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ABSTRACT

To maximize knowledge from existing studies and to determine how job satisfaction constructs have been operationalized in the field of educational administration over the last quarter century, reliable and valid procedures must be developed to synthesize findings from the studies empirically. This study synthesizes empirical findings on job satisfaction in the first 26 volumes (1965 to 1990) of the "Educational Administration Quarterly" (EAQ). Six sequential research objectives and 31 research questions were pursued through a model designed to classify, record, and analyze study characteristics in EAQ articles. Of the 474 articles in the EAQ in the period, 41 addressed constructs of job satisfaction according to article authors. Of these, 34 gave empirical findings, but only 22 had sufficient information for the synthesis. Drawing on the analysis of these articles, recommendations are made for editorial policies and data reporting in the EAQ in the following areas: (1) construct operationalization, (2) statistical power, (3) data-reporting standards, (4) unit of analysis, (5) indicators of explained variance, and (6) study of administrators. Suggestions are given for future research based on the review of topics addressed to date. (Contains 60 references.) (SLD)

JOB SATISFACTION: A SYNTHESIS OF RESEARCH IN THE EDUCATIONAL ADMINISTRATION QUARTERLY

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Running Head: A SYNTHESIS OF JOB SATISFACTION RESEARCH

Author's Note: This research was initiated while I was a doctoral student at Texas A&M University. Special thanks go to my wife D'Anne Thompson, my daughter Rachel Hannah Thompson, my parents Douglas and Cynthia Thompson, and my doctoral committee co-chairs Drs. John R. Hoyle and James F. McNamara.

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JOB SATISFACTION: A SYNTHESIS OF RESEARCH IN THE EDUCATIONAL ADMINISTRATION QUARTERLY

Introduction and Purpose

Educational administration scholars (Crehan, 1985; Campbell, 1979; Hoy, 1978) have periodically commented on the lack of programmatic and cumulative efforts which have characterized educational administration inquiry. Hoy (1978, p. 5) put it bluntly: "There is little in the way of application, improving, or building on others' work. We rarely base new work on existing work." A similar charge has been leveled at research efforts into the often-studied topic of job satisfaction (Miskel and Ogawa, 1988). This state of affairs exists in the Educational Administration Quarterly (EAQ), arguably the field's leading scholarly journal. After more than a quarter of a century of publication of articles in the EAQ, no empirical synthesis of individual studies of job satisfaction has been conducted. Neglecting to empirically synthesize findings on job satisfaction suggests that educational administration researchers have not learned all that can be learned from existing job satisfaction studies. To maximize knowledge from existing studies, as well as to determine how job satisfaction constructs have been operationalized in the field of educational administration over the past quarter century, reliable and valid procedures must be developed to empirically synthesize findings from these studies. Crehan (1985) advanced the potential for quantitative synthesis to bring order to a non-systematic body of research in educational administration. Accordingly, the purpose of this inquiry was to synthesize empirical findings on job satisfaction published in the first 26 volumes (1965-1990) of the EAQ.

Objectives and Research Questions

Following specific procedures for quantitative synthesis (Hunter and Schmidt, 1990; Glass, McGaw, and Smith, 1981), this inquiry addressed six sequential research objectives and 31 research questions. These objectives and their corresponding research questions are presented in Table 1 (see pp. 2-4). Taken collectively and addressed in the sequence indicated in Table 1, these 31 research questions guided both the theoretical and empirical aspects of this inquiry. Answers to these 31 research questions not only maximized what was learned from job satisfaction studies published in the first 26 volumes of the

TABLE 1

Research Objectives and Research Questions

Research Objective One: Specifying the EAQ articles that address job satisfaction and provide sufficient information for quantitative synthesis

Historical Overview

1. How many EAQ articles address job satisfaction?
2. How many of the articles addressing job satisfaction present empirical findings?
3. How many of the empirical job satisfaction articles provide sufficient information for quantitative synthesis?

Research Objective Two: Identifying the research hypotheses and the target population, job satisfaction constructs, and predictor constructs around which these hypotheses are generated

Target Population

4. What target population is identified in each article?
5. What characteristics are associated with the target population identified in each article?
6. What sampling design characteristics are identified in each article?

Research Hypotheses

7. How many job satisfaction research hypotheses are investigated in each article?
8. How many research hypotheses specify expected relationships between job satisfaction and other organizational behavior variables?
9. How many research hypotheses in each article specify expected differences in job satisfaction for subgroups of the target population?

Job Satisfaction Constructs

10. What job satisfaction constructs are elaborated in the research hypotheses in each article?
11. What reliability information for job satisfaction constructs is provided in each article?
12. What validity information for job satisfaction constructs is provided in each article?

Predictor Constructs

13. What specific predictor constructs are elaborated in the research hypotheses in each article?
14. What reliability information for predictor constructs is provided in each article?
15. What validity information for predictor constructs is provided in each article?

TABLE 1 (Continued)

Research Objective Three: Identifying the statistical hypotheses and the inferential rules used to link empirical evidence to the corresponding research hypotheses

Statistical Hypotheses

16. How many statistical hypotheses in each article specify correlation parameters?

17. How many statistical hypotheses in each article specify mean difference parameters?

Statistical Tests

18. Is a predetermined alpha level reported for each statistical test?

19. Is a predetermined beta level reported for each statistical test?

20. Is an explicit alternative statistical hypothesis reported for each statistical test?

21. Is an explicit effect size to distinguish between statistical and practical significance reported for each statistical test?

22. What specific test statistic is reported for each statistical hypothesis?

23. What specific effect size indicator is reported or can be derived for each test statistic?

Research Objective Four: Estimating the population effect sizes corresponding to selected research hypotheses

Effect Sizes

24. What is the estimate of the true population effect size?

25. What is the estimate of the variance of the observed (or derived) effect sizes?

26. What is the estimate of the variance due to sampling error?

27. What is the estimate of the variance of the true population effect size?

28. What is the estimate of the standard deviation of the true population effect size?

Research Objective Five: Elaborating the moderator variables that increase the explanatory power associated with selected research hypotheses

Moderator Variables

29. What moderator variables, if any, are associated with the job satisfaction research hypothesis under analysis?

TABLE 1 (Continued)

Research Objective Six: Assessing the stability of population effect size estimates for selected research hypotheses generated over the first 26 volumes of the EAQ

Time Series Analysis

30. How have job satisfaction effect sizes for selected research hypotheses changed over time?

31. How have job satisfaction effect sizes for specific target populations changed over time?

EAQ, but also provided new information needed to advance recommendations for improving future research on job satisfaction.

Design of the Inquiry

The design of the inquiry was conceptualized as a 14-stage sequential model. An overview of this model is presented in Table 2 This model was designed and validated to classify, record, and analyze study characteristics found in EAQ articles which addressed job satisfaction and provided sufficient information for quantitative synthesis. A group of Texas A&M University researchers specifically trained in meta-analytic methods independently verified the reliability of classification, coding, and parameter estimation. A description of the model follows.

Stage One. Developing the Theoretical Framework

A theoretical framework based on a review of literature was used to guide this synthesis. This review examined job satisfaction in the domains of industrial/organizational psychology, education, and educational administration and focused on: (a) definition, (b) theories and models, (c) constructs, (d) measurement, (e) relationship of job satisfaction constructs to selected predictor constructs, and (f) a summary of previously reported research.

Stage Two. Specifying the Population

The population of empirical articles addressing job satisfaction was identified using a content analysis. A two-step classification scheme was used to accomplish this identification. In step one, EAQ articles were classified as those which did or did not address job satisfaction as declared by the author. In step two, all articles were classified as either empirical or not empirical. This classification scheme placed each article into one of four mutually exclusive categories. As such, all empirical articles which addressed job satisfaction were retained for quantitative synthesis. The non-empirical EAQ articles that addressed job satisfaction were integrated into the review of literature.

