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A META-ANALYTIC REVIEW OF THE RELATIONSHIP BETWEEN JOB SATISFACTION AND ORGANIZATIONAL COMMITMENT

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<Abstract>

The purpose of this study is to investigate the relationship between the job satisfaction and organizational commitment through the use of meta-analysis. The hypotheses that this relationship would be influenced by moderators were partially confirmed. That is, several situational variables were found to moderate the relationship between employees' job satisfaction and organizational commitment. Especially, public-professional subgroup was found to be significantly reduced the total variance in the mean r after correction for sampling error and attenuation (two of other prominent statistical artifacts). A large percentage of the variance in the mean weighted correlation remains unexplained, however.

직무만족도와 조직몰입도의 관계 연구에 대한 메타분석적 검증

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<요 약>

같은 태도변수인 직무만족도와 조직몰입도는 다양한 차원에서 연구가 지속적으로 수행되고 있다. 그 중에서도 직무만족과 조직몰입간의 관계에 관한 연구가 가장 대표적인 것으로 나타나고 있다. 이들 연구문헌은 표본의 성격이라든지, 척도의 사용에 있어서 상당한 차이를 가지고 있는 것이 대부분이다. 아울러 직무만족과 조직몰입간의 관계에서 중간에

서 매개하는 (mediating) 변수의 존재에 대해서도 연구마다 주장이 다르게 나타나고 있다. 본 연구는 선행연구문헌에서 밝히고 있는 조직몰입과 직무만족간의 상관관계(r)자료를 사용하여 계량적 메타분석(Meta Analysis: 연구에 대한 연구: 필자주)을 통하여 두 변수간의 관계를 심도있게 설명하고 이해하는 데 목적을 둔다. 본 연구의 주요 가정 중 하나는 직무만족과 조직몰입간의 관계에서 매개적 변수가 있을 수 있다라는 것이다. 본 연구에서는 여러가지 상황변수(situational variables)가 위 두가지 변수 사이에서 관계를 매개하는 것으로 나타났으며, 그 중에서도 '공공부문-전문가' 하위 집단이 조직몰입과 직무만족간의 관계를 설명하는데 있어서 통계적으로 유의한 영향을 미치는 것으로 드러났다. 또한 '공공조직성원-민간조직성원' 하위 집단이 두 변수간의 관계에 영향을 미치는 것으로 나타났다. 본 연구는 기존 연구를 재조사하여 직무만족과 조직몰입간의 관계에 영향을 미치는 매개변수를 통계적인 메타분석을 사용하여 발견 검증하였다는 데서 중요성을 가지지만, 연구문헌 수집상에 있어서 사용가능한 문헌 중에서 상관관계(r)자료를 밝히지 않은 논문이 많아 연구문헌의 손실이 많았다는 것은 안타까운 점이라 하지 않을 수 없다. 더욱 보강하여 이와 같은 연구가 반복적으로 수행될 것으로 기대한다.

I. INTRODUCTION

As an attitudinal variable, organizational commitment has been extensively studied. The interest in organizational commitment stems from its demonstrated linkage with such attitudinal and behavioral variables as job satisfaction, structure-related variables, and performance. In these studies, organizational commitment has been conceptualized either as an independent variable (Angle & Perry, 1981; Bateman & Strasser, 1984; Blau & Boal, 1987) or as a dependent variable (Buchanan, 1974; Steers, 1977; Bartol, 1979; Glisson & Durick, 1988; Mathieu & Hamel, 1989). In either category of studies, job satisfaction has been widely studied with the measures of organizational commitment.

After decades of investigations, considerably different viewpoints on the job satisfaction - organizational commitment association have emerged. Ideas differ in terms of the nature of the relationship (i.e., existent or nonexistent), theoretical underpinnings (e.g., causality and direction), and the strength of the association (e.g., significantly strong or insignificantly weak). Scholars also differ in their academic interests: some are more pertinent to satisfaction, some to commitment, while others are germane to both areas. Both concepts are similar in terms of their conceptual schema - job satisfaction is considered an attitude, and perspectives consider commitment an attitude. At the same time, they seem to denote differential levels of activation. That is, job satisfaction appears to be a relatively passive concept, whereas commtiment has more of an active or behavioral connotation, including typically higher statistical relationships with outcome behaviors like turnover.

