir, 1989). It would seem especially important to address this issue in future studies with samples such as the ones used here, since the modal person code (IAR) was fairly different from the list of job codes assigned to positions. It could be that persons with otherwise poor matches simply value being among like-minded colleagues at work.

A note on gender issues. No post-hoc tests were done regarding gender differences in levels of career self-efficacy. A number of studies (e.g., Landino & Owen, 1988; see Hackett & Lent, in press, for a review) have found that, in various domains (e.g., faculty research production, prediction of occupational interests or performance) males report higher self-efficacy than females. This has often been interpreted as denoting a difference in socialization between the sexes rather than an important intrapsychic phenomenon. It was decided to avoid forming a hypothesis regarding this relationship, since few studies on adult workers have been reported on the present variables.

Interestingly, in this study, women reported higher career self-efficacy than men. There was no moderating effect of workforce tenure

on this result, although the intercorrelations were all significant. Women had higher workforce tenure than men, but not significantly so.

It will not be suggested here that the higher rate of self-efficacy for women disproves, or casts doubt upon, the socialization interpretations. In fact, Hackett and Betz (1981) cite female-nontraditional fields as examples of careers for which women lack self-efficacy. Nursing, the career of most female study participants, is still predominately female.

Summary of Major Issues

The main concepts raised in this discussion of results will be reviewed briefly here.

Demographic factors not significant. It is notable that no demographic variables contributed important variance to the prediction of job satisfaction. It was hypothesized that dual-career status would limit perceptions of mobility and therefore might limit the development of job satisfaction. This was not the case; nor did greater workforce tenure correlate with higher congruence, as Holland's theory would suggest. Age, sex, education level, and tenure in the workforce were unrelated to congruence and to job satisfaction. Career success and career self-efficacy were significantly positively correlated with age, and women achieved higher scores in both these career variables. Since more of the older study subjects were female, these results should be interpreted cautiously.

Congruence-job satisfaction link not established. The present findings imply, within limits, that the constellation of vocational interests, attitudes and values represented by congruence did not directly contribute significant variance to the prediction of job satisfaction. Correlation and multiple regression analyses suggest that a poor fit between personality traits and job environment need not necessarily threaten job satisfaction. However, a minimum level of congruence appears to potentiate important internal factors which contribute to job satisfaction.

In any case, changing jobs to increase congruence might not by itself be expected to directly affect job satisfaction. And since the intrapersonal portion of congruence--the Holland code type--is assumed to be stable in adults, efforts to impact job satisfaction by enhancing the person side of congruence would seem ill-considered. These results encourage looking elsewhere for predictors of job satisfaction. This is partly consistent with Gati's (1989) comments on the failure of congruence as measured to predict occupational satisfaction. Among other explanations, he suggests that congruence may moderate other variables in predicting outcomes like satisfaction.

Reciprocal interaction approach achieves support. Career self-efficacy may provide a richer context than job-person congruence for understanding job satisfaction. Self-efficacy theory posits that individual cognitions about competence are developed and strengthened in a recursive process, with success experiences following from relevant cognitions and contributing in turn to more such beliefs. In this study, the reciprocal "partners" of self-efficacy were prior career

success experiences and perceived organizational opportunity. The former was operationalized as frequency of various success events in one's career, such as being promoted early or being chosen for special assignments. The latter represented subjects' perceptions of their chances for job transfers and promotions given the competition from co-workers, and given their status in five categories: age, sex, education level, ethnicity, and dual-career status. It was hypothesized, and results confirmed, that self-efficacy and its partners covary, and that they contribute important variance to the prediction of job satisfaction.

Boundaries and Limitations of the Study

Beyond the issues mentioned above, several other limits to the present study are mentioned below.

First, this study was conducted with managers and professionals in two different federal government agencies. Subjects volunteered for study participation, and did not necessarily reflect the entire worksite in their demographic characteristics. Generalizability is correspondingly limited. Second, gathering data at a single point in time limits the generalizability of results. A variable such as career success, which is dependent upon specific events, might change substantially over time. Third, since little is known about vocational theories' contribution to workers' actual career outcomes, and since the self-efficacy construct is a relative newcomer, this study is necessarily exploratory. Fourth, a number of the variables were

operationalized by novel measures constructed for this study. While these measures evidenced generally acceptable reliability indices, establishment of their validity must await additional research.

Also, the distinction between prediction and explanation is valuable to recall when discussing regression results (e.g., Pedhazur, 1982). The ability to "predict" a criterion variable does not constitute an explanation of that variable. From this study we cannot claim to have explained the genesis or variability of job satisfaction.

This study did adequately address an important criticism of career development theoretical positions (Holland & Gottfredson, 1976): that is, it incorporated the structure of opportunity, person-environment fit, and psychological variables in a consideration of job satisfaction. In this way, both structural and developmental variables were brought to bear on the research question.

Implications and Directions for Future Research and Practice

In this section, an attempt is made to place these results in the context of current knowledge, and to suggest how they can inform research and practice in the future.

Instruments. The instruments debuted here demonstrated adequate reliability, and can offer assistance to future researchers in measuring the constructs studied here. Issues of validity can and should be addressed, as discussed in Chapter Four. The career management self-efficacy measure may be especially valuable for continued research on employed adult populations, particularly those in professional settings.

It is also clear that different "sub-domains" of career self-efficacy exist (e.g., job task S-E, job search S-E, career management S-E), so several instruments might need to be validated as inquiry continues. Also, gathering verifiable self-reports on perceived opportunity and career success events can itself become a valuable intervention if organizations use this information to promote such events and appraisals in the workplace.

Demographics. Sex, age, education level, and dual-career status did not stand out as significant predictors of job satisfaction. This is a hopeful sign that researchers and practitioners with working adults may someday find such variables incidental to job satisfaction. This of course is not now the case with all such studies and populations. It should be noted, however, that the dual-career status variable in particular deserves further exploration; and studying the relationship of continuing education and congruence might yield interesting new hypotheses.

Congruence and Self-efficacy. The present study found an interesting moderating relation between these two constructs in the prediction of job satisfaction. Because of this, the conflict between so-called structural and developmental theory statements perhaps need not reflect win-or-lose thinking. This is a picture of participation, not antagonism. When congruence is low, only perceived performance accomplishments (career successes) predict job satisfaction. When congruence is higher, self-efficacy increases in strength as a significant predictor of satisfaction.

It is true that Holland's theory appears not to adequately incorporate the phenomenon of self-generated beliefs. He would advise a thorough Person-Environment analysis, but tools do not exist in his typology to measure the development of personal belief in one's competency to be, say, a mechanic. His position would be that exploration of childhood/adolescence roles, social status, and liking for the relevant tasks could explain career choice. This seems too cumbersome. Self-efficacy aggregates these variables, and incorporates the cognitive and affective "power" that Holland and Gottfredson suggest occurs for users of their system:

...the typology and its tools appear to give understanding and power to the user throughout the vocational counseling process (p. 25).

Researchers who have devoted much attention to Holland's typology are thinking more broadly as well. Gati (1989) suggests expanding beyond congruence itself in finding psychological predictors of job satisfaction. Since this study implies that congruence moderates the predictive utility of career management self-efficacy, the results fit well with this recent proposition.

Inquiry with working populations on career-related self-efficacy continues. In a recent series of experiments, Wood and Bandura (1989) studied the effects of person, behavior, and environment variables on self-efficacy for managerial performance. A double-sequence causal model was produced to account for the effects of triadic reciprocal causation on new efficacy percepts and their sequelae. Enhanced performance was produced when SE judgments grew stronger over time.

Personal goals and decision strategies were also significant in explaining performance. These results, in combination with the present study, suggest that strong self-efficacy in workers can have salutary benefits on behavioral, cognitive, and emotional reactions.

Implications for Change

These results can suggest efforts aimed at enhancing job satisfaction through the important predictor variables of career success, perceived opportunity, and career management self-efficacy. They also suggest that higher job-person congruence provides a more fertile context for job satisfaction, given the presence of these other variables.

Career Success. Subjects asked to rank importance of success events cited several which could be implemented at little or no cost. These include: receiving an exciting or high-visibility job assignment; being chosen to substitute when the manager is away; being selected for task force assignments or special projects; and receiving a higher-than-average performance appraisal rating. These events may have dual benefits of recognizing current performance and contributing to enhanced efficacy beliefs about future job and career competence.

Perceived Opportunity. Seeing opportunities for job mobility contributes indirectly to job satisfaction, also. Workplaces which routinely offer open access to jobs, regardless of employees' gender, ethnicity, and other demographic factors, are likely to augment the ability of personal efficacy beliefs to predict job satisfaction.

Career self-efficacy. Workers who believe in their own competence and skill are more likely to be satisfied on the job. Information and persuasion regarding job and career efficacy can be offered via formal efforts, like seminars, and informally, through mentoring and supervision. The present results also argue for maintaining accurate job descriptions and realistic hiring practices (Ilgen & Seely, 1974). If workers' valued skills are not formally recognized in recruitment and job descriptions, their efficacy beliefs may have a less than optimal chance to develop. And ongoing appraisals of performance, often perfunctory (D.R. Ilgen, personal communication, January, 1988) may likewise falter in enhancing beliefs about competence.