The content analysis was tested for reliability by having a two behavioral science researchers from Texas A&M University independently classify each article in the 26 EAQ volumes. Differences resulting from the independent classification were resolved by a third researcher.

TABLE 2

Design of the Inquiry

Stage 1:	Developing the theoretical framework
Stage 2:	Specifying the population
Stage 3:	Designing the classification system
Stage 4:	Designing the coding system
Stage 5:	Coding the data
Stage 6:	Archiving the coded data
Stage 7:	Constructing the research hypotheses inventory
Stage 8:	Identifying the effect sizes
Stage 9:	Describing the articles
Stage 10:	Describing the effect sizes
Stage 11:	Estimating the parameters
Stage 12:	Elaborating the moderator variables
Stage 13:	Assessing the stability of findings over time
Stage 14:	Specifying the recommendations

Stage Three. Designing the Classification Systems

In this stage, classification systems for each variable employed in the synthesis were constructed. Several classification systems which are not straightforward merit mention.

First, the classification systems for both job satisfaction constructs and predictor constructs classified as organizational variables were informed by the following perspectives: (a) the theoretical framework developed in Stage One; (b) the organizational variable typology employed by Educational Administration Abstracts to classify organizational variables in over 120 management and administration journals; and (c) the constructs actually measured in the synthesis population of articles.

Second, the classification system for predictor constructs specified as target population characteristics was developed from the array of actual characteristics portrayed in the synthesis population of articles.

Third, the classification system to identify the effect size indicator r_{xy} (the Pearson product moment correlation) for each type of test statistic used in the EAQ articles was constructed following guidelines for meta-analysis (Johnson, 1989; Cohen, 1988; Glass, McGaw, and Smith, 1981). Typical statistical models and their conversion formulas to obtain the effect size indicator r_{xy} follow:

1. Pearson Product Moment Correlation (r_{xy})

   $r_{xy} = r_{xy}$ (1)

2. Point Biserial Correlation (r_{pb})

   $r_{xy} = 1.25(r_{pb})$ (2)

3. t-test for Independent Samples (t)

   $r_{pb} = [t^2 / (t^2 + n_1 + n_2 - 2)]^{1/2}$ (3)

   Convert r_{pb} to r_{xy} by (2)

4. Oneway ANOVA model with K=2 groups (F)

   $t = (F)^{1/2}$ (4)

   Convert t to r_{xy} by (3) and (2) above

5. Oneway ANOVA models with K>2 groups (F)

   Collapse K groups into 2 groups and proceed according to (4), (3), and (2) to convert F into r_{xy}

6. Chi-square models

$$r_{xy} = [X^2 / (X^2 + n)]^{1/2} \quad (5)$$

The classification systems developed in this stage provided for computerized analysis of data taken from the synthesis population of EAQ articles.

Stage Four. Designing the Coding System

The classification systems designed in Stage Three provided the means for constructing a numerical coding system. This coding system empirically reflected and numerically represented the theoretical classification systems designed in Stage Three.

A group of Texas A&M University researchers specifically trained in meta-analytic methods in an advanced doctoral seminar by Dr. James F. McNamara independently verified the reliability of the coding system by ensuring that the system accurately reflected the classification systems developed in Stage Three. Differences were resolved by a third researcher.

Stage Five. Coding the Data

The numerical coding system developed in Stage Four provided the means for coding the empirical data contained in the synthesis population of EAQ articles. Specifically, data from the EAQ articles were coded onto specially designed coding sheets reflecting the coding system developed in Stage Three.

Researchers from the meta-analysis seminar replicated data coding to ensure its reliability. Any discrepancies were resolved with the assistance of a third researcher.

Stage Six. Archiving the Coded Data

The coding system developed in Stage Four and the coding of data in Stage Five provided the means for archiving the data into an SPSS-X data file. This archiving was accomplished in two steps. In step one, an SPSS-X code was developed; this code accurately reflected the coding system developed in Stage Four. In step two, coded data from Stage Five were archived into an SPSS-X data file.

The reliability of data archiving was also accomplished by having the researchers in the meta-analysis seminar proficient in writing SPSS-X code independently verify both that this code accurately reflected the coding system developed in Stage Four and that the data were accurately archived into the computer file.

Stage Seven. Constructing the Research Hypotheses Inventory

The inventory of research hypotheses was constructed from the actual array of explicit or implicit research hypotheses addressed in the synthesis population of EAQ articles. Each research hypothesis specified either an expected relationship between a distinct job satisfaction construct and a distinct predictor construct or an expected difference on a distinct job satisfaction construct for a target population subgroup. For example, Bacharach, Bamberger, Conley, and Bauer (1990) presented three implicit research hypotheses specifying expected relationships between overall job satisfaction and the following predictor constructs: (a) role ambiguity, (b) role conflict, and (c) organizational commitment. Based on this information, three research hypotheses were identified and entered into the inventory. Similarly, explicit or implicit research hypotheses from other EAQ articles in the synthesis population were identified and entered into this inventory.

The reliability and validity of constructing the research hypotheses inventory were also verified by researchers participating in the meta-analysis seminar.

Stage Eight. Identifying the Effect Size Estimates

Once the research hypotheses inventory was constructed and data from the synthesis population of EAQ articles were coded and archived, effect size estimates were identified. According to Hedges and Becker (1986), effect size estimates must meet three criteria to be suitable for quantitative synthesis. Each estimate must: (a) represent the same construct; (b) be independent, i.e., one estimate per construct per sample; and (c) estimate the same statistical parameter.

For purposes of this study, effect size estimates took the form of Pearson product moment correlation coefficients and were classified according to Hedges and Becker's (1986) criteria. Since these estimates were correlational in nature, or could readily be converted to product moment correlations, the estimate for each research hypothesis describing the relationship between a distinct job satisfaction

construct (y_i) and a distinct predictor construct (x_i) was classified into the population of effect size estimates. Returning to the example given in Stage Seven, Bacharach et al. (1990) presented product moment correlations describing the relationships between overall job satisfaction (y_1) and role ambiguity (x_1), role conflict (x_2), and organizational commitment (x_3). Moreover, these relationships were described for samples of both elementary and secondary teachers. From this information, six correlation coefficients were entered into the population of effect size estimates. They were r_{x1y1}, r_{x2y1}, and r_{x3y1} for elementary teachers, and r_{x1y1}, r_{x2y1}, and r_{x3y1} for secondary teachers.

Stage Nine. Describing the Articles

Descriptive analyses were conducted for the synthesis population of EAQ articles. These analyses took the form of univariate distributions and provided answers to the first 15 research questions.

Stage Ten. Describing the Effect Sizes

Descriptive analyses were conducted for the quantitative synthesis population of effect size estimates meeting Hedges and Becker's (1986) criteria. These analyses took the form of univariate distributions of two sets of effect size estimates: (a) the entire set of effect size estimates and (b) subsets of effect size estimates corresponding to research hypotheses specifying the relationship between a distinct job satisfaction construct and a distinct predictor construct (e.g., overall job satisfaction and organizational commitment, or satisfaction with pay and gender).

The subsets of research hypotheses described in (b) above yielding at least five effect size estimates and employing the same unit of statistical analysis provided the basis for conducting independent meta-analyses. The conducting of these analyses is described in the next three stages.