Reviews of work in search for simple job satisfaction-organizational commitment correlations have also exposed inconsistencies in findings. Experts have cited the (lack

of) rationale in research hypotheses, and have called for more guidance from well constructed theory (e.g., differentiation in research between public and private organizations) (Reichers, 1985; Morris & Sherman, 1981). Some of those inconsistencies have been attributed to methodological and analytical problems. For example, while most of research on organizational commitment during the past decade has used the Organizational Commitment Questionnaire [OCQ] (Mowday, Porter, & Steers, 1979), considerable variation in utilizing job satisfaction scales was identified. Some scholars have defined job satisfaction as the extent to which an employee expressed a positive affective orientation toward a job (Smith, Kendall, & Hulin, 1969; Rusbult & Farrell, 1983). Other have treated the construct as a facet-specific concept referring to various aspects of work, such as pay, supervision, or workload (Cook, Hepworth, Wall, & Warr, 1981). Some researchers have suggested that the causal relationship may be direction of organizational commitment - job satisfaction (Bateman & Strasser, 1984). But Porter, Steers, Mowday, and Boulian (1974) simply found the two to be correlated. More recently, Curry, Wakefield, Price, and Mueller (1986) found no evidence of the relationship in either direction. Still others have proposed moderator designs to unearth apparent intricacies, including career type (e.g., professional or nonprofessional) (Wiener & Vardi, 1980; Mathieu & Hamel, 1989), the impact of intrinsic and extrinsic job choice behavior (O'Reilly & Caldwell, 1980), organization type (e.g., public or private organization) (Reichers, 1986), and situational factors (e.g., dominant culture and organizational climate) (DeCotiis & Summers, 1987; Putti, Aryee, & Liang, 1989). Despite an abundance of the research, there has been little progress toward a sound thesis for the job satisfaction - organizational commitment relationship.

Fortunately, the majority of studies have reported and agreed that there have been positive and viable associations between the relationship of job satisfaction - organizational commitment, but with considerable variations in terms of their amount. For example, Balfour and Wechsler (1990) studied the relationship in a public human service agency and reported the correlation coefficient of .375, while Reichers' study (1986), which was also conducted in a professional public service organization, exposed rather strong relationship (r = .66). Peters, Bhagat and O'Connor (1981) just reported that increasing job satisfaction led to greater organizational commitment with increasing job dissatisfaction leading to reduced commitment. Even with those "fragmented" but "viable" evidences, there has been little or no attempt to challenge that satisfaction and commitment covary in a certain way. So, there is too much potential gain to allow this topic to fall by the wayside. Because interaction and mediator effects are in need of further study on the relationship of satisfaction - commitment. Furthermore, the sampling base and measurement base of research into satisfaction and commitment needs to be controlled and refined in interpreting and understanding true relationship of satisfaction - commitment in organizations.

Newer techniques for appraising predictor-criterion relationships have been developed in recent years, techniques which have made it possible to reexamine existing studies using quantitative review methods (Hunter, Schmidt, & Jackson, 1982). Specifically, methods for systematically cumulating data across studies, called meta-analysis, have

been developed in such a way as to provide results which (in theory) represent conclusions that might evolve from a controlled independent study. Given the prevalence of contrasting views and contradictory research in the job satisfaction - organizational commitment literature, along with contemporary trends toward contingency approach to the study of organizational commitment as an indicator of organizational productivity (Etzioni, 1975) and employee high performance (Katz & Kahn, 1966; Steers, 1977), and public concern with employee morale (Ban, 1987), a meta-analytic review appears to be conceptually and practically appropriate. The purpose of this paper, therefore, is to use meta-analytic procedures to clarify the relationship between the two constructs as represented in published management, public administrative and organizational research to date.