If trait-based variables (such as congruence) or demographic variables (such as education level) had made the strongest contribution to job satisfaction, it might be concluded to focus future inquiry and interventions on changing workforce composition and job tasks. Times of low mobility could spell doom for such efforts. Happily, studies and interventions based on efficacy cognitions and success events are much less drastic, and can be more easily individualized.

A Prevention Approach. These results encourage a prevention approach to low job satisfaction. Through such techniques as accurate job descriptions, realistic recruiting practices, job enrichment, job-related rewards, and recognition of individual contributions, many workers might avoid disappointment, reduced performance, and premature termination in favor of an increased sense of competence and satisfaction. The prevention of mental health problems such as job stress, and the improvement of well-being on the job and off, deserves

as much attention as the validation or challenge of our present vocational theories.

LIST OF REFERENCES

LIST OF REFERENCES

- Adler, S., & Aranya, N. (1984). A comparison of the work needs, attitudes, and preferences of professional accountants at different career stages. Journal of Vocational Behavior, 25, 45-57.
- Anastasi, A. (1982). Psychological testing (5th ed.). New York: Macmillan.
- Aranya, N., Barak, A., & Amernic, J. (1981). A test of Holland's theory in a population of accountants. Journal of Vocational Behavior, 19, 15-24.
- Arthur, M.B. (1984). The meaning of careers. In M.B. Arthur, L. Bailyn, D.J. Levinson, & H.A. Shepard: Working with careers. New York: Center for Research in Career Development, Columbia University.
- Babbie, E.R. (1973). Survey research methods. Belmont, CA: Wadsworth.
- Bailyn, L. (1982). Trained as engineers: Issues for the management of technical personnel in midcareer. In R. Katz (Ed.), Career issues in human resource management. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. American Psychologist, 37, 122-147.
- Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1988). Organizational applications of social cognitive theory. Australian Journal of Management, 13, 137-164.
- Bandura, A. (1989). Human agency in social cognitive theory. American Psychologist, 44, 1175-1184.
- Bandura, A. (1991). Human agency: The rhetoric and the reality. American Psychologist, 46, 157-162.
- Bardwick, J.M. (1986). The plateauing trap: How to avoid it in your career and your life. New York: American Management Association.
- Barling, J., & Beattie, R. (1983). Self-efficacy beliefs and sales performance. Journal of Organizational Behavior Management, 5, 41-51.
- Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: conceptual,

- strategic, and statistical considerations. Journal of Personality and Social Psychology, 51, 1173-1182.
- Betz, N.E., & Hackett, G. (1986). Applications of self-efficacy theory to understanding career choice behavior. Journal of Social and Clinical Psychology, 4, 279-289.
- Blau, G.J. (1986). The relationship of management level to effort level, direction of effort and managerial performance. Journal of Vocational Behavior, 29, 226-239.
- Blustein, D.L. (1989). The role of goal instability and career self-efficacy in the career exploration process. Journal of Vocational Behavior, 35, 194-203.
- Brown, D. (1984). Issues and trends in career development. In D. Brown, L. Brooks, & Associates, Career choice and development. San Francisco: Jossey-Bass.
- Campbell, N.K., & Hackett, G. (1986). The effects of mathematics task performance on math self-efficacy and task interest. Journal of Vocational Behavior, 28, 149-162.
- Campbell, R.E., & Heffernan, J.M. (1983). Adult vocational behavior. In W.B. Walsh & S.H. Osipow (Eds.), Handbook of vocational psychology. Vol. I: Foundations. Hillsdale, NJ: Erlbaum.
- Caplan, R.D. (1987). Person-environment fit theory: Commensurate dimensions, time perspectives, and mechanisms. Journal of Vocational Behavior, 31, 248-267.
- Childs, A., & Klimoski, R. (1986). Successfully predicting career success: An application of the biographical inventory. Journal of Applied Psychology, 71, 3-8.
- Collin, A., & Young, R.A. (1986). New directions for theories of career. Human Relations, 39, 837-853.
- Cooper, W.H., & Richardson, A.J. (1986). Unfair comparisons. Journal of Applied Psychology, 71, 179-184.
- Cronbach, L.J. (1951). Coefficient alpha and the internal structure of tests. Psychometrika, 16, 297-334.
- Dalton, G.W., Thompson, P.H., & Price, R.L. (1982). The four stages of professional careers: A new look at performance by professionals. In R. Katz (Ed.), Career issues in human resource management. Englewood Cliffs, NJ: Prentice-Hall.
- Dawis, R. (1987). Scale construction. Journal of Counseling Psychology, 34, 481-489.

- Derr, C.B. (1982). Career switching and organizational politics: The case of naval officers. In R. Katz (Ed.), Career issues in human resource management. Englewood Cliffs, NJ: Prentice-Hall.
- Dictionary of Occupational Titles (4th ed.) (1977). Washington, D.C.: U.S. Department of Labor.
- Elton, C.F., & Smart, J.C. (1988). Extrinsic job satisfaction and person-environment congruence. Journal of Vocational Behavior, 32, 226-238.
- Feldman, S., & Meir, E.I. (1976). Measuring women's interests using Holland's vocational classification. Journal of Vocational Behavior, 9, 345-353.
- Forbes, J.B. (1987). Early intraorganizational mobility: Patterns and influences. Academy of Management Journal, 30, 110-125.
- Forgionne, G.A., & Peeters, V.E. (1982). Differences in job motivation and satisfaction among female and male managers. Human Relations, 35, 101-118.
- Frayne, C.A., & Latham, G.P. (1987). Application of social learning theory to employee self-management of attendance. Journal of Applied Psychology, 72, 387-392.
- Fretz, B.R., Kluge, N.A., Ossana, S.M., Jones, S.M., & Merikangas, M.W. (1989). Intervention targets for reducing preretirement anxiety and depression. Journal of Counseling Psychology, 36, 301-307.
- Gati, I. (1989). Person-environment fit research: problems and prospects. Journal of Vocational Behavior, 35, 181-193.
- Ghiselli, E.E., Campbell, J.P., & Zedeck, S. (1981). Measurement theory for the behavioral sciences. San Francisco: W. H. Freeman.
- Ginzberg, E. (1985). Resizing for organizational effectiveness: A report of a workshop. New York: Center for Career Research and Human Resource Management, Columbia University.
- Gottfredson, G.D., Holland, J.L., & Ogawa, D.K. (1982). Dictionary of Holland occupational codes. Palo Alto: Consulting Psychologists Press.
- Gottfredson, G.D., & Holland, J.L. (1990). A longitudinal test of the influence of congruence: Job satisfaction, competency utilization, and counterproductive behavior. Journal of Counseling Psychology, 37, 389-398.
- Greenwald, A., Pratkanis, A., Leippe, M., & Baumgardner, M. (1986). Under what conditions does theory obstruct research progress? Psychological Review, 93, 216-229.

- Hackett, G., & Betz, N.E. (1981). A self-efficacy approach to the career development of women. Journal of Vocational Behavior, 18, 326-339.
- Hackett, G., & Lent, R.W. (in press). Theoretical advances and current inquiry in career psychology. In S.D. Brown & R.W. Lent (Eds.), Handbook of Counseling Psychology (2nd ed.). New York: John Wiley.
- Hackett, G., Betz, N.E., & Doty, M.S. (1985). The development of a taxonomy of career competencies for professional women. Sex Roles, 12, 393-409.
- Hackett, G., Betz, N.E., O'Halloran, M.S., & Romac, D.S. (1990). Effects of verbal and mathematics task performance on task and career self-efficacy and interest. Journal of Counseling Psychology, 37, 169-177.
- Hackett, G., Lent, R.W., & Greenhaus, J.H. (1991). Advances in vocational theory and research: A 20-year retrospective. Journal of Vocational Behavior, 38, 3-38.
- Hall, D.T. (1986). Breaking career routines: Midcareer choice and identity development. In D.T. Hall & Associates, Career development in organizations. San Francisco: Jossey-Bass.
- Hall, D.T., & Lerner, P. (1980). Career development in work organizations: Research and practice. Professional Psychology, 11, 428-435.
- Hansen, J.C. (1985). The Strong-Campbell Interest Inventory. Stanford, CA: Stanford University Press.
- Hansen, J.C. (May, 1987). Personal communication.
- Heesacker, M., Elliott, T.R., & Howe, L. (1988). Does the Holland code predict job satisfaction and productivity in clothing factory workers? Journal of Counseling Psychology, 35, 144-148.
- Hener, T., & Meir, E.I. (1981). Congruency, consistency, and differentiation as predictors of job satisfaction within the nursing profession. Journal of Vocational Behavior, 18, 304-309.
- Hill, R.E., & Hansen, J.C. (1986). An analysis of vocational interests for female research and development managers. Journal of Vocational Behavior, 28, 70-83.
- Hill, T., Smith, N.D., & Mann, M.F. (1987). Role of efficacy expectations in predicting the decision to use advanced technologies: The case of computers. Journal of Applied Psychology, 72, 307-313.