Stage Eleven. Estimating the Parameters

For each research hypotheses yielding: (a) at least five effect size estimates describing the relationship between a specific job satisfaction construct and a specific predictor construct and (b) the same unit of statistical analysis, a separate meta-analysis was conducted. Each analysis was conducted according to the guidelines set forth in Hunter and Schmidt (1990, p. 156). According to these guidelines, each distinct effect size estimate was weighted according to the sample size of the study from which the estimate was taken. Using this weighting system, five estimates were calculated: (a) the effect

size estimate of the population correlation, (b) the estimate of the variance of observed correlations across studies, (c) the estimate of the variance due to sampling error, (d) the estimate of the variance of the population correlation, and (e) the estimate of the standard deviation of the population correlation. These estimates were used to draw conclusions about the relationships between job satisfaction constructs and predictor constructs as measured in the EAQ.

Stage Twelve. Elaborating the Moderator Variables

Moderator variables are those which explain differences in the relationship between two variables (Hunter and Schmidt, 1990; Borg, 1987). For example, the relationship between job satisfaction and job tension may be moderated by age; that is, the relationship may be markedly different for different age levels.

Moderator variable elaboration followed guidelines proffered by Hunter and Schmidt (1990). According to Hunter and Schmidt, moderator variables manifest themselves if there is true variation (not due to sampling error) in correlations across studies. If such is the case, then Hunter and Schmidt recommend grouping the observed correlations into subsets and performing an independent meta-analysis on each subset. Moderator variables may come from previous theory, literature, or hypotheses and may manifest themselves in two ways: (a) the mean correlation will vary distinctly between subsets, and (b) the standard deviation of population correlations will be lower in each subset than for the aggregate set of data.

Stage Thirteen. Assessing the Stability of Findings Over Time

To assess the stability of population effect size estimates generated over the first 26 years of the EAQ, the effect size estimates for each research hypothesis yielding at least five effect sizes and employing the same unit of analysis were disaggregated and ordered by the year in which findings were published in the EAQ. This disaggregation and ordering helped to determine if and how the relationships between job satisfaction constructs and predictor constructs classified as either organizational variables or target population characteristics have changed over time.

Stage Fourteen. Specifying the Recommendations

Following Campbell's (1979) model, recommendations addressed the following areas: (a) editorial policies of the EAQ and (b) future research. These recommendations were offered in light of the stated purposes of the EAQ, the existing knowledge on job satisfaction, and the extension of knowledge of job satisfaction through scholarly research.

Theoretical Framework

The review of literature on job satisfaction was divided into six sections: (a) definition, (b) theories and models, (c) constructs, (d) measurement, (e) relationships between constructs of job satisfaction and selected predictor constructs, and (f) a summary of previously reported research.

Definition

Most definitions of job satisfaction have emphasized the individual's affective reaction to the job or its facets (Hoy and Miskel, 1991; Miskel, McDonald, and Bloom, 1983; Bridges, 1980; Gruneberg, 1979; Locke, 1976; Smith, Kendall, and Hulin, 1969; Vroom, 1964; Herzberg, Mausner, and Snyderman, 1959; Hoppock, 1935). Other scholars have taken the position that job satisfaction is the deficiency between perceived and actual need fulfillment (Trusty and Sergiovanni, 1966) or the discrepancy between expectations and perceived reality of the job situation (Bacharach and Bamberger, 1990).

Theories

Two classifications of job satisfaction theories were reviewed. The first, proposed by Locke (1976), identified content and process theories of job satisfaction. Content theories posit that certain needs must be satisfied or values attained in order for one to attain job satisfaction. Major content theories include Maslow's (1954) Needs Hierarchy Theory and Herzberg's et al. (1959) Two-Factor Theory. Process theories emphasize how expectancies, needs, values, and perceptions are causally relevant and how these variables interact with job characteristics to product job satisfaction (Gruneberg, 1979), and include need, value, and expectancy theories of job satisfaction (Locke, 1976).

Models

Hoy and Miskel (1991) and Miskel and Ogawa (1988) identified three models of job satisfaction. The first, identified as the general relationships model, postulates that variables or facets such as demographic

and organizational variables correlate with job satisfaction. The second, identified as the discrepancy model, posits that job satisfaction is positively related to the perceived discrepancy between individual motivation or valued work outcomes and organization incentives. The third model of job satisfaction is based on the work of Lawler (1973) and integrates the general relationships and discrepancy models.

Constructs

Scholars have identified and classified numerous constructs and operationalizations of job satisfaction. Many of these constructs have been identified through factor analysis (Locke, 1976). Based upon this review (Locke, 1976; Wanous and Lawler, 1972; Smith, Kendall, and Hulin, 1969; Trusty and Sergiovanni, 1966; Porter, 1961; Vroom, 1960; Herzberg, 1959; March and Simon, 1958; Maslow, 1954) and the review of measurement of job satisfaction, 12 constructs of job satisfaction were classified for use in this inquiry. The constructs were: overall job satisfaction, satisfaction with pay, satisfaction with agents, satisfaction with work, satisfaction with colleagues or coworkers, satisfaction with supervisor, major satisfaction comes from work, security need deficiency, social need deficiency, esteem need deficiency, autonomy need deficiency, and self-actualization need deficiency.

Measurement

The measurement of job satisfaction since 1935 has consisted mainly of self-report rating scales (Hoy and Miskel, 1991; Locke, 1976) which ask respondents to either directly or indirectly assess their satisfaction with the job or its facets. The most widely-used, reliable, and valid self-report rating scale is the Job Descriptive Index (JDI) (Smith et al., 1969), and has been used periodically in job satisfaction research published in the EAQ (Scott and Wimbush, 1991; Bridges, 1980; Bridges and Hallinan, 1978). Other scholars publishing in the EAQ have developed and validated self-report rating scales (Hoy and Miskel, 1991; Bacharach and Bamberger, 1990; Bacharach, Bamberger, Conley, and Bauer, 1990; Conley, Bacharach, and Bauer, 1989; Miskel et al., 1983; Miskel, DeFrain, and Wilcox, 1980; Miskel, Fevurly, and Stewart, 1979; Holdaway, 1978; Miskel, Glasnapp, and Hatley, 1975).

Relationships

The relationships between constructs of job satisfaction and the following predictor constructs were examined in this review: role ambiguity, role conflict, organizational structures, gender, age, tenure or experience, and level of school employed. A convention proposed by Cohen '1988) was used to qualify the magnitude of relationships discussed in both the theoretical and empirical portions of this inquiry. Briefly, Cohen proposed that Pearson product-moment correlation coefficients, which also function as effect sizes in relational research, be conventionalized as small, moderate, and large when these correlations are at least ±.10, ±.30, and ±.50 in magnitude, respectively. Based on this review, relationships between job satisfaction and its facets and both role ambiguity and role conflict have been consistently negative and moderate to large in magnitude (Bacharach and Bamberger, 1990; Bacharach et al., 1990; Conley et al., 1989; Freeston, 1987; Jackson and Schuler, 1985; Paul, 1975). Many aspects of organizational structure, including bureaucratic structure, job routinization (Conley et al., 1989), rules and regulations (Bacharach and Mitchell, 1983; Hoy, Blazovsky, and Newland, 1983; Grassie and Carss, 1973), and hierarchy of authority (Hoy et al., 1983, Miskel et al., 1979; Grassie and Carss, 1973), have been negatively related to facets of job satisfaction. Participation in decision making has been found to be positively related to job satisfaction, particularly for classroom teachers (Cooke and Rousseau, 1981; Holdaway, 1978). Gender and its relationship to facets of job satisfaction has been found to be at the most small in magnitude and inconsistent (Jones, 1988; McClure, Weidman, and Sharp, 1988; Brush, Moch, and Pooyan, 1987; Young, 1984; Bridges, 1980; Hollon and Gemmill, 1976; Miskel et al., 1975; Paul, 1975). The relationship between age and job satisfaction has tended to be small, with a trend toward increased satisfaction with age (Avi-Itzhak, 1988; Brush et al., 1985; Anderson and Iwanicki, 1984; Bridges, 1980). Relationships between job satisfaction and organizational and job tenure have tended to be small and inconsistent (Scott and Wimbush, 1991; Brush et al., 1985; Bacharach and Mitchell, 1983; Benson, 1983; Paul, 1975; Trusty and Sergiovanni, 1966). Finally, the relationship between job satisfaction and level of school at which one is employed has been found to be negative for teachers (Bacharach and Bamberger, 1990; Bacharach et al., 1990; Conley et al., 1989; Miskel et al., 1983, 1979,

1975) and inconclusive for administrators (Gunn and Holdaway, 1986; Bacharach and Mitchell, 1983; Johnson, Yeakey, and Winter, 1981; Brown, 1976; Miskel et al., 1975).