II. META-ANALYSIS

Hunter and his fellows (1982) have demonstrated how meta-analysis can be used to estimate the true relationship between variables through identifying the extent to which variance in observed correlation coefficients across studies is due to statistical artifacts such as sampling error, unreliability in measurement, and restriction in range. The meta-analysis is first applied to the entire population of studies. If a "substantial" amount of residual variance remains after corrections for statistical artifacts, the sample is then separated into two or more subgroups on the basis of the moderator variable of interest. "Substantial" has been defined by Schmidt et al. as being 25% or more of the total observed variance that is not accounted for by statistical artifacts. Mean weighted correlations and variance estimates are then calculated for each subgroup. Statistical evidence can be taken as support for the moderating effect when the average correlation varies between subgroups and residual variance in the correlation coefficient approaches zero within the subgroups (Hunter, et al., 1982).

HYPOTHESES

The purpose of the present study was to examine the relationship between job satisfaction and organizational commitment as it is influenced by moderator variables. It is believed that much of the inconsistency in moderator research in the area is due to the aforementioned statistical artifacts. Only when results are compiled and corrections made for these artifacts, can a better understanding be had of the true relationship between job satisfaction and organizational commitment.

Based on ideas presented earlier, it was expected that the following hypotheses would be confirmed.

Hypothesis 1. Nearly all of the variability in observed correlations in the literature can be accounted for by "correctable" error variance. That is, the observed variability is illusory; the population contains no such

variability.

Hypothesis 2. The relationship between job satisfaction and organizational commitment is moderated by organization type (public and private).

Hypothesis 3. The relationship between job satisfaction and organizational commitment is moderated by managerial level (manager and nonmanager).

Hypothesis 4. The relationship between job satisfaction and organizational commitment is moderated by career type (professional and nonprofessional).

III. METHOD

This study uses a meta-analytic solution to the question of across study variance in studies relating the job satisfaction and organizational commitment. It is expected that much of the inconsistency in patterns of the relationship is due to experimental artifacts, rather than the moderators examined. When these artifacts are corrected through meta-analysis, a better understanding of the true relationship between the two variables under various conditions can be made.

DATA COLLECTION PROCEDURE

Location of studies bearing on the topic was done by the manual examination of several major journals, namely, Journal of Applied Psychology, Psychological Bulletin, Journal of Vocational Behavior, Academy of Management Journal, Administrative Science Quarterly, Human Relations, Organizational Behavior and Human Performance, and Groups and Organizational Studies. This method involved pursuing every issue of each of these publications over the past 15 years and reading those articles suspected of being even remotely related to the research question. This procedure, though quite unproductive, served as a check for thoroughness.

INCLUSION CRITERIA

The first step in the cumulative analysis was to establish criteria to define which studies were to be included in this analysis. The first inclusion criterion was that the studies should examine the relationship of job satisfaction and organizational commitment. This relationship need not have been the central focus of the study.

An additional inclusion criterion was that studies had to be correlational in nature. Because studies were subgrouped based on similar moderators if a substantial amount of variance was unaccounted for in the overall meta-analysis, the same information must be extracted from each investigation. That is, the zero-order correlation between the dependent and independent variables and the mean, standard deviations, sample size, and reliabilities of the variables, must be used to obtain a mean correlation, variance corrected for sampling error, variance corrected for both sampling error and attenuation, etc.

A final inclusion criterion was that studies needed to report the necessary information for calculation of the meta-analysis listed above.

To recap, the large list of potential sources (nearly 60 in number) was next screened to include only those which satisfy the inclusion criteria mentioned above. Altogether, 13 published studies were considered useful in some fashion. A list of these references can be found in Appendix A. Some of these studies contained more than one sample. Consequently, 17 correlation coefficients were obtained for later analyses. Unfortunately, Marsh and Mannari's (1977) study was excluded from the analysis, since the scale for commitment used in the study was not intended to measure organizational commitment but lifetime commitment of Japanese electronic workers.