- Holland, J.L. (1966). The psychology of vocational choice. Waltham, MA: Blaisdell.
- Holland, J.L. (1985a). The Self-Directed Search. Odessa, FL: Psychological Assessment Resources.
- Holland, J.L. (1985b). Vocational Preference Inventory. Odessa, FL: Psychological Assessment Resources.
- Holland, J.L. (1985c). Making vocational choices: A theory of vocational personalities and work environments (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Holland, J.L. (1987a). Current status of Holland's theory of careers: Another perspective. Career Development Quarterly, 36, 24-30.
- Holland, J.L. (1987b). Some speculation about the investigation of person-environment transactions. Journal of Vocational Behavior, 31, 337-340.
- Holland, J.L., & Gottfredson, G.D. (1976). Using a typology of persons and environments to explain careers: Some extensions and clarifications. The Counseling Psychologist, 6, 20-29.
- Holland, J.L., Gottfredson, G.D., & Baker, H.G. (1990). Validity of vocational aspirations and interest inventories: Extended, replicated, and reinterpreted. Journal of Counseling Psychology, 37, 337-342.
- Howard, G.S. (1987). Toward a telic vision of human beings: A dialogue with Joseph F. Rychlak. Journal of Counseling and Development, 66, 12-19.
- Howard, G.S. (1984). A modest proposal for a revision of strategies for counseling research. Journal of Counseling Psychology, 31, 430-441.
- Ilgen, D.R., & Seely, W. (1974). Realistic expectations as an aid in reducing voluntary resignations. Journal of Applied Psychology, 59, 452-455.
- Jepsen, D.A. (1984). The developmental perspective on vocational behavior: A review of theory and research. In S.D. Brown and R.W. Lent (Eds.), Handbook of counseling psychology. New York: Wiley.
- Jones, G.R. (1986). Socialization tactics, self-efficacy, and newcomers' adjustments to organizations. Academy of Management Journal, 29, 262-279.

- Kanfer, R., & Hulin, C. (1985). Individual differences in successful job searches following lay-off. Personnel Psychology, 38, 835-847.
- Katz, R. (1982). Managing careers: The influence of job and group longevities. In R. Katz (Ed.), Career issues in human resource management. Englewood Cliffs, NJ: Prentice-Hall.
- Kirk, R.E. (1982). Experimental design: Procedures for the behavioral sciences (2nd ed.). Belmont, CA: Brooks/Cole.
- Kivilighan, D.M., Jr., Hagaseth, J.A., Tipton, R.M., & McGovern, T.V. (1981). Effects of matching treatment approaches and personality types in group vocational counseling. Journal of Counseling Psychology, 28, 315-320.
- Klein, H. (1988). Job satisfaction in professional dual-career couples: Psychological and socioeconomic variables. Journal of Vocational Behavior, 32, 255-268.
- Klimoski, R.J. (1973). A biographical data analysis of career patterns in engineering. Journal of Vocational Behavior, 3, 103-113.
- Kopelman, R.E. (1977). Psychological stages of careers in engineering: An expectancy theory taxonomy. Journal of Vocational Behavior, 10, 270-286.
- Kuder, G.F. (1974). Kuder Occupational Interest Survey. Chicago: Science Research Associates.
- Landino, R.A., & Owen, S.V. (1988). Self-efficacy in university faculty. Journal of Vocational Behavior, 33, 1-14.
- Lapan, R.T., Boggs, K.R., & Morrill, W.H. (1989). Self-efficacy as a mediator of investigative and realistic general occupational themes on the SCII. Journal of Counseling Psychology, 36, 176-182.
- Lauver, P.J., & Jones, R.M. (1991). Factors associated with perceived career options in American Indian, white, and Hispanic rural high school students. Journal of Counseling Psychology, 38, 159-166.
- Lent, R.W., Brown, S.D., & Larkin, K.C. (1986). Self-efficacy in the prediction of academic performance and perceived career options. Journal of Counseling Psychology, 33, 265-269.
- Lent, R.W., Brown, S.D., & Larkin, K.C. (1987). Comparison of three theoretically-derived variables in predicting career and academic behavior: Self-efficacy, interest congruence, and consequence thinking. Journal of Counseling Psychology, 34, 293-298.

- Lent, R.W., & Hackett, G. (1987). Career self-efficacy: Empirical status and future directions. Monograph. Journal of Vocational Behavior, 30, 347-382.
- Levinson, D.J., & associates (1978). The seasons of a man's life. New York: Knopf.
- Levinson, D.J. (1984). The career is in the life structure, the life structure is in the career: An adult development perspective. In M.B. Arthur, L. Bailyn, D.J. Levinson, & H.A. Shepard, Working with careers. New York: Center for Research in Career Development, Columbia University.
- Lewis-Beck, M.S. (1980). Applied regression: An introduction. Beverly Hills, CA: Sage Publications.
- Locke, E.A., Frederick, E., Lee, C., & Bobko, P. (1984). Effect of self-efficacy, goals, and task strategies on task performance. Journal of Applied Psychology, 69, 241-251.
- Locke, E.A., & Latham, G.P. (1990). Work motivation and satisfaction: Light at the end of the tunnel. Psychological Science, 1, 240-246.
- Markham, S. (1983). I can be a bum: Knowledge about abilities and life style in vocational behavior. Journal of Vocational Behavior, 23, 72-86.
- Meir, E.I. (1988). The need for congruence between within-occupation interests and specialty in mid-career. The Career Development Quarterly, 37, 631-69.
- Meir, E.I. (1989). Integrative elaboration of the congruence theory. Journal of Vocational Behavior, 35, 219-230.
- Meir, E.I., & Erez, M. (1981). Fostering a career in engineering. Journal of Vocational Behavior, 18, 115-120.
- Meir, E.I., & Melamed, S. (1986). The accumulation of person-environment congruences and well-being. Journal of Occupational Behaviour, 7, 315-323.
- Meir, E.I., & Yaari, Y. (1988). The relationship between congruent specialty choice within occupations and satisfaction. Journal of Vocational Behavior, 33, 99-117.
- Meir, E.I., Keinan, G., & Segal, Z. (1986). Group importance as a mediator between personality-environment congruence and satisfaction. Journal of Vocational Behavior, 28, 60-69.
- Meir, E.I., Melamed, S., & Abu-Freha, A. (1990). Vocational, avocational, and skill utilization congruence and their

- relationship with well-being in two cultures. Journal of Vocational Behavior, 36, 153-165.
- Moos, R.H. (1987). Person-environment congruence in work, school, and health care settings. Journal of Vocational Behavior, 31, 231-247.
- Mount, M.K., & Muchinsky, P.M. (1978). Person-environment congruence and employee job satisfaction--A test of Holland's theory. Journal of Vocational Behavior, 13, 84-100.
- Myers, R.A. (1988, August). Research on career counseling: Fifteen years later. Paper presented at the meeting of the American Psychological Association, Atlanta, Georgia.
- Nevill, D.D., & Schlecker, D.I. (1988). The relation of self-efficacy and assertiveness to willingness to engage in traditional/nontraditional career activities. Psychology of Women Quarterly, 12, 91-98.
- Parsons, F. (1909). Choosing a career. Boston: Houghton Mifflin.
- Pedhazur, E.J. (1982). Multiple regression in behavioral research: Explanation and prediction. (2nd ed.) Fort Worth: Holt, Rinehart & Winston.
- Peiser, C., & Meir, E.I. (1978). Congruence, consistency, and differentiation of vocational satisfaction and preference stability. Journal of Vocational Behavior, 12, 270-278.
- Pervin, L.A. (1987). Person-environment congruence in the light of the person-situation controversy. Journal of Vocational Behavior, 31, 222-230.
- Phillips, S.D., Cairo, P.C., Blustein, D.L., & Myers, R.A. (1988). Career development and vocational behavior, 1987: A review. Journal of Vocational Behavior, 33, 119-184.
- Pond, S.B., & Geyer, P.D. (1987). Employee age as a moderator of the relation between perceived work alternatives and job satisfaction. Journal of Applied Psychology, 72, 552-557.
- Quinn, R.P., & Shepard, L. (1974). The 1973-1974 quality of employment survey: Descriptive statistics. Ann Arbor, MI: Institute for Social Research, Survey Research Center.
- Robbins, S.B. (1985). Validity estimates for the Career Decision-Making Self-efficacy Scale. Measurement and Evaluation in Counseling and Development, 18, 64-71.

- Rotberg, H.L., Brown, D., & Ware, W.B. (1987). Career self-efficacy expectations and perceived range of career options in community college students. Journal of Counseling Psychology, 34, 164-170.
- Roth, L.M. (1988). Downsizing and restructuring practices in corporate America: An interview study. The Career Center Bulletin, Columbia University Center for Career Research and Human Resource Management.
- Rounds, J.B. (1985). [Review of Vocational Preference Inventory, 7th rev.]. In J.V. Mitchell, Jr. (Ed.), The ninth mental measurements yearbook, Vol. II. Lincoln, NE: The Buros Institute of Mental Measurements, University of Nebraska.
- Rounds, J.B. (1990). The comparative and combined utility of work value and interest data in career counseling with adults. Journal of Vocational Behavior, 37, 32-45.
- Schein, E.H. (1986). A critical look at current career development theory and research. In D.T. Hall & Associates (Eds.), Career development in organizations. San Francisco: Jossey-Bass.
- Schlossberg, N.K. (1984). Counseling adults in transition: Linking practice with theory. New York: Springer.
- Schoen, L.G., & Winocur, S. (1988). An investigation of the self-efficacy of male and female academics. Journal of Vocational Behavior, 32, 307-320.
- Schwartz, R.H., Andiappan, P., & Nelson, M. (1986). Reconsidering the support for Holland's congruence-achievement hypothesis. Journal of Counseling Psychology, 33, 425-428.
- Shullman, S.L., & Carder, C.E. (1983). Vocational psychology in industrial settings. In W.B. Walsh & S.H. Osipow (Eds.), Handbook of vocational psychology. Vol. 2: Applications. Hillsdale, NJ: Erlbaum.
- Slaney, R.B., & Russell, J.E.A. (1986). Perspectives on vocational behavior, 1986: A review. Journal of Vocational Behavior, 31, 111-173.
- Smart, J.C. (1989). Life history influences on Holland vocational type development. Journal of Vocational Behavior, 13, 54-62.
- Smart, J.C., Elton, C.F., & McLaughlin, G.W. (1986). Person-environment congruence and job satisfaction. Journal of Vocational Behavior, 29, 216-225.
- Smith, P.C., Kendall, L.M., & Hulin, C.L. (1969). The measurement of satisfaction in work and retirement. Chicago: Rand McNally.