Summary

Crehan (1985) commented on the utility of meta-analysis in educational administration research. She observed that quantitative synthesis is necessary because of what is considered to be a "disparate and non-systematic corpus" (p. 269) of knowledge in the educational administration research and suggested that meta-analysis held the potential of bringing some order to the knowledge base. This appears to hold true for research on job satisfaction which has cumulated over the first 26 volumes of the EAQ.

Findings

Descriptive Analysis of Articles

The first 15 research questions elaborated in Table 1 were used to guide the descriptive analysis of all articles published in the first 26 volumes of the EAQ. The answers to these first 15 questions satisfied the intents elaborated in the first two research objectives detailed in Table 1.

Historical overview. There were 474 articles published in the EAQ between 1965 (Volume 1) and 1990 (Volume 26). Forty-one of these articles addressed job satisfaction as declared by the article author(s). Thirty-four of the 41 articles addressing job satisfaction presented empirical findings. Of the 34 presenting empirical findings, 22 provided sufficient information for quantitative synthesis; these 22 articles were referred to as the synthesis population of articles.

Target population. The 22 articles in the synthesis population were analyzed to determine the target population to which research findings were generalized. Classroom teachers were the target population in 16 of the 22 articles. Sampling designs and sample sizes were also coded in the 22 articles. Stratified random sampling designs were used in six of the 22 articles and non-probability sampling was used in four of the 22 articles. Sample sizes were found in each article and ranged from 42 subjects to 2475 subjects. The units of analyses were classified into two categories: individual or organizational. The individual was the unit of analysis in 15 of the 22 articles in the synthesis population.

Research hypotheses. The 22 articles yielded 330 distinct, non-overlapping research hypotheses specifying either an expected relationship between a job satisfaction construct and a predictor construct or an expected difference on a distinct job satisfaction construct for a target population subgroup. Because many of the distinct research hypotheses were investigated multiple times in one or more articles, a total of 613 research hypotheses were ultimately investigated. The number of research hypotheses per article ranged from one to 177. The 613 research hypotheses were classified into two categories: relational and mean difference. Relational research hypotheses accounted for 590 of the 613 research hypotheses, while mean difference research hypotheses accounted for the other 23. The most frequently occurring research hypothesis specified an expected relationship between overall job satisfaction and role ambiguity.

Job satisfaction constructs. Twelve distinct job satisfaction constructs were classified as the criterion variables in the 613 research hypotheses. The most frequently occurring job satisfaction construct was overall job satisfaction, occurring in 265 of the 613 research hypotheses. Reliability information for job satisfaction constructs, necessary to correct study correlations for error of measurement (Hunter and Schmidt, 1990), was provided in 16 of the 22 articles and for 537 of the 613 research hypotheses. Cronbach's Coefficient Alpha was the most frequently reported reliability coefficient, appearing in 8 of the 16 articles and in 232 research hypotheses. Reported reliability coefficients ranged from .61 to .95. Validity information was provided for job satisfaction constructs in seven of the 22 articles and for 270 of the 613 research hypotheses. Construct and face validity were the most frequently reported types of validity, each reported in two of seven articles for which validity information was provided. No validity correlation coefficients were reported for job satisfaction constructs.

Predictor constructs. One hundred sixty-two distinct predictor constructs were used as the independent variables in the 613 research hypotheses. The most frequently occurring predictor construct was gender, occurring in 30 of the 613 research hypotheses. Of the 12 most frequently occurring predictor constructs, eight were classified as organizational predictor constructs, while three were classified as target population characteristics. Over 25 distinct predictor measures were found in the 22 articles. Reliability information was provided for a portion (237 of 613) of predictor constructs in 14 of

the 22 articles Coefficient Alpha was the most frequently reported type of predictor construct reliability, reported in nine articles and for 134 constructs. Validity information was provided for a portion (124 of 613) of predictor constructs in nine of the 22 articles. Construct and a combination of construct and face validity were the most frequently reported types of predictor variable validity, each reported in five articles and for 49 and 47 predictor constructs, respectively.

In all, the 22 articles in the synthesis population yielded 613 research hypotheses, job satisfaction constructs, predictor constructs, statistical hypotheses, statistical tests, test statistics, and effect size indicators.

Descriptive Analysis of Statistical Tests

Research questions 16-23 in Table 1 were used to guide the descriptive analysis of statistical tests found in the synthesis population of EAQ articles. The answers to these research questions satisfied the intents elaborated in the third research objective.

Statistical hypotheses. Just as the 22 articles in the synthesis population yielded a total of 613 research hypotheses, so the articles yielded 613 statistical hypotheses. As in the case of the research hypotheses, 96.2% (590 of 613) of the statistical hypotheses implied correlational parameters, while the balance of statistical hypotheses implied mean difference parameters.

Statistical tests. There were necessarily 613 statistical tests implicit in the synthesis population of articles; these statistical tests help researchers make inferential decisions regarding the accuracy of statistical hypotheses. Only 2.8% (17 of 613) of the statistical tests were accompanied by an a priori alpha level to guard against making a Type I error, or incorrectly rejecting a true null statistical hypothesis. Moreover, not one of the 613 statistical tests was accompanied by a predetermined beta level, used by researchers either to guard against a Type II error of incorrectly failing to reject a false null statistical hypotheses or to determine during the design phase of an inquiry the probability of a statistical test to detect a true population relationship or difference (McNamara, 1991). In addition, none of the statistical tests specified an alternative statistical hypothesis. Finally, none of the statistical tests reported an explicit effect size to distinguish between statistical and practical significance.

Of the test statistics reported in or derived from the articles in the synthesis population, 88.3% (541 of 613) were the Pearson product-moment correlation coefficient depicting the relationship between two continuous variables. The point-biserial correlation coefficient was reported for 7.4% (46 of 613) of the statistical tests, while the student t-statistic and the Phi coefficient each accounted for 0.5% (3 of 613) of the statistical tests. No test statistic was reported for 3.3% (20 of 613) of the statistical tests; in each of these cases, means and standard deviations for a job satisfaction construct were used along with sample sizes for two target population subgroups to calculate a point-biserial correlation coefficient describing the relationship between the job satisfaction construct and group membership.

Effect sizes. The effect size of choice in this inquiry was the Pearson product-moment correlation coefficient since it is dimensionless or free of measurement units. Both the Phi coefficient and the point-biserial coefficient are special cases of the product-moment correlation; the Phi coefficient has been shown to be mathematically equivalent to the raw score formula for the continuous Pearson r (Hinkle, Wiersma, and Jurs, 1988), while the point-biserial correlation can be readily converted to a continuous Pearson r should the need arise (Glass et al., 1981).