The final preparations of the data base concerned the coding of potential moderators (criterion subgroupings). The ability to investigate moderator in a study of this type is dictated by the extent of common information reported by authors. For organization type, two groups were created -- public and private. The public employees were either labeled as such, or it was clear that the organization was government-run or highly government regulated (e.g., government agencies, public hospital or public utilities). The private classification included organizations that enterprise for profit (e.g., industrial or manufacturing firms). Secondly, samples were considered non-manager level if it was clear that the work was nonsupervisory and was at the bottom of the organizational structure. An example of this would be line workers in a factory. In addition, samples were allocated to the professional category if either the job required professional training, or the work entailed professional in nature. Examples of these would be nurses or teachers. In many cases, this information was either not provided or was unclear; consequently they were not used in moderator analyses in this connection.

META-ANALYSIS PROCEDURE

The calculations of this paper followed meta-analysis principles as prescribed by Hunter, et al. (1982). Altogether, 19 meta-analyses were performed on a host of the relationship between job satisfaction and organizational commitment. Corrections beyond sampling error and attenuation were not conducted because of lack of the necessary data. As a result, the following steps were followed using information taken from each individual study.

1) The zero-order correlation coefficient was taken from each study and the sample-weighted correlation (M_r) was calculated, followed by the sample-weighted (observed) variance of the correlations ($\sigma^2_{r(xy)}$) and the variance due to sampling error (σ^2_e). And then, "residual variance" ($\sigma^2_{r(xy)} - \sigma^2_e = \sigma^2_{\rho(xy)}$) was calculated.
2) The M_r and $\sigma^2_{r(xy)}$ were then corrected for unreliability in the instruments measuring job satisfaction and organizational commitment ($\sigma^2_{\rho(TU)}$).

Note: No correlation could be made for restriction in range due to a lack of information in the included samples.

3) If 75% or more of the observed variance was accounted for by these artifacts, it was concluded that the presence of a moderator variable was disconfirmed, therefore no support was found for the hypotheses.
4) If the correction for artifacts did indeed show a substantial variation remaining in population corrections across studies, samples were subgrouped on the basis of the moderator investigated (e.g., organization type, career type, and hierarchical level). Meta-analysis was then applied to each subgroup separately. Within each subgroup a moderator showed itself in two ways: a) the average correlation varied from subset to subset and b) the corrected variance averaged lower in the subgroups than for the data as a whole.
5) The 95% confidence intervals were then computed for each corrected mean correlation.

The selected formulas used for the meta-analysis are included in Appendix B.

IV. RESULTS

Table 1 - 3 show the characteristics and summary statistics for studies included in this meta-analysis. In 16 studies included in this analysis, organizational commitment was measured by the OCQ (Porter, et al., 1974) in 67% of the (N=8) studies. Job satisfaction was measured by several different instruments including the Job Diagnostic Index [JDI] (Smith, & et al., 1969), the Index of Organizational Reactions [IOR] (Smith, 1976), the Minnesota Satisfaction Questionnaire [MSQ] (Weiss, Dawis, England, Lofquist, 1967), Kunin's instrument (1955), Porter and Lawler's instrument (1968), Kornhauser's scale (1965), Overall Job Satisfaction scale (Brayfield & Rothe, 1951), and Hackman and Oldham's scale (1980).

Sample sizes ranged from a small sample of 54 to a larger sample of 508 with correlations ranging from .25 to .66 (See Table 1). As can be seen in Table 4, for the total of 16 correlations the mean correlation between job satisfaction and organizational commitment was significantly different from zero ($.502 \leq M_r \leq .812$). Thus, there initially appeared to be relationship between the two constructs. The mean weighted correlation was found to be .657 after corrections for attenuation and sampling error were made. These artifacts accounted for only 17% of the observed variance ($\sigma^2_{r(xy)}$). To determine whether or not the remaining 83% of the variance ($\sigma^2_{\rho(TC)}$) not attributable to artifacts was due to possible moderators, the study was subgrouped and further meta-analyses performed.