- Sonnenfeld, J., & Kotter, J.P. (1982). The maturation of career theory. Human Relations, 35, 19-46.
- Spokane, A.R. (1985). A review of research on person-environment congruence in Holland's theory of careers. Journal of Vocational Behavior, 26, 306-343.
- Spokane, A.R. (1987). Conceptual and methodological issues in person-environment fit research. Journal of Vocational Behavior, 31, 217-221.
- Staying away in droves. (1987, April). The Economist, 303, 88.
- Steiner, D.D., & Farr, J.L. (1986). Career goals, organizational reward systems, and technical updating in engineers. Journal of Occupational Psychology, 59, 13-24.
- Stout, S.K., Slocum, J.W., & Cron, W.L. (1987). Career transitions of superiors and subordinates. Journal of Vocational Behavior, 30, 124-137.
- Stumpf, S.A., Brief, A.P., & Hartman, K. (1987). Self-efficacy expectations and coping with career-related events. Journal of Vocational Behavior, 31, 91-108.
- Super, D.E. (1980). A life-span, life-space approach to career development. Journal of Vocational Behavior, 16, 282-298.
- Super, D.E. (1984). Career and life development. In D. Brown & L. Brooks (Eds.), Career choice and development. San Francisco: Jossey-Bass.
- Sutton, R.I., & Kahn, R.L. (1987). Prediction, understanding, and control as antidotes to organizational stress. In J.W. Lorsch (ed.), Handbook of organizational behavior (pp. 272-285). Englewood Cliffs, N.J.: Prentice-Hall.
- Swaney, K., & Prediger, D. (1985). The relationship between interest-occupation congruence and job satisfaction. Journal of Vocational Behavior, 26, 13-24.
- Tinsley, H.E.A., & Tinsley, D.J. (1987). Uses of factor analysis in counseling psychology research. Journal of Counseling Psychology, 34, 414-424.
- U.S. Department of Labor. (1977). Dictionary of Occupational Titles (4th ed.) Washington, D.C.: U.S. Government Printing Office.
- Vondracek, F.W., Lerner, R.M., & Schulenberg, J.E. (1986). Career development: A life-span developmental approach. Hillsdale, NJ: Erlbaum.

- Warnath, C.F. (1975). Vocational theories: Direction to nowhere. Personnel and Guidance Journal, 53, 422-428.
- Warren, G.D., Winer, J.L., & Dailey, K.C. (1981). Extending Holland's theory to the later years. Journal of Vocational Behavior, 18, 104-114.
- Weiner, J., & Klein, K.L. (1978). The relationship between vocational interests and job satisfaction: Reconciliation of divergent results. Journal of Vocational Behavior, 13, 298-304.
- Weiss, N., & Hassett, M. (1982). Introductory statistics. Reading, MA: Addison-Wesley.
- Wiener, Y., Vardi, Y., & Muczyk, J. (1981). Antecedents of employees' mental health--The role of work satisfaction. Journal of Vocational Behavior, 19, 50-60.
- Wiggins, J.D. (1984). Personality-environmental factors related to job satisfaction of school counselors. Vocational Guidance Quarterly, 33, 169-177.
- Wiggins, J.D., Lederer, D.A., Salkowe, A., & Rys, G.S. (1983). Job satisfaction related to tested congruence and differentiation. Journal of Vocational Behavior, 23, 112-121.
- Williams, T.M., & Leonard, M.M. (1988). Graduating black undergraduates: The step beyond retention. Journal of College Student Development, 29, 69-75.
- Wolfe, L.K., & Betz, N.E. (1981). Traditionality of choice and sex-role identification as predictors of the congruence of occupational choice in college women. Journal of Vocational Behavior, 18, 43-55.
- Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. Academy of Management Review, 14, 361-384.

APPENDICES

APPENDIX A

Sample executive information letter

Chief
Nursing Service

Dear

I am writing to propose participation by your staff in a study of career attitudes and job satisfaction, which I could conduct on site in _____. Dr. _____ suggested that I let you know of this study.

I have completed my coursework for a Ph.D. in counseling psychology at Michigan State, and this study is a portion of my dissertation research. A pilot version has already been conducted at another U.S. government facility in Michigan. Enclosed is a description of the study, sample agreement, consent form, surveys, and my vita.

The issue of job satisfaction has held my interest for many years, and my decision to return to school was based largely on my desire to better understand the psychological components of adult workers' decisions in the job and career area. The study, described in the enclosed statement, is an attempt to learn more about workers' career development concerns, especially in the current climate of reduced upward mobility and flattening organizations. My hunch is that job satisfaction can be enhanced by factors less expensive than promotions and raises, if human resource policies are targeted to known employee attitudes.

The study involves collecting survey responses from employees, and giving feedback to the organization (and to individuals who participated, if desired). All individual survey responses are kept confidential; I report only aggregate data. Participants may request their specific responses at group meetings where I discuss the results. There are five paper and pencil surveys which take under 30 minutes for most people to complete. These can be answered in group meetings at the work site, privately through interoffice mail, or by some other convenient method. There would be no cost to you in conducting the study.

Benefits for individuals who participate include: gaining awareness of personal attitudes and decisions related to career development; comparison of individual survey results to scores from a large population; and a chance to contribute to a survey which might provide a broader perspective on their employer's human resource issues. Benefits for the organization include: gathering information which might indicate changes or enhancements in current human resource policies and programs, including recruitment, hiring, training, and succession planning; external consultation from a skilled observer; and a reusable process for collecting human resource information.

The first phase of the project surveyed 65 managers and professionals in a public-sector agency, to test the reliability of the surveys and to make preliminary conclusions. I would like to repeat the study in a setting with the potential for over one hundred participants. (Wording on some surveys may require changes to make them appropriate for the new setting.) It would be a pleasure to meet with you and/or other interested colleagues to discuss the study's potential usefulness. I will contact you soon to learn if you're interested in discussing this idea further. I will be in town all of this month except July 21-28.

Best regards,

Ellen Lent

enclosures

APPENDIX B

INVITATION TO PARTICIPATE IN STUDY. SITE A

DRAFT - Advance publicity memo re Career Attitudes Study

TO: All engineers and managers

FROM: _____, Human Resources Officer

SUBJECT: Upcoming Career Attitudes Study

We have agreed to participate in a study of career attitudes designed by Ellen Lent for her dissertation in psychology at Michigan State University. Ellen has fifteen years of human resources experience in government, education, and corporate settings, and would like to contribute knowledge to the important dilemma of job satisfaction that is facing many U.S. workplaces. You may realize that, because of the baby boom generation and the tendency toward downsizing, many professionals are feeling dissatisfied and frustrated in their jobs, and employers need better insights into current reasons for job satisfaction. Vocational psychologists try to help employers understand problems like these. Having previously worked with large numbers of engineers and managers, Ellen approached us about the study and asked our assistance. I see this as a chance for us to contribute to a better understanding of professionals' attitudes about career issues, and to learn more about our own individual characteristics and opinions.

This will be a voluntary activity, involving completion of five paper-and-pencil surveys, and I strongly encourage you to participate. The surveys are designed to provide information about career decisions and attitudes; individual survey responses will be kept totally confidential from me and anyone else at _____. I personally, and _____ generally, can benefit from learning the overall results of this study and their implications for our workforce, now and in the future. Further, at the follow-up meetings, you can hear more about the study from Ellen, get your own results from the surveys, and ask questions about your results in confidence.

Ellen will be here to administer the surveys on the morning of Tuesday, October 24. Another announcement of the meeting time will be sent to you closer to that date. Please plan to attend the meeting and listen to Ellen explain the procedure. You will have a chance at that time to ask questions and to decide whether to participate. If you have any questions before the meeting, please contact me. Thank you for considering to participate in this study.

APPENDIX C

OUTLINE OF VERBAL PRESENTATION TO POTENTIAL STUDY PARTICIPANTS. SITE A

INTRODUCTION

1. My years in personnel and career development settings
2. My review of literature: career-related studies with employees dating back to the turn of the century
3. Interest in career-related attitudes and their possible connections with behavior
4. A number of theories have been proposed, trying to explain many things:
 - * job performance
 - * turnover/longevity
 - * job satisfaction
 - * career choice
 - * satisfaction outside of work
5. Your participation will help to move knowledge forward in vocational psychology and in your work setting. I'm very excited about this study too, and hope to continue it in another site later this year.
6. I'll provide you with your results when they're available
7. People who don't complete these surveys today will get a packet in the mail. (If you don't want to participate, ignore the next packet when it arrives)
8. If you think this is useful, please tell your co-workers who didn't come today
9. Sign consent form; if you don't, I can't use your answers
10. Be honest; there will be no adverse reflection on yourself or your agency
11. Any questions?