The 613 effect sizes describing the relationships between constructs of job satisfaction and various predictor constructs ranged from the largest (in absolute value) negative value of -.77 to the largest positive value of .94. When ordering the effect sizes from -.77 to .94, the median effect size was 0.05. The most frequently occurring effect size was 0.00, occurring in 2.8% (17 of 613) of the effect size inventory.

The distribution of effect sizes revealed several trends. First, 32.3% (198 of 613) of the effect sizes were in the range of -0.09 to 0.09, thereby not meeting Cohen's (1988) convention of a small effect size ($r=\pm.10$). Just over 40% (41.1%, or 252 of 613) of the effect sizes ranged in absolute value from .10 to .29, large enough to meet Cohen's convention of a small effect size but not large enough to be considered a moderate effect size. Nearly one in five (18.3%, or 112 of 613) of the effect sizes ranged in absolute value from .30 to .49, large enough to meet Cohen's convention of a moderate effect size but not large enough to be considered a large effect size. Finally, 8.3% (51 of 613) of the effect sizes were

greater in absolute value than ±.50; specifically, 34 effect sizes were considered large and positive (≥.50), while 17 effect sizes were considered large and negative (≤-.50).

The unit of analysis was the individual in 78.8% (483 of 613) of the effect sizes and the organization in 21.2% (130 of 613). Meta-analytic techniques (Hunter and Schmidt, 1990) were used to synthesize findings for research hypotheses which yielded five or more effect sizes and whose unit of analysis was either individual or organizational.

Meta-analyses of Selected Findings

Research questions 24-31 in Table 1 were used to guide the meta-analyses for the six research hypotheses yielding five or more effect sizes and the same unit of statistical analysis. Each research hypothesis, its population effect size corrected for sampling error, and its population effect size standard deviation is presented in Table 2 (see pg. 13). Answers to research questions 24-31 for each of the six research hypotheses satisfied the intents elaborated in research objectives four through six.[1]

Research hypothesis 25 specified an expected relationship between overall job satisfaction and role ambiguity and yielded seven effect size estimates. The estimated population effect size corrected only for sampling error was -.4337, indicating a moderate to nearly large inverse relationship between overall job satisfaction and role ambiguity. Squaring this average correlation yielded a coefficient of determination (Hinkle et al., 1988) of .188, indicating that 18.8% of the variation in overall job satisfaction was accounted for by the variation in role ambiguity. The standard deviation of the population effect size was .07825. The ratio of the population effect size to the standard deviation of the population effect size was -5.54, suggesting that the relationship between overall job satisfaction and role ambiguity as reported in the first 26 volumes of the EAQ is universally negative (Hunter and Schmidt, 1990). Moderator variable analysis conducted by grouping the data (Hunter and Schmidt, 1990) indicated that this relationship was larger in magnitude for teachers than for administrators.

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[1] Due to the paucity of effect size estimates for qualifying research hypotheses and to space constraints, only research questions 24, 28, and 29 are addressed in this discussion. Moderator variable analysis was performed only for research hypotheses 25 and 17.

TABLE 3

Mean Effect Size Corrected for Sampling Error for Each Research Hypothesis with Five or More Effect Size Estimates and the Same Unit of Analysis

(N=6)

Research Hypothesis Number & Name	Number of Effect Size Estimates	Unit of Analysis	Population Effect Size[1]	Standard Deviation of Population Effect Size
25. Overall Job Satisfaction related to Role Ambiguity	7	Individual	-.4337[2]	.07825
17. Overall Job Satisfaction related to Role Conflict	6	Individual	-.4931[2]	.03857
83. Overall Job Satisfaction related to School Level (Elementary, Middle, High)	5	Organizational	-.2730	.14062
55. Satisfaction with Pay related to Age	5	Individual	.1361	.00000
57. Satisfaction with Pay related to Gender (1=female, 2=male)	5	Individual	-.1323	.01915
321. Satisfaction with Work related to Gender (1=female, 2=male)	5	Individual	-.0832	.09002

1 Population effect sizes are in the form of Pearson product-moment correlations corrected for sampling error (Hunter and Schmidt, 1990)

2 Moderator variable analysis (Hunter and Schmidt, 1990) suggests that this relationship is larger in magnitude for teachers than for administrators

Research hypothesis 17 specified an expected relationship between overall job satisfaction and role conflict and yielded six effect size estimates. The estimated population effect size corrected only for sampling error was -.4931, indicating a nearly large inverse relationship between overall job satisfaction and role ambiguity. Squaring this average correlation yielded a coefficient of determination of .243, indicating that 24.3% of the variation in overall job satisfaction was accounted for by the variation in role ambiguity. The standard deviation of the population effect size was .03857. The ratio of the population effect size to the standard deviation of the population effect size was -12.8, suggesting that the relationship between overall job satisfaction and role conflict as reported in the first 26 volumes of the EAQ is universally negative (Hunter and Schmidt, 1990). Moderator variable analysis conducted by grouping the data (Hunter and Schmidt, 1990) again indicated that this relationship was larger in magnitude for teachers than for administrators.

Research hypothesis 83 specified an expected relationship between overall job satisfaction and level of school taught (elementary, middle, high) and yielded five effect size estimates. The estimated population effect size corrected only for sampling error was -.2730, indicating a nearly moderate inverse relationship between overall job satisfaction and school level. Squaring this average correlation yielded a coefficient of determination of .075, indicating that only 7.5% of the variation in overall job satisfaction was accounted for by the grade level of school taught. The standard deviation of the population effect size was .14062. The ratio of the population effect size to the standard deviation of the population effect size was -1.94, suggesting that the relationship between overall job satisfaction and school level as reported in the first 26 volumes of the EAQ cannot be considered universally negative.

Research hypothesis 55 specified an expected relationship between satisfaction with pay and chronological age and yielded five effect size estimates. The estimated population effect size corrected only for sampling error was .1361, indicating a small positive relationship between overall job satisfaction and age. Squaring this average correlation yielded a coefficient of determination of .019, indicating that only 1.9% of the variation in overall job satisfaction was accounted for by age. The standard deviation of the population effect size was .00, suggesting variation due only to sampling error (Hunter and Schmidt, 1990).

Research hypothesis 57 specified an expected relationship between satisfaction with pay and gender (1=female, 2=male) and yielded five effect size estimates. The estimated population effect size corrected only for sampling error was -.1323, suggesting a small and positive relationship between the female gender and satisfaction with pay. Squaring this average correlation yielded a coefficient of determination of .018, indicating that only 1.8% of the variation in overall job satisfaction was accounted for by gender membership. The standard deviation of the population effect size was .01915. The ratio of the population effect size to the standard deviation of the population effect size was -6.91, indicating that the relationship between satisfaction with pay and gender as reported in the first 26 volumes of the EAQ was universally inverse.

Research hypothesis 321 specified an expected relationship between satisfaction with work and gender (1=female, 2=male) and yielded five effect size estimates. The estimated population effect size corrected only for sampling error was -.08320, suggesting a minimal relationship between gender and satisfaction with pay. Squaring this average correlation yielded a coefficient of determination of .007, indicating that less than 1% of the variation in satisfaction with pay was accounted for by gender membership. The standard deviation of the population effect size was .09002. The ratio of the population effect size to the standard deviation of the population effect size was -.924, indicating that the relationship between satisfaction with work and gender as reported in the first 26 volumes of the EAQ was neither universally positive or negative.