Table 1 Overview of Meta-Analysis Coding

Study(year)	Sample Size (N)	Reported r
1. Balfour & Wechsler (90)	232	.375(*)
2. Bateman & Strasser (84)		
Sample 1	374	.55
Sample 2	412	.63
3. Curry, Wakefield, Price, & Mueller (86)		
Sample 1	508	.499
Sample 2	508	.534
4. DeCotiis & Summers (87)	367	.65
5. Glisson & Durick (88)	319	.64
6. Magenau, Martin, & Peterson (88)		
Sample 1	225	.57
Sample 2	268	.51
7. Mathieu & Hamel (89)		
Sample 1	450	.65
Sample 2	161	.63
8. Meyer, Paunonen, Gellatly, Goffin, & Jackson (89)	61	.54
9. Reichers (86)	124	.66
10.Stumpf & Hartman (84)	85	.4
11.Welsh & LaVan (81)	149	.486
12.Wiener & Gechman (77)	54	.25

(*) average correlation coefficients of 4-face satisfaction items, pay, social, security and supervision satisfaction.
This study also selected "internalization" out of three dimensions of organizational commitment.

Table 1 (continued)

Study #	Org. Type	Career Type	Job Level
1.	Public (Human service agency)	non-prof.	mixed
2.	Public (General Hospital, Nurse)		
Sample 1		prof.	non-mgr
Sample 2		prof.	non-mgr
3.	Public (General Hospital, Nurse)		
Sample 1		prof.	non-mgr
Sample 2		prof.	non-mgr
4.	Private (Restaurant employees)	non-prof.	mgr
5.	Private	prof.	non-mgr
6.	Private		
Sample 1		------	non-mgr
Sample 2		------	mgr
7.	Public (Government agency)		
Sample 1		non-prof.	mixed
Sample 2		prof.	mixed
8.	Private (Food Service Co.)	non-prof.	mgr
9.	Public (Community Mental Health)	non-prof.	mixed
10.	------	------	non-mgr
11.	Public (A Veteran's Admin.)	prof.	mgr
12	Private (Elementary School)	prof.	non-mgr

Table 2 Characteristics of Organizational Commitment Measures

Study (Journal, Yr)	Sources	$r_{yy}(\alpha)$
Balfour & Wechsler (RPPA, 90)	O'Reilly & Chatman(*)	------
Bateman & Strasser (AMJ, 84)		
Sample 1	QCQ	.9
Sample 2	OCQ	.89
Curry, & et al. (AMJ, 86)		
Sample 1	OCQ	.874
Sample 2	OCQ	.898
DeCotiis & Summers (HR, 87)	A self-developed	.88
Glisson & Durick (ASQ, 88)	OCQ	.91
Magenau, & et al. (AMJ, 88)		
Sample 1	Martin & Peterson's	.89
Sample 2	Employer Commitment	.85
Mathieu & Hamel (JVB, 89)		
Sample 1	OCQ	.89
Sample 2	OCQ	.92
Meyer, & et al. (JAP, 89)	Meyer & Allen's 4 items(**)	.74
Reichers (JAP, 86)	OCQ	.88
Stumpf & Hartman (AMJ, 84)	OCQ	.93
Welsh & LaVan (HR, 81)	OCQ	.9
Wiener & Gechman (JVB, 77)	Personal time devoted to work	------

(*) 12 items from O'Reilly & Chatman's (1986) and 1 item from Cook and Wall's (1980) instrument.

(**) Meyer and Allen's (1984) 4-item Affective Commitment Questionnaire.

r_{yy}: reliability of the measure of organizational commitment.