Procedure

1. Hand out packets; each person check contents
2. Write I.D. number (not name) on all pages except maroon VPI answer sheet

3. Complete surveys in silence
4. No need to rush; no time limit
5. Ignore numbers in parentheses on surveys
6. Sign consent form with name and I.D. number
7. For VPI: I.D. number on answer sheet; use answer sheet for responses. Note it continues on back side. Leave maroon form out; don't write on it.

APPENDIX D

FINAL REPORT TO SITE A

CAREER ATTITUDES STUDY - REPORT OF RESULTS: July 1990

This study was conducted as part of the dissertation research of Ellen Lent, Ph.D. candidate in counseling psychology at Michigan State University. Please contact her for further information at

The purpose of this study was to better understand factors that contribute to job satisfaction, especially in the current climate of lessened promotional opportunities. The increased numbers of baby boom workers at mid-career, the reduced numbers of managerial positions, and the effects of dual-career decision making were all thought to contribute to this reduction in upward mobility. Study findings might assist _____ in enhancing job satisfaction through human resource policies such as job descriptions, recruiting, hiring, job assignments, and job enrichment.

Concepts from two different theories of career development were used in studying levels of job satisfaction. John Holland's theory of job-person fit, or congruence, holds that the better the "fit" between type of person and type of job, the more satisfied the worker will be. For instance, a person who values individual effort, and who is less socially focused, will thrive in a research or artistic environment, but will not enjoy person-oriented work such as selling. The concept of career self-efficacy, or belief in personal competence, is advanced by Albert Bandura and others. High self-efficacy for planning one's career and performing well at work is said to contribute to greater job satisfaction.

The two theories each name several factors that are supposed to contribute to these key concepts. Length of time in the workforce and mobility within the organization are expected to increase congruence between person and job. Past successes in career planning and job performance are expected to increase career self-efficacy. The study includes these factors, and several others: age, tenure in the organization, and dual-career status (whether the study participant has a life partner whose career affects the participant's career decisions).

This study used survey responses from 64 professional and managerial employees at _____. Of the five surveys, two (Job Satisfaction Survey and Vocational Preference Inventory) are in common use, and three (Organizational Mobility Survey, Career Success Measure, and Career Task Survey) are original.

The first set of surveys was administered in October 1989; the three original surveys were retaken in March 1990.

INITIAL DESCRIPTION OF RESULTS

	MEAN	MINIMUM	MAXIMUM	STD. DEVIATION
Age range	30-39	under 25	50-54	
Job tenure	4.9 yrs.	1 year	18 years	4.6 years
Org'l tenure	9.5 yrs.	1 year	26 years	6.7 years
Workforce tenure	12.5 yrs.	1 year	35 years	8.8 years
Career success	1.6	.25	3.25 (4)	.67
Career self-efficacy	6.5	4.27	8.03 (9)	.82
Job satisfaction	3.1	1.00	4.60 (5)	.87
Org'l mobility	2.1	.57	3.43 (4)*	.58

* Number in parentheses is highest possible score

Dual-career status: 41 participants

Males: 47 Females: 17

SURVEY RELIABILITY (similarity in each participant's answers over 5 months)

1. Career Success Measure: .66
2. Career Task Survey (self-efficacy): .69
3. Organizational Mobility: .81

PERSON-JOB CONGRUENCE

High: 7

Medium: 27

Low: 30

HIGHEST RANKED CAREER SUCCESS FACTORS

1. Offered a promotion sooner than the normal rate (55)
2. Received an exciting or high-visibility job assignment (53)
3. Received a higher than average performance appraisal rating (47)
4. Received a higher than average salary increase (31)
5. Been chosen to substitute when manager is away (30)
6. Selected above others to go on details, or for a task force assignment (29)

SELECTED CORRELATIONS

1. The higher the work tenure, the lower the job satisfaction
2. The higher the career success, the higher the job satisfaction
3. The greater the age, the higher the career success
4. The dual career participants had higher congruence
5. The higher the congruence, the lower the job satisfaction
6. The higher the work tenure, the higher the career self-efficacy

STATISTICAL PREDICTORS OF JOB SATISFACTION, IN ORDER OF STRENGTH

1. career success
2. career self-efficacy

NEGATIVE CONTRIBUTORS TO JOB SATISFACTION

1. work tenure
2. congruence

NONSIGNIFICANT FACTORS

Dual-career status, age, sex, education level, organizational mobility

DISCUSSION

Demographics. The age of study participants is relatively young, but the mean job tenure and organizational tenure is high. This picture is consistent with the national trend of baby-boom-age workers being promoted less often than in the past. The large number of dual-career workers is also consistent with national trends. Age ranges rather than exact ages were used as a privacy safeguard.

Because of the mean age of participants, it is not surprising that career success scores are fairly low, since that survey asks for frequency of occurrence. A younger worker will have had fewer chances for such events to occur.

Job satisfaction. 1987 scores for a group of 226 employees of a healthcare facility were: mean = 3.49, standard deviation = .86. The job satisfaction scores for ____ do not appear to differ greatly from this other sample.

Original surveys. The Career Task Survey was designed to measure four areas of self-efficacy: overall career planning, job performance, professional development, and organizational requirements. The Career Success Measure items were reviewed at ____ for content and correct wording. The survey of organizational mobility captured the presence of obstacles to finding other desirable work within the current organization.

The reliabilities of the three original surveys over a 5-month period are fairly good. These values show how well the surveys perform an important purpose: to yield scores that are consistent for the same person, answering on different occasions. The highest possible reliability for any survey is 1.00. Mean scores for career self-efficacy, career success, and organizational mobility can be compared later to those of another group which will complete this study.

Congruence. The six types of persons and jobs proposed by Holland are: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. High congruence is defined as: exact match of first three letters, such as IRE, IRE; or same first two letters, same order, such as IRE, IRA; or same three letters in different order, such as IRE, REI. Partial congruence is defined as: same first letter, such as RIA, REC; or first two letters in one code in any order in the second, such as IRE, SRI.

The Holland codes for positions in this study, determined by review of job descriptions and comparisons to the Holland Dictionary of Occupational Titles, are:

REI: supervisory chemist, supervisory mechanical engineer, supervisory mechanical engineering technician, supervisory environmental protection specialist, supervisory environmental scientist.

IER: supervisory general engineer, general engineer, environmental engineer.

IRE: environmental protection specialist, chemist, mechanical engineer, chemical engineer, environmental scientist.

The Holland codes for individuals, computed from their Vocational Preference Inventory results, were quite varied. 38 participants' codes included Artistic; 21 included Social; and 15 included Conventional. These three types are not represented in the codes of positions held by study participants.

The relatively small number of high-congruence fits between person and job in this group may have several explanations. First, Holland himself has consistently found when analyzing engineering jobs that they alternately receive I or R primary codes. That is, his system cannot say for sure that an individual engineering position should be coded with I or R first. Second, the relatively young age of this group may suggest that some people have not yet gravitated to positions that are high-congruence matches; Holland's theory states that this movement takes place over time. Third, the amount of researching, writing, and personal interaction that characterizes some technical positions may attract some Artistic and Social incumbents who might not "fit" as happily into more traditional science and engineering jobs. So _____ may have a number of fairly satisfied technical specialists who are misfits "on paper"; that is, some positions might have more S or A tasks than the job description indicates.

Career Success. On the Career Success Measure, participants chose the five events which they believed were the most important overall indicators of career success in their workplace. This reflects employees' opinions about the ability of specific events to signal career success. The strength of these events in contributing to job satisfaction is very significant, as shown by the regression analyses. An important fact about these six events is that only one, receiving a higher than average salary increase, is a direct cost. The other five can be implemented for little or no cost.

Correlations.

1. In studies of job satisfaction, it is common to find a negative relationship with work tenure; this is often explained by the increasing satisfaction provided by avocational interests as workers near retirement.
2. Career success is an important predictor of job satisfaction, so this positive correlation is expected.
3. Age is correlated with career success since, as mentioned above, scores increase with number of success indicators reported.

4. It is possible that workers in dual-career couples are older, and that greater work tenure (and therefore age) is associated with higher congruence.

5. The negative relation between congruence and satisfaction may be explained by the presence of nontraditional (e.g., artistic and social) tasks in otherwise unremarkable-looking scientific job descriptions. That is, if a number of A and S tasks exist in positions for which traditionally-trained scientists or engineers were hired, the I or R congruent workers may find they are not as well suited to those tasks, and their job satisfaction could suffer as a result.

6. The positive correlation between work tenure and career self-efficacy may reflect the age-career success relationship. Age is highly related to work tenure, and career success is a predictor of career self-efficacy.