Conclusions

Articles

Recall that of the 474 EAQ articles published from 1965-1990, 41 addressed constructs of job satisfaction as declared by the article authors. Thirty-four of the 41 articles which addressed job satisfaction provided empirical findings. Only 22 of these 34 empirical job satisfaction articles provided sufficient information for quantitative synthesis; stated differently, over one-third of the EAQ articles which addressed job satisfaction and presented empirical findings failed to provide zero-order correlations or sufficient information to derive zero-order correlations. This represents over a 33% "lost opportunity" rate to increase knowledge of job satisfaction as investigated in the first 26 volumes of the EAQ.

Effect Sizes

This quantitative synthesis of job satisfaction research published in the first 26 volumes of the EAQ uncovered 613 reported or derived correlational effect sizes which depicted relationships between various job satisfaction constructs and various predictor constructs. As referenced in the findings section, just under three-fourths (73.4%, or 32.3% plus 41.1%) of the effect sizes ranged in magnitude from .00 to .29, i.e., were less than moderate in magnitude; stated differently, nearly three in four predictor constructs investigated in this synthesis explained less than 9% of the variability in constructs of job satisfaction as investigated in the first 26 volumes of the EAQ. Also discovered was that just over one-fourth (26.6%, or 18.3% plus 8.3%) of the effect sizes were in magnitude equal to or greater than .30, i.e., were at least moderate in magnitude; stated differently, just over one in four predictor constructs investigated in this synthesis explained over 9% of the variability in constructs of job satisfaction as investigated in the first 26 volumes of the EAQ.

If one were to use Cohen's (1988) criterion of a moderate correlational effect size to infer practical significance between a job satisfaction construct and a predictor construct, it would be seen that just over one-fourth of the effect sizes reported or derived in this quantitative synthesis would meet this criterion. None of the article authors heeded McNamara's (1978) advice to consider a measure of practical significance, such as percentage of explained variance, in interpreting their research findings. Since statistical significance is largely a function of sample size (Borg, 1987), it becomes important to look beyond statistical significance as a means of inferring differences or relationships and, more crucially, as a means of building and developing theories.

Relationships

In interpreting the results found from the meta-analyses of the selected research hypotheses, it is important to note that these findings are based on at most seven (i.e., the relationship between overall job satisfaction and role ambiguity) study correlations. Caution should be exercised when interpreting meta-analytic findings based on a small sample of study correlations due to the problem of second-order sampling error (Hunter and Schmidt, 1990); second-order sampling error might be defined as sampling error in meta-analytic estimates resulting from drawing or locating a small number of studies from the

population of all studies investigating a distinct research hypothesis. Even so, the magnitude and direction of relationships uncovered in the first 26 volumes of the EAQ for the most frequently occurring research hypotheses mirrors the magnitude and direction of relationships uncovered in the theoretical framework section of this inquiry.

Role tensions. Mean correlations found between overall job satisfaction and both role ambiguity and role conflict were universally inverse in direction and moderate to large in magnitude. Research reviewed also suggested a moderate to large inverse relationship.

School level. The relationship between overall job satisfaction and grade level of school taught as reported in the first 26 volumes of the EAQ, though less in magnitude, also pointed to a consistently negative relationship; in other words, teacher job satisfaction decreased as grade level of school taught increased. Again, this finding largely coincides with findings uncovered for teachers in the review of literature. The relationship between level of school administered and overall job satisfaction proved to be less conclusive.

Demographic variables. Similar statements held true for the relationships between constructs of job satisfaction and both age and gender as studied in the first 26 volumes of the EAQ. The relationship between satisfaction with pay and age as reported for educators in the first 26 volumes of the EAQ was small and direct, suggesting a small increase in satisfaction with pay as one advances in age. The literature reviewed for relationships of age to constructs of job satisfaction suggested small relationships in magnitude with a trend toward increased satisfaction as one advances in age. The relationships between gender and satisfaction with both pay and work as reported in the EAQ have been at most small in magnitude and fairly inconsistent in direction; these relationships also mirror those found in the review of literature.

Model for Quantitative Synthesis

For this inquiry, a 14-stage model was conceptualized, implemented, and validated. This model was conceptualized to classify, record, and analyze study characteristics pertaining to job satisfaction research published in the first 26 volumes of the EAQ. Although based on other quantitative synthesis models or methods (Hunter and Schmidt, 1990; Johnson, 1989; Jones, 1988; Crehan, 1985; Glass et al., 1981),

this model departed from those mentioned above in that it was conceptualized to classify, record, and analyze study characteristics for an inquiry concerned with multiple criterion and multiple predictor variables.

Propositional inventory. Since this inquiry was not concerned with just one research hypothesis specifying an expected relationship between a distinct job satisfaction construct and a distinct predictor construct, perhaps the most unique feature of this model was that it allowed for constructing a propositional inventory of all job satisfaction research hypotheses actually investigated in the synthesis population of EAQ articles. This inventory was based on the theoretical framework developed in the review of literature and reflected the investigation of job satisfaction research as published in the first 26 volumes of the EAQ.

Logical conducting of quantitative synthesis. A second important characteristic of this model comes as a corollary to constructing the propositional inventory of research hypotheses. Many traditional models (Hunter and Schmidt, 1990; Johnson, 1989; Crehan, 1985; Glass et al., 1981) of quantitative synthesis focus largely on locating and selecting studies, recording study characteristics, and estimating effect sizes. Certainly, the model developed for this inquiry recognized the importance of estimation. Just as importantly, this model also focused on the logic of conducting a quantitative synthesis from start to finish, particularly in designing and validating the classification systems used to determine the types of research hypotheses, job satisfaction constructs, and predictor constructs studied over the first 26 volumes of the EAQ.

Reliability of model. The final characteristic of this model was that it provided for reliability of classifying and recording study characteristics found in the synthesis population of EAQ articles. Furthermore, this inquiry operationalized the reliability component by having behavioral science researchers independently classify and record the study characteristics found in the synthesis population as well as estimate the parameters for the meta-analyses. Accordingly, the procedures of and the findings resulting from this model were independently validated, suggesting that this model could be used by researchers to synthesize empirical research findings on organizational variables found in the EAQ and similar research publications.

Recommendations

EAQ Editorial Policies

The following recommendations for EAQ editorial policies and data reporting are offered in the light of maximizing existing knowledge of both job satisfaction and other organizational variables studied in the EAQ. These recommendations coincide in part with those offered by Jones (1990, 1988) in her synthesis of the gender difference hypothesis as studied in the first 22 volumes of the EAQ. The point of departure of these recommendations lies in the topic under investigation in this inquiry.

Construct operationalization. Constructs should become more rigorously operationalized. For example, Belasco and Alutto (1972) operationalized job satisfaction as willingness to remain in the organization despite inducements to leave. A year later, Alutto and Belasco (1973) applied this same operationalization to the construct of organizational commitment. The same can be said for the construct of experience or job tenure. It was suggested in Chapter 2 of this dissertation that many researchers in educational administration (Avi-Itzhak, 1988; Anderson and Iwanicki, 1984; Miskel et al., 1980; Miskel et al., 1979; Paul, 1975; and Trusty and Sergiovanni, 1966) have failed to classify teaching or administrative experience as either experience in one's current position or experience in a particular job classification. Increased rigor in construct operationalization would lead to more reliable and valid meta-analytic findings.

Statistical power. Statistical power, given a great deal of attention in this inquiry, should be of central consideration in research design. Since sample size selection is a function of alpha, beta (power), effect size, and the directionality of the alternative statistical hypothesis, each of these facets should be considered by researchers who wish to maximize the ability of their research design to detect a true population difference or relationship.