Table 3 Characteristics of Job Satisfaction Measure

Study	Source	$r_{xx}(\alpha)$
Balfour & Wechsler	------	------
Bateman & Strasser	JDI	
Sample 1		.64
Sample 2		.66
Curry, & et al.	Brayfield & Rothe's (1951)	
Sample 1		.868
Sample 2		.863
DeCotiis & Summers	MSQ	.9
Glisson & Durick	Hackman & Oldham's (1980)	.86
Magenau, & et al.	Hoppock's (1935)	
Sample 1		.84
Sample 2		.85
Mathieu and Hamel	MSQ	
Sample 1		.9
Sample 2		.91
Meyer, & et al.	IOR	.89
Reichers	Kunin's (1955)	------
Stumpf & Hartman	JDI	.81
Welsh & LaVan	Porter & Lawler's (1968)	------
Wiener & Gechman	Kornhauser's (1965)	------

r_{xx}: the reported reliability for job satisfaction.

Table 4 Subgroup Meta-Analyses of Moderator Effects

Subgroup	K	N	M_r	$\sigma^2_{r(xy)}$	σ^2_e
Total	16	4297	.562	.0074	.00175
Organization Type					
Public	9	2918	.557	.0064	.00147
Private	6	1294	.583	.00792	.00202
Job Level					
Manager	4	845	.569	.0052	.00216
Non-Manager	8	2485	.551	.00545	.00156
Career Type					
Professional	8	2485	.556	.00527	.00154
Nonprofessional	4	784	.562	.0155	.00239

Table 4 (continued)

$\sigma^2_{p(xy)}$	$\sigma^2_{p(TU)}$	$\sigma^2_{e(TU)}$	% explained	95% CI	$M_{p(TU)}$
.00565	.00617	.00123	17	.502 ≤ p ≤ .812	.657
.00493	.00464	.00176	27.5	.525 ≤ p ≤ .791	.658
.0059	.00736	.00056	7	.508 ≤ p ≤ .846	.677
.00304	.00343	.00177	34	.546 ≤ p ≤ .778	.662
.00389	.00394	.00151	28	.532 ≤ p ≤ .778	.655
.00373	.00299	.00228	43	.549 ≤ p ≤ .765	.657
.01311	.0169	-.00000	0	.396 ≤ p ≤ .906	.651

Notations
K: Number of correlations included in analysis
N: Aggregated Sample size
M_r: Weighted-mean correlation
$\sigma^2_{r(xy)}$: Observed weighted variance across studies
σ^2_e: Variance due to sampling error
$\sigma^2_{p(xy)}$: Variance corrected for sampling error
$\sigma^2_{p(TU)}$: Variance after corrected for sampling error and measurement error
$\sigma^2_{e(TU)}$: Total amount of variance due to error
$M_{p(TU)}$: Weighted-mean correlations corrected for attenuation

As I have noted earlier, organization type was determined by whether the study described the data as being gathered from a private firm (6 studies) or a public organization (9 studies). If organization type was indeed a moderator of the focal relationship of job satisfaction and organizational commitment, it should be evidenced by a different weighted mean correlation from the overall meta-analysis and lower unexplained variance across samples in the subgroups than in the total sample. The weighted-mean correlation was slightly lower in the subgroup of public organizations (M_r=.557) and the unexplained variance across studies lower (72.5% as compared to 83%). This indicates that the relationship between job satisfaction and organizational commitment is moderated by the fact that the employees work in a public organization. The result of the meta-analysis are shown in Table 4.

A slightly higher M_r was found for the job satisfaction and organizational commitment in private organizations (M_r=.583) with a rather higher degree of unexplained variance across samples (93%) after corrections for sampling error and attenuation. Therefore, the fact that the employees work in a private firm appeared not to moderate the relationship of the two variables. (See, Table 4)

Based on the similar rationale, manager, non-managers subgroups and professional subgroup appeared to moderate the relationship between job satisfaction and organizational commitment, since the inclusion of these moderators significantly reduced the total unexplained variance up to 66%, 72%, and 57% respectively. However, non-professional subgroup found to be no effect on the relationship between the two variables. (Table 4)

Although initial analyses showed that some of the inconsistencies in reported findings could be explained by differences in organization type, job level, and career type, investigation of the results for each subgroup exposed that, with the exception of professional subgroup, the unexplained variance associated with each moderator category was greater than 60% of the observed variance. This indicated the "still" existence of additional moderating effects, so a series of subgroup analyses were performed that incorporated the effects of two of the moderators simultaneously.