Predictors of job satisfaction. The ability of career success and career self-efficacy to predict job satisfaction is predicted by Bandura's theory, and has important implications for _____. This demonstrates that work-related success experiences, and participants' judgments about their capacity to succeed, contribute to satisfaction on the job. It is possible to arrange work conditions and human resource policies to increase workers' chances for success experiences, and success events can be expected to improve workers' judgements about their own ability to accomplish work-related goals. For instance, performance-based promotions could be accelerated for exceptional performers; creative planning could be continually applied to job assignments and task organization, perhaps with multi-manager input; performance appraisal ratings could be monitored to avoid clustering at the high end; manager substitution could be rotated, to allow more workers exposure to managerial tasks; and assignments to details and task forces could be reviewed by a prestigious group and be announced publicly.

The negative relation between congruence and satisfaction suggests a review of practices in writing job descriptions, recruiting, and hiring new engineers and scientists. It is possible that improved listing of job tasks, and expanded discussion of these tasks with new candidates, might allow _____ to attract and retain technical workers who genuinely enjoy the artistic and/or social qualities of the jobs.

APPENDIX E

REQUEST TO PARTICIPATE IN STUDY. SITE B

TO: Selected employees

FROM: _____ and _____

SUBJECT; Career Attitudes Study

We have agreed to participate in a study of career attitudes designed by Ellen Lent, a doctoral student in counseling psychology at Michigan State University. Our contribution to the study consists of selected employees completing five paper-and-pencil surveys; the time needed is about 30 minutes per person. All responses will be totally anonymous and confidential; results will be reported in aggregate form only.

The benefit to our service will be an improved awareness of the factors that contribute to job satisfaction and career success. We will also be able to compare the results of this study with those obtained at another public sector agency. With increasing numbers of baby-boom employees at mid-career, the importance of job satisfaction continues to rise. This study will contribute to better understanding of this important topic.

The surveys are enclosed in this packet. Please read the directions, complete the surveys, and return them to Ellen at _____. If you would like to know your individual results, please contact her in writing at _____ results should be available by January.

APPENDIX F

FINAL REPORT TO SITE B

CAREER ATTITUDES STUDY - REPORT OF RESULTS: APRIL 1991

This study was conducted as part of the dissertation research of Ellen Lent, Ph.D. candidate in counseling psychology at Michigan State University. Please contact her for further information at

The purpose of this study was to better understand factors that contribute to job satisfaction, especially in the current climate of lessened promotional opportunities. The increased numbers of baby boom workers at mid-career, the reduced numbers of managerial positions, and the effects of dual-career decision making were all thought to contribute to this reduction in upward mobility. Study findings might assist _____ in enhancing job satisfaction through human resource policies such as job descriptions, recruiting, hiring, job assignments, and job enrichment.

Concepts from two different theories of career development were used in studying levels of job satisfaction. John Holland's theory of job-person fit, or congruence, holds that the better the "fit" between type of person and type of job, the more satisfied the worker will be. For instance, a person who values individual effort, and who is less socially focused, will thrive in a research or artistic environment, but will not enjoy person-oriented work such as selling. The concept of career self-efficacy, or belief in personal competence, is advanced by Albert Bandura and others. High self-efficacy for planning one's career and performing well at work is said to contribute to greater job satisfaction.

The two theories each name several factors that are supposed to contribute to these key concepts. Length of time in the workforce and mobility within the organization are expected to increase congruence between person and job. Past successes in career planning and job performance are expected to increase career self-efficacy. The study includes these factors, and several others: age, sex, education level, tenure in the job, organization, and workforce, and dual-career status (whether the study participant has a life partner whose career affects the participant's career decisions).

This study used survey responses from 104 professional and managerial employees at _____. Of the five surveys, two (Job Satisfaction Survey and Vocational Preference Inventory) are in common use, and three (Organizational Mobility Survey, Career Success Measure, and Career Task Survey) are original. The first set of surveys was administered in October 1990; a follow-up survey, the Job Description Survey, was administered in March 1991.

INITIAL DESCRIPTION OF RESULTS

Number of subjects: 104 Females: 93 Males: 11
 Age range: under 25 to over 60 Mean age range: 40-44
 Dual-career status: 62 (59%)
 Education level: 22% post-high school, 49% B.A. or B.S.; 31% post-B.S.

	MEAN	MINIMUM	MAXIMUM	STD. DEV.
Job tenure (years)	5.7	1	23	4.80
____ tenure (years)	10.9	1	42	8.13
Workforce tenure (years)	17.4	1	42	9.30
Career success	1.9	0	3.75 (4)	.79
Career self-efficacy	7.3	3.87	8.87 (9)	.97
Job satisfaction	3.5	1.00	5.00 (5)	1.05
Org'l mobility	2.5	.86	4.00 (4)*	.64

* Number in parentheses is highest possible score

PERSON-JOB CONGRUENCE

	NUMBER	PERCENT
High:	33	31%
Medium:	44	42%
Low:	27	25%

SELECTED CORRELATIONS BETWEEN FACTORS

Significant positive relation:

- * organizational mobility and job satisfaction
- * career success and job satisfaction
- * career self-efficacy and job satisfaction

- * organizational mobility and career success
- * age and career success
- * career success and career self-efficacy
- * work tenure and career self-efficacy

STATISTICAL PREDICTORS OF JOB SATISFACTION, IN ORDER OF STRENGTH

1. career self-efficacy
2. career success
3. organizational mobility

NONSIGNIFICANT FACTORS

Dual-career status, age, sex, education level, job tenure, _____ tenure, job-person congruence

DISCUSSION

Study participation. Of 265 personnel who were invited to participate, 104 (39%) completed surveys. There was no in-person contact; all communication with potential participants occurred through interoffice mail. This response rate is not unusual for such a project. Of those who did not respond, a large percentage work in ICU and operating room positions.

Demographics. The mean age of study participants is relatively young, but the mean job tenure and organizational tenure is high. This picture is consistent with the national trend of baby-boom-age workers being promoted less often than in the past. The large percentage of dual-career workers is also consistent with national trends. Age ranges rather than exact ages were used as a privacy safeguard.

Original surveys. The Career Task Survey was designed to measure four areas of self-efficacy: overall career planning, job performance, professional development, and organizational requirements. The Career Success Measure items were reviewed by the Nursing Service for content and correct wording. Career Success scores reflect frequency of success experiences, so a high-tenure workforce such as this should score relatively high on this measure. Younger workers have had fewer chances for such events to occur. The Organizational Mobility Survey captures the presence of obstacles to finding other desirable work within the current organization.

Job satisfaction. 1987 scores for a group of 226 employees of a healthcare facility were: mean = 3.49, standard deviation = .86. The job satisfaction scores for _____ do not appear to differ greatly from this other sample. Mean scores for _____ subjects on job

satisfaction, career self-efficacy, career success, and organizational mobility are uniformly higher than those from the first study site. Recall that workforce tenure is highly related to job satisfaction, and _____ subjects' workforce tenure was higher (17.4 vs. 12.5 years). Therefore, it is somewhat expected to find this result in a higher-tenure group.

Congruence. The six types of persons and jobs proposed by Holland are: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. High congruence is defined as: exact match of first three letters, such as SIE, SIE; or same first two letters, same order, such as SIE, SIA; or same three letters in different order, such as SIE, IES. Partial congruence is defined as: same first letter, such as SEC, SIA; or first two letters in one code in any order in the second, such as ISR, SEI.

The Holland codes for _____ positions in this study, determined by matching _____ job descriptions to the Dictionary of Occupational Titles (DOT), are:

SIE: staff nurse, head nurse

SEI: nursing supervisor, clinical coordinator

SEC: clinical specialist, research nurse

SCI: nursing instructor

The Holland codes for individuals, computed from their Vocational Preference Inventory results, were quite varied. 20 participants' first-letter codes were Realistic, and 22 were Artistic; these two types do not appear at all in _____ position codes. The single most popular type in this group is Investigative, which is the first letter for 34 participants.

The first computation of congruence was done by the process described above, comparing the three-letter codes from subjects' VPIs with the position codes from the DOT. This not only resulted in a very skewed distribution (76% not congruent), but also demonstrated a confusing correlation: the higher the congruence, the lower the job satisfaction. Similar results were obtained the first study site. Holland suggests that unusual results may occur because of incomplete information, including job descriptions that do not fully reflect the position's variety. Approval was given for a new survey to address this issue. Forty-four study subjects responded to the Job Description Survey, administered in March 1991. This survey yielded the following changes: 29% increased congruence, 13% decreased congruence, and 54% remained the same. New correlations were not computed because of the partial response.

Another computation, suggested by Holland, compares individual VPI scores with the most common VPI score across all subjects (in this case,

IAR). This was done, with the following congruence results: 31% high, 42% medium, 25% low. With this method, the negative relation between congruence and job satisfaction disappeared. It is possible, just as with the first group of subjects, that the job descriptions did not fully reflect the variety of tasks in each position. It is also possible, however, that the high congruence/low satisfaction picture might be accurate: that Nursing Service employees who truly "fit" the Social description find their ____ work environments inhospitable and therefore have lower satisfaction. The large numbers of Investigative, Realistic and Artistic employees, who prefer more privacy and less personal interaction, may contribute to this lack of fit. It is also possible that the coding of nursing positions in the Holland scheme is inappropriate for ____ jobs. Since the most common three-letter VPI code obtained by subjects is IAR, perhaps the work environment really is less social and more investigative than some other nursing environments. (In fact, IAR is also the most common VPI code in the first study site, staffed by chemists, engineers, and managers.) So _____ may have a number of fairly satisfied nursing personnel who are misfits "on paper"; that is, some positions might be characterized more by Investigative, Artistic, and Realistic than the job description indicates.