Data reporting standards. Data reporting standards in the EAQ should become more rigorous to encourage and enable researchers to both calculate effect sizes and perform meta-analytic syntheses on existing research. Hunter and Schmidt (1990) recommend that means, standard deviations, sample sizes, measurement reliability and validity, and zero-order correlation matrices for all variables be published for correlational and multiple regression studies. Moreover, they contend that all descriptive statistics be published without regard to statistical significance. In addition, this researcher recommends that

measures used by researchers in primary studies as well as their response scales be appended to the journal publication. In this way, reverse scored measures can be noted as such and adjustments in the sign of the correlation can be made to more readily cumulate correlations.

Unit of analysis. Unit of analysis should be of major consideration to researchers submitting manuscripts to the EAQ as well as to EAQ editors and reviewers. Because over one-fifth (21.2%, or 130 of 613) of the reported or derived effect sizes in this inquiry corresponded to an **organizational** rather than an **individual** unit of analysis, many effect sizes yielded by the same research hypotheses could not be cumulated. Hopkins (1982) recommended an individual unit of analysis for statistical significance testing; certainly, consistency in unit of analysis would facilitate increased cumulation of findings.

Indicators of explained variance. More emphasis should be placed on the practical significance of research findings published in the EAQ. McNamara (1978) advanced that the proportion of explained variance (e.g., omega-squared; or in the case of correlations, the coefficient of determination) be used as an indicator of practical significance. Most test statistics or effect sizes are convertible to indicators of explained variance, thereby allowing for the conversion of research findings into a metric that is readily understood by researchers and scholar-practitioners alike. Assuming that scholar-practitioners comprise at least an observable portion of EAQ readers, it seems that an indicator of explained variance would be more useful than a theoretical statement when interpreting research findings and their potential implications for practice.

Study of administrators. The study of organizational variables in general, and job satisfaction specifically, should be expanded to appropriately represent the educational administrator. In this inquiry, educational administrators were the target population in 13.6% (3 of 22) of the synthesis population of EAQ articles. The study of the educational administrator and his or her satisfaction should, in the opinion of this researcher, comprise a greater portion of the study of educational administration. Greater understanding of practicing administrators' perceptions would lead to the improvement f educational administration theory and practice.

Future Research

This quantitative synthesis of job satisfaction research was by no means exhaustive; indeed, it focused on research published solely in the EAQ and addressed both multiple job satisfaction and predictor constructs. The problem of second-order sampling error (Hunter and Schmidt, 1990) resulting from the small number of study correlations corresponding to the most frequently occurring research hypotheses has already been noted.

Benefits of inquiry. Keeping the above in mind, three benefits were derived from this inquiry. First, this inquiry followed Campbell's (1979) recommendation that empirical synthesis be undertaken to cumulate research findings on constructs studied over time in the EAQ. Specifically, this inquiry represented the first attempt to synthesize existing empirical research on job satisfaction as published in the first 26 volumes of the EAQ.

Second, this inquiry not only synthesized, but extended, knowledge of job satisfaction research as published in the first 26 volumes of the EAQ. The content analysis provided insights as to the classification, operationalization, and measurement of job satisfaction constructs. Meta-analytic syntheses of the most frequently occurring job satisfaction research hypotheses provided information on the magnitude and direction of relationships most often studied over the first 26 volumes of the EAQ. Moderator analyses pointed to professional role as a possible covariate in the relationship between overall job satisfaction and both role ambiguity and role conflict. In addition, trend analyses of the most frequently occurring research hypotheses provided insights as to how these relationships have changed over the first 26 volumes of the EAQ.

Third, and perhaps most important, since the procedures developed to synthesize job satisfaction research in the first 26 volumes have been demonstrated to be reliable and valid, they have provided a model for researchers to use in synthesizing research findings on organizational variables studied in the EAQ and similar research publications. This model provides an excellent starting point for such future research.

Comparison of models. Much emphasis has been given to the 14-stage model developed for this inquiry and its departure from traditional quantitative synthesis models. A future inquiry would compare

the efficacy of this model to more traditional models emphasizing parameter estimation. As a result, the model developed for this inquiry could be refined and improved, thereby making it more useful for future quantitative syntheses of organizational variables.

Time-ordering of findings. This inquiry attempted to time-order effect sizes stemming from research hypotheses yielding at least five effect sizes and the same unit of statistical analysis. Caution is advised in over-interpreting these time series analyses due to the small number of effect sizes for any research hypothesis. Even so, time-ordering of correlations is useful because of its ability to identify consistent or changing correlations for a research hypothesis of interest.

Due, however, to the model developed for this inquiry, findings were not limited to just parameter estimates. Therefore, it would serve a useful purpose for future inquiries to time-order other findings uncovered in this and similar quantitative syntheses. This time-ordering would be important since any behavioral science finding is time-bound and does not automatically generalize or hold for future periods of time. For example, the research hypothesis relating overall job satisfaction to role ambiguity was studied 11 times in the synthesis population of EAQ articles. Interestingly, this research hypothesis was not accorded much attention until 1983, and has since been studied nine times. Perhaps more interestingly, of the nine times this research hypothesis was investigated since 1983, it was investigated eight times by the same group of researchers.

In the same manner, other study findings such as job satisfaction constructs, predictor constructs, and measures employed could be time-ordered to determine the research focus accorded to each over time. Moreover, expanding the population of relevant studies to several journals would also facilitate comparing, contrasting, and combining time series analyses of important findings on job satisfaction.

Expansion of population of relevant studies. Since the model designed for this inquiry focused on job satisfaction research in one journal, future quantitative syntheses would expand the population of relevant studies and apply this model as such. First, the expansion of studies would logically focus on the Journal of Educational Administration, which has published a large amount of research on job satisfaction. Findings from the EAQ and the Journal of Educational Administration could be compared and contrasted to determine of the findings are similar or different to those uncovered in the EAQ. Again, findings

include not just parameter estimates, but also research hypotheses, job satisfaction and predictor constructs, measurement characteristics, moderator variables, trend analyses, and so on.

Second, the population of relevant studies could be expanded to several journals to determine similarity and differences in findings. If findings were found to be dissimilar across journals, one might assume that reading just one journal would not portray the state of research on job satisfaction or other organizational variables. If findings were found to be similar, they could be combined to yield a more pervasive knowledge base, thereby extending knowledge of job satisfaction in educational organizations. In this manner, job satisfaction theory development and validation in educational organizations could then be based on an optimal understanding of existing job satisfaction research.

References

Alutto, J.A., & Belasco, J.A. (1973). Patterns of teacher participation in school system decision making. Educational Administration Quarterly, 9, 1, 15-26.

Anderson, M.G., & Iwanicki, E.F. (1984). Teacher motivation and its relationship to burnout. Educational Administration Quarterly, 20, 3, 5-10.

Avi-Itzhak, T.E. (1988). The effect of needs, organizational factors and teachers' characteristics on job satisfaction in kindergarten teachers. Journal of Educational Administration, 26, 3, 353-363.

Bacharach, S.B., & Bamberger, P. (1990). Exit and voice: Turnover and militancy in elementary and secondary schools. Educational Administration Quarterly, 26, 4, 316-344.

Bacharach, S.B., Bamberger, P., Conley, S.C., & Bauer, S. (1990). The dimensionality of decision participation in educational organizations: The value of a multi-domain evaluative approach. Educational Administration Quarterly, 26, 2, 126-167.

Bacharach, S.B., & Mitchell, S.M. (1983). The sources of dissatisfaction in educational administration: A role-specific analysis. Educational Administration Quarterly, 19, 1, 101-128.

Belasco, J.A., & Alutto, J.A. (1972). Decisional participation and job satisfaction. Educational Administration Quarterly, 8, 1, 44-58.

Benson, J. (1983). The bureaucratic nature of schools and teacher job satisfaction. Journal of Educational Administration, 21, 2, 137-148.