Table 5 shows the combined moderator effects on the relationship between job satisfaction and organizational commitment. As shown in Table 5, though there were fairly consistent weighted-mean correlations ranging from .501 to .634, the combination of public and non-manager drastically reduced the unexplained variance to 0%. This was also true in the combinations of private-nonprofessional, manager-professional, and manager-nonprofessional. These results indicates that the moderators almost completely corrected the two possible errors. However, this result may be an erroneous one since those combined categories each contained too small number of studies (only 2 studies included in each category). As a result, those three private-nonprofessional, manager-professional, and manager-nonprofessional categories should not be regarded as moderators for the relationship of job satisfaction - organi-

Table 5 Combined Moderator Effects

Combined subgroups	K	N	M_r	$\sigma^2_{r(xy)}$	σ^2_e	$\sigma^2_{p(xy)}$
Public						
Manager	1	149	----	------	------	------
Non-manager	4	1802	.549	.00227	.00109	.00118
Private						
Manager	3	696	.586	.00457	.00185	.00272
Non-Manager	3	598	.578	.0118	.00222	.00958
Public						
Professional	6	2112	.511	.00432	.00155	.00277
Nonprofessional	3	806	.572	.0158	.00168	.0141
Private						
Professional	3	641	.553	.0123	.00225	.01
Nonprofessional	2	428	.634	.00148	.00167	-.00000
Manager						
Professional	2	417	.501	.00013	.00269	-.00000
Nonprofessional	2	428	.634	.00148	.00167	-.00000
Non-Manager						
Professional	7	2260	.549	.00595	.00151	.00444
Nonprofessional	0	----	----	------	------	------

Table 5 (continued)

$\sigma^2_{p(TU)}$	$\sigma^2_{e(TU)}$	% explained	95% CI	$M_{p(TU)}$
------	------	------		------
-.00000	.00227	100		.67
.00304	.00153	34	.581 ≤ p ≤ .797	.689
-.0125	-.00000	0		.661
.00189	.00243	56	.525 ≤ p ≤ .695	.61
.0177	-.00000	0		.641
.013	-.00000	0		.637
-.00000	.00148	100		------
-.00000	.00012	100		------
-.00000	.00147	100		------
.00459	.00136	25	.522 ≤ p ≤ .788	.655
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See, Table 4 for notations.

zational commitment. The Table also shows the combined effects of the public employees and professional subgroup on the job satisfaction - organizational commitment reduced the unexplained variance from initially estimated 83% to 44%. This combination, therefore, can be considered to be strong moderator for the relationship between the two variables.

V. DISCUSSION

The results of the analysis involving studies of the job satisfaction - organizational commitment relations appear to partially answer this student's hypotheses. The correlation after corrected for sampling error and attenuation between the two variables is about .657. Theoretically, if a variable reduces up to 40% of the unexplained variance, it would be considered as a moderator (Peters, Hartke, & Pohlmann, 1985). However, in this kind of behavioral and attitudinal research, it is expected that the limitation of the 40% rule can hardly be achieved. So, this student follows the less stringent rule prescribed by Hunter and his fellows (1980, 1982) that a variable can be a moderator if it has lower percentage unexplained variance than that of the total sample. Based on the rationale, subgroup meta-analyses revealed the presence of seven "weak" moderators (public, job level differentiation in studies, professional, public-nonmanager, private-manager, public-professional, and nonmanager-professional subgroups). Among the moderators, the two strongest