Career Success. Success experiences contribute to career self-efficacy, the single most important predictor of job satisfaction in this study. One factor commonly denoting career success is money. Interestingly, many events on the Career Success Measure do not include salary increases, such as "received an exciting or high-visibility job assignment", and "chosen to substitute when manager is away". The strength of these events in contributing to job satisfaction is significant, and many can be implemented for little or no cost. At the first study site, a public sector agency, subjects ranked items on this measure based on their importance in indicating career success. Only one item in the top six--"received a higher than average salary increase"--costs money.

Predictors of job satisfaction. The ability of career success and career self-efficacy to predict job satisfaction is predicted by Bandura's theory, and has important implications for _____ Nursing Service. This study demonstrates that work-related success experiences, and participants' subsequent judgements about their capacity to succeed, contribute to satisfaction on the job. It is possible to arrange work conditions and human resource policies to increase workers' chances for success experiences, and success events can be expected to improve workers' judgments about their own ability to accomplish work-related goals. For instance, performance-based promotions could be accelerated for exceptional performers; creative planning could be continually applied to job assignments and task organization, perhaps with multi-manager input; performance appraisal ratings could be monitored to avoid clustering at the high end; manager substitution could be rotated, to allow more workers exposure to managerial tasks; and assignments to details and task forces could be reviewed by a prestigious group and be announced publicly.

The negative relation between congruence and satisfaction suggests a review of practices in writing job descriptions, recruiting, and hiring new personnel. It is possible that improved listing of job tasks, and expanded discussion of these tasks with new candidates, might allow _____ to attract and retain nursing professionals who genuinely enjoy the investigative and artistic qualities of the work environment. Also, an expectation that the Nursing Service as a whole is oriented toward social values and activities may not be warranted in this setting. There is a visible percentage of Nursing Service staff who prize abstract inquiry, scientific pursuits, technical competency, and personal creativity in their working lives.

APPENDIX G

Informed Consent Form for Career Attitudes Study

This study is an attempt to learn more about the career attitudes of professional employees in various stages of their careers. There are many theories and guesses about whether people are content with their work, and what factors contribute to work satisfaction. This study will provide updated information on this topic. Knowledge about work satisfaction will help individuals and employers find better ways to manage careers, including personal career planning methods, hiring and training policies, and employee development activities. The procedure for this study is the completion by each participant of five written surveys.

Please read the following statements about the Career Attitudes Study and, if you are willing to participate, complete the information below.

1. I have freely consented to take part in this study, which is being conducted by Ellen Lent, M.A., of Michigan State University, under the supervision of Dr. Frederick Lopez, of Michigan State University.
2. I understand that the time needed for me to complete the five surveys in this study is between 30 and 60 minutes.
3. I understand that my participation will pose no significant risks or discomfort to me; that I am free not to participate at all or to discontinue my participation in the study at any time without penalty; and that I am free to decline to answer specific questions.
4. I understand that the results of this study will be treated in strict confidence, and that I will never be identified by name in any reporting of the results. Results of the study will be available in group or aggregate form only. Within these restrictions, results of the study can be made available to me at my request.
5. I understand that my participation or nonparticipation in this study will in no way affect the conditions of my employment.

This study has been described to me and I understand the explanation that has been given and what my participation will involve. My participation in this research is completely voluntary. I am indicating my voluntary agreement to participate by completing and returning this form and package of surveys.

Signature

Name (please print)

Date

APPENDIX H
General Information Survey

10/89

Circle the number that describes your status in each area, or fill in the blanks:

Age 0 - under 25
 1 - 25-29
 2 - 30-34
 3 - 35-39
 4 - 40-44
 5 - 45-49
 6 - 50-54
 7 - 55-59
 8 - 60 or over

Sex 0 - male
 1 - female

Education level completed

 1 - high school or below
 2 - some college
 3 - undergraduate degree
 4 - graduate work or degree

Job Title _____

Nature of job (check the answer that best describes your position)

_____ staff nurse _____ manager _____ other

Dual-career status (do you have a life partner whose career decisions affect you and who is affected by your career decisions?)

0 - no
1 - yes

Job tenure (how long in your present job?) _____ years

Organizational tenure (how long in all positions?) _____ years

Workforce tenure (how many years as a full-time worker in your entire career?) _____ years

Ethnic status 0 - majority 1 - minority

APPENDIX I
Perceived Opportunity Survey

Circle a number from 1-4:

1. How many opportunities have you had to apply for appropriate transfers or promotions?

0	1	2	3	4
no opportunities				many opportunities

2. If you have applied for transfers or promotions, how much competition from other candidates have you faced?

0	1	2	3	4
much competition				very little competition

3. To what extent is mobility easy for persons of your:

	<u>very difficult</u>				<u>very easy</u>
A. educational level	0	1	2	3	4
B. age	0	1	2	3	4
C. sex	0	1	2	3	4
D. ethnic status	0	1	2	3	4
E. dual career status	0	1	2	3	4
F. other (write in):					
_____	0	1	2	3	4

APPENDIX J
Career Task Survey

10/89

Below is a list of tasks that you may have faced in your work and career. Even if you have never faced some of the tasks, please state how much confidence you have that you could do each one if you had to. Please answer each item by circling one number on the scale: 0 = No confidence at all; 9 = Complete confidence that I could do this task. Choose lower numbers to show little confidence, higher numbers to show more confidence.

	No confidence	Complete confidence								
1. Perform with excellence in my current job.	0	1	2	3	4	5	6	7	8	9
2. Perform with excellence in future jobs.	0	1	2	3	4	5	6	7	8	9
3. Avoid having enemies at work.	0	1	2	3	4	5	6	7	8	9
4. Identify work projects that will interest me and develop my talents.	0	1	2	3	4	5	6	7	8	9
5. Meet work deadlines under pressure.	0	1	2	3	4	5	6	7	8	9
6. Set work priorities effectively to get the most important tasks done.	0	1	2	3	4	5	6	7	8	9
7. Do what my manager wants and expects me to do.	0	1	2	3	4	5	6	7	8	9
8. Increase my knowledge and skill on my present job.	0	1	2	3	4	5	6	7	8	9
9. Understand myself and my career plans.	0	1	2	3	4	5	6	7	8	9
10. Rescue a project with major faults or obstacles.	0	1	2	3	4	5	6	7	8	9
11. Get what I want from my working life.	0	1	2	3	4	5	6	7	8	9
12. Obtain the most desirable job (for me) in this organization.	0	1	2	3	4	5	6	7	8	9
13. Fully describe my work-related strengths and weaknesses.	0	1	2	3	4	5	6	7	8	9
14. Communicate my ideas effectively to others at work.	0	1	2	3	4	5	6	7	8	9
15. Display leadership skills when appropriate.	0	1	2	3	4	5	6	7	8	9

	No confidence					Complete confidence				
16. Respond appropriately to requests from my manager that I feel are unreasonable.	0	1	2	3	4	5	6	7	8	9
17. Let my job successes become known to colleagues outside my work group.	0	1	2	3	4	5	6	7	8	9
18. Contribute effectively to task forces and committees.	0	1	2	3	4	5	6	7	8	9
19. Plan for the future of my career.	0	1	2	3	4	5	6	7	8	9
20. Identify my needs for improvement and development in my current job.	0	1	2	3	4	5	6	7	8	9
21. Deal appropriately with hostile subordinates and/or colleagues.	0	1	2	3	4	5	6	7	8	9
22. Recognize when my job is well suited to my talents and interests.	0	1	2	3	4	5	6	7	8	9
23. Recognize when my job is not well suited to my talents and interests.	0	1	2	3	4	5	6	7	8	9
24. Persist at work in spite of career-related disappointments and setbacks.	0	1	2	3	4	5	6	7	8	9
25. Make allies in the organization.	0	1	2	3	4	5	6	7	8	9
26. Predict how my employer will use my talents in the future.	0	1	2	3	4	5	6	7	8	9
27. Use training, professional reading, and other activities to increase my expertise for current and future responsibilities.	0	1	2	3	4	5	6	7	8	9
28. Make valuable suggestions for organizational improvement.	0	1	2	3	4	5	6	7	8	9
29. Request training and/or other activities to meet my needs for improvement and development.	0	1	2	3	4	5	6	7	8	9
30. Identify and understand new developments in my field.	0	1	2	3	4	5	6	7	8	9

APPENDIX K
Job Satisfaction Scale

10/89

Circle one number on each of the following scales to represent your answer to these questions:

1. If you had to decide all over again whether to take the job you now have, what would you decide?

1	2	3	4	5
definitely not take job				definitely take job

2. If a qualified friend asked if he/she should apply for a job like yours with your employer, what would you recommend?

1	2	3	4	5
recommend not at all				recommend strongly

3. How does this job compare to your ideal job?

1	2	3	4	5
very far from ideal				very close to ideal

4. How does your job measure up to the sort of job you wanted when you took it?

1	2	3	4	5
not at all like what I wanted				just what I wanted

5. All things considered, how satisfied are you with your current job?

1	2	3	4	5
not at all satisfied				completely satisfied

APPENDIX L
Career Success Survey

10/90

1. Consider the kinds of accomplishments people in your work setting see as indicators of being successful in a career. Against those standards, how do you think others in your field would view your career accomplishments up to this point in your career (Circle a number from zero to four):

Not at all successful		About average		Very successful
0	1	2	3	4

2. For each of the following items, please indicate how often it has occurred to you in your career up to this point:

	Never		A few times		Very frequently
A. Spontaneous/voluntary praise from manager	0	1	2	3	4
B. Received a higher performance appraisal rating than others with whom I work	0	1	2	3	4
C. Received a higher than average salary increase	0	1	2	3	4
D. Selected above others to go on details, or for a task force assignment	0	1	2	3	4
E. Received financial support for attending conferences	0	1	2	3	4
F. Been chosen to substitute when manager is away	0	1	2	3	4
G. Scheduled to go to workshops or seminars	0	1	2	3	4
H. Received a step increase or a merit increase	0	1	2	3	4
I. Offered lateral reassignment	0	1	2	3	4
J. Offered a promotion sooner than expected	0	1	2	3	4

K. Made presentations at meetings	0	1	2	3	4
L. Received an exciting or high- visibility job assignment	0	1	2	3	4

The following item appeared only in the CSS at Site A, Time 1.