Borg, W.R. (1987). Applying educational research: A practical guide for teachers. New York: Longman.

Bridges, E.M. (1980). Job satisfaction and teacher absenteeism. Educational Administration Quarterly, 16, 2, 41-56.

Bridges, E.M., & Hallinan, M.T. (1978). Subunit size, work system interdependence, and employee absenteeism. Educational Administration Quarterly, 14, 2, 24-42.

Brown, F. (1976). Job satisfaction of educational administrators: A replication. Planning and Changing, 7, 2, 45-53.

Brush, D.H., Moch, M.K., & Pooyan, A. (1987). Individual demographic differences and job satisfaction. Journal of Occupational Behavior, 8, 139-156.

Campbell, R.F. (1979). A critique of the educational administration quarterly. Educational Administration Quarterly, 15, 3, 1-19.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Conley, S.C., Bacharach, S.B., & Bauer, S. (1989). The school work environment and teacher career dissatisfaction. Educational Administration Quarterly, 25, 1, 58-81.

Cooke, R.A., & Rousseau, D.M. (1981). Problems of complex systems: A model of system problem solving applied to schools. Educational Administration Quarterly, 17, 3, 15-41.

Crehan, P. (1985). An exploration of the usefulness of meta-analysis in educational administration. Educational Administration Quarterly, 21, 3, 263-279.

Freeston, K.R. (1987). Leader substitutes in educational organizations. Educational Administration Quarterly, 23, 2, 45-59.

Glass, G.V., McGaw, B., & Smith, M.L. (1981). Meta-analysis in social research. Beverly Hills, CA: Sage.

Grassie, M.C., & Carss, B.W. (1973). School structure, leadership quality, and teacher satisfaction. Educational Administration Quarterly, 9, 1, 15-26.

Gruneberg, M.M. (1979). Understanding job satisfaction. London: Macmillan.

Gunn, J.A., & Holdaway, E.A. (1986). Perceptions of effectiveness, influence, and satisfaction of senior high school principals. Educational Administration Quarterly, 22, 2, 43-62.

Hedges, L.V., & Becker, B.J. (1986). Statistical methods in the meta-analysis of research on gender differences. In J.S. Hyde & M.C. Linn (Eds.), The psychology of gender (pp. 14-50). Baltimore, MD: The Johns Hopkins University Press.

Herzberg, F., Mausner, B., & Snyderman, B. (1959). The motivation to work. New York: John Wiley.

Hinkle, D.E., Wiersma, W., & Jurs, S.G. (1988). Applied statistics for the behavioral sciences (2nd ed.). Boston: Houghton Mifflin.

Holdaway, E.A. (1978). Facet and overall satisfaction of teachers. Educational Administration Quarterly, 14, 1, 30-47.

Hollon, C.J., & Gemmill, G.R. (1976). A comparison of female professors on participation in decision making, job related tension, job involvement, and job satisfaction. Educational Administration Quarterly, 12, 1, 80-93.

Hopkins, K.D. (1982). The unit of analysis: Group means versus individual observations. American Educational Research Journal, 19, 5-18.

Hoppock, R.H. (1935). Job satisfaction. New York: Harper and Brothers.

Hoy, W.K. (1978). Scientific research in educational administration. Educational Administration Quarterly, 14, 3, 1-12.

Hoy, W.K., Blazovsky, R., & Newland, W. (1983). Bureaucracy and alienation: A comparative analysis. Journal of Educational Administration, 21, 2, 109-120.

Hoy, W.K., & Miskel, C.G. (1991). Educational administration: Theory, research and practice (4th ed.). New York: McGraw-Hill.

Hunter, J.E., & Schmidt, F.L. (1990). Methods of meta-analysis. Newbury Park, CA: Sage.

Jackson, S.E., & Schuler, R.S. (1985). A meta-analysis and conceptual critique of research on role ambiguity and role conflict in work settings. Organizational Behavior and Human Decision Processes, 36, 16-78.

Johnson, B.T. (1989). Software for the meta-analytic review of research literatures. Hillsdale, NJ: Lawrence Erlbaum Associates.

Johnson, G.S., Yeakey, C.C., & Winter, R.A. (1981). A study of the relationship between the job satisfaction of principals and the perceived level of teacher militancy. Alberta Journal of Educational Research, 27, 4, 352-365.

Jones, B.K. (1988). The gender difference hypothesis: A synthesis of research in the educational administration quarterly. Unpublished doctoral dissertation, Texas A&M University, College Station, Texas.

Jones, B.K. (1990). The gender difference hypothesis: A synthesis of research findings. Educational Administration Quarterly, 26, 1, 5-37.

Lawler, E.E. (1973). Motivation in work organizations. Monterey, CA: Brooks-Cole.

Locke, E.A. (1976). The nature and causes of job satisfaction. In M.D. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 1297-1349). Chicago: Rand McNally.

March, J.G., & Simon, H.A. (1958). Organizations. New York: John Wiley.

Maslow, A.H. (1954). Motivation and personality. New York: Harper & Row.

McClure, M.W., Weidman, J.C., & Sharp, L.M. (1988). Teaching career paths and teacher education reform. Educational Administration Quarterly, 24, 2, 200-221.

McNamara, J.F. (1978). Practical significance and statistical models. Educational Administration Quarterly, 14, 1, 48-63.

McNamara, J.F. (1991). Statistical power in educational research. National Forum of Applied Educational Research Journal, 3, 2, 23-36.

Miskel, C.G., DeFrain, J.A., & Wilcox, K. (1980). A test of expectancy work motivation theory in educational organizations. Educational Administration Quarterly, 16, 1, 70-92.

Miskel, C.G., Fevurly, R., & Stewart, J. (1979). Organizational structures and processes, perceived school effectiveness, loyalty, and job satisfaction. Educational Administration Quarterly, 15, 3, 97-118.

Miskel, C., Glasnapp, D., & Hatley, R. (1975). A test of the inequity theory for job satisfaction using educators' attitudes toward work motivation and work incentives. Educational Administration Quarterly, 11, 1, 38-54.

Miskel, C.G., McDonald, D. & Bloom, S. (1983). Structural and expectancy linkages within schools and organizational effectiveness. Educational Administration Quarterly, 19, 1, 49-82.

Miskel, C.G., & Ogawa, R. (1988). Work motivation, job satisfaction and climate. In N. J. Boyan (Ed.), Handbook of research on educational administration (pp. 279-304). New York: Longman.

Paul, R.J. (1975). Some correlates of role ambiguity: Men and women in the same work environment. Educational Administration Quarterly, 11, 3, 85-98.

Porter, L.W. (1961). A study of perceived need satisfactions in bottom and middle management jobs. Journal of Applied Psychology, 45, 1-10.

Scott, K.D., & Wimbush, J.C. (1991). Teacher absenteeism in secondary education. Educational Administration Quarterly, 27, 4, 506-529.

Smith, P.C., Kendall, L.M., & Hulin, C.L. (1969). The measurement of satisfaction in work and retirement. Chicago: Rand-McNally.

Trusty, F.M., & Sergiovanni, T.J. (1966). Perceived need deficiencies of teachers and administrators. Educational Administration Quarterly, 2, 3, 168-180.

Vroom, V.H. (1960). Some personality determinants of the effects of participation. Englewood Cliffs, NJ: Prentice-Hall.

Vroom, V.H. (1964). Work and motivation. New York: John Wiley.

Wanous, J.P., & Lawler, E.E. (1972). Measurement and meaning of job satisfaction. Journal of Applied Psychology, 56, 95-105.

Young, I.P. (1984). An examination of job satisfaction of female and male public school superintendents. Planning and Changing, 15, 2, 114-124.