3. Finally, please review the list of items in number 2. Place a check to the left of the five items which you believe are the most important indicators of career success in your workplace.

APPENDIX M

Vocational Preference Inventory (VPI)TM

"Reproduced and adapted by special permission of the Publisher, Psychological Assessment Resources, Inc., 16204 North Florida Avenue, Lutz, Florida 33549, from the Vocational Preference Inventory by Dr. John L. Holland, Ph.D., Copyright 1978, 1985. by PAR, Inc."

1985 Revision

Developed by John L. Holland, Ph.D.

This is an inventory of your feelings and attitudes about many kinds of work. Fill out your answer sheet by following the directions given below:

1. Show on your answer sheet the occupations which *interest* or *appeal* to you by blackening (Y) for "Yes."
2. Show the occupations which you *dislike* or find *uninteresting* by blackening (N) for "No."
3. Make *no marks* when you are undecided about an occupation.

- | | |
|----------------------------------|--------------------------------------|
| 1. Criminologist | 31. Auto Mechanic |
| 2. Private Investigator | 32. Astronomer |
| 3. Restaurant Worker | 33. Musician |
| 4. Detective | 34. Juvenile Delinquency Expert |
| 5. Photoengraver | 35. Advertising Executive |
| 6. Truck Gardener | 36. Budget Reviewer |
| 7. Physical Education Teacher | 37. Prizefighter |
| 8. Humorist | 38. Post Office Clerk |
| 9. Photographer | 39. Experimental Laboratory Engineer |
| 10. Diplomat | 40. Bartender |
| 11. Airplane Mechanic | 41. Carpenter |
| 12. Meteorologist | 42. Medical Laboratory Technician |
| 13. Poet | 43. Author |
| 14. Sociologist | 44. Speech Therapist |
| 15. Speculator | 45. Manufacturer's Representative |
| 16. Bookkeeper | 46. Certified Public Accountant |
| 17. Deep Sea Diver | 47. Firefighter |
| 18. Stock Clerk | 48. Airline Ticket Agent |
| 19. Dramatic Coach | 49. Entertainer |
| 20. Lawyer | 50. Novelist |
| 21. Fish and Wildlife Specialist | 51. Hunting or Fishing Guide |
| 22. Biologist | 52. Anthropologist |
| 23. Symphony Conductor | 53. Commercial Artist |
| 24. High School Teacher | 54. Marriage Counselor |
| 25. Buyer | 55. Television Producer |
| 26. Business Teacher | 56. Credit Investigator |
| 27. Wrecker (Building) | 57. Wild Animal Trainer |
| 28. Veterinarian | 58. Administrative Assistant |
| 29. Elementary School Teacher | 59. Physical Therapist |
| 30. Physician | 60. Cashier |

Continue on the back ➡

APPENDIX M (cont'd)

-
- | | |
|-------------------------------------|---------------------------------|
| 61. Surveyor | 111. Bus Driver |
| 62. Zoologist | 112. Geologist |
| 63. Free-Lance Writer | 113. Composer |
| 64. School Principal | 114. Youth Camp Director |
| 65. Hotel Manager | 115. Real Estate Salesperson |
| 66. Court Stenographer | 116. Financial Analyst |
| 67. Stunt Man/Stunt Woman (Movies) | 117. Mountain Climber |
| 68. Route Salesperson | 118. Cook/Chef |
| 69. Professional Athlete | 119. Stage Director |
| 70. Flight Attendant | 120. Ticket Agent |
| 71. Construction Inspector | 121. Locomotive Engineer |
| 72. Chemist | 122. Botanist |
| 73. Musical Arranger | 123. Sculptor/Sculptress |
| 74. Playground Director | 124. Personal Counselor |
| 75. Business Executive | 125. Publicity Director |
| 76. Bank Teller | 126. Cost Estimator |
| 77. Jockey | 127. Explorer |
| 78. Interior Decorator | 128. Nursery School Teacher |
| 79. Airplane Pilot | 129. Quality Control Expert |
| 80. Banker | 130. Judge |
| 81. Radio Operator | 131. Machinist |
| 82. Independent Research Scientist | 132. Scientific Research Worker |
| 83. Journalist | 133. Playwright |
| 84. Clinical Psychologist | 134. Psychiatric Case Worker |
| 85. Restaurant Manager | 135. Department Store Manager |
| 86. Tax Expert | 136. Payroll Clerk |
| 87. Motorcycle Driver | 137. Test Pilot |
| 88. Sports Promoter | 138. Computer Programmer |
| 89. Referee (Sporting Events) | 139. Clothing Designer |
| 90. Mail Carrier | 140. Truck Driver |
| 91. Electronic Technician | 141. Electrician |
| 92. Writer of Scientific Articles | 142. Physicist |
| 93. Portrait Artist | 143. Cartoonist |
| 94. Social Science Teacher | 144. Vocational Counselor |
| 95. Master of Ceremonies | 145. Sales Manager |
| 96. Inventory Controller | 146. Bank Examiner |
| 97. Blaster (Dynamiter) | 147. Racing Car Driver |
| 98. Police Officer | 148. Forester |
| 99. English Teacher | 149. Social Worker |
| 100. U.N. Official | 150. Sales Clerk |
| 101. Tree Surgeon | 151. Funeral Director |
| 102. Editor of a Scientific Journal | 152. Mind Reader |
| 103. Concert Singer | 153. Architect |
| 104. Director of Welfare Agency | 154. Shipping & Receiving Clerk |
| 105. Salesperson | 155. Criminal Psychologist |
| 106. IBM Equipment Operator | 156. Insurance Clerk |
| 107. F.B.I. Agent | 157. Barber |
| 108. Probation Agent | 158. Bill Collector |
| 109. Astronaut | 159. Ward Attendant |
| 110. College Professor | 160. Masseuse/Masseur |
-

PAR Psychological Assessment Resources, Inc.
P.O. Box 998 / Odessa, Florida 33556 / Telephone (813) 968-3003

Copyright © 1953, 1965, 1977, 1985 by Psychological Assessment Resources, Inc. All rights reserved. May not be reproduced in whole or in part in any form or by any means without written permission of Psychological Assessment Resources, Inc.

9876543

Printed in the U.S.A.

APPENDIX N

Job Description Survey

(3/91)

INSTRUCTIONS Read the following six descriptions and decide how similar each is to your own work environment. Assign a rank to each description, using the numbers 1 through 6, with 1 most similar to your work environment, and 6 least similar.

_____ Explicit, ordered, or systematic manipulation of objects, tools, machines, or animals; encouragement of technical competencies and achievements; encouragement of mechanical ability, seeing the world in simple, tangible, and traditional terms; few opportunities to develop skill in human relations.

_____ Observation and symbolic, systematic, creative investigation of physical, biological, or cultural phenomena; encouragement of scientific competencies and achievements; encouragement of scholarly traits, scientific and mathematical ability, seeing the world in complex, abstract, original, and independent ways; few opportunities to develop leadership skills.

_____ Ambiguous, free, unsystematized activities and competencies to create art forms or products; encouragement of artistic achievements; encouragement of traits such as expressiveness, originality, intuitiveness, nonconformity, and independence, and abilities such as acting, writing, and speaking; seeing the world in complex, independent, unconventional, and flexible ways.

_____ Involvement with others to inform, train, develop, cure, or enlighten; encouragement to engage in social activities, encouragement of traits such as helpfulness, understanding, cooperativeness, sociability, and persuasiveness; encouragement of social values; seeing the world in flexible ways.

_____ Involvement with others to attain organizational or self-interest goals; encouragement to engage in enterprising and leadership activities; encouragement of traits such as aggressiveness, popularity, self-confidence, sociability, leadership, and speaking ability; seeing the world in terms of power, status, and responsibility.

_____ Explicit, ordered, systematic manipulation of data, such as keeping records, filing and reproducing materials, organizing written and numerical data according to a prescribed plan; encouragement of recording and organizing data or records; encouragement of traits such as conformity, orderliness, and dependability.

MICHIGAN STATE UNIV. LIBRARIES



31293009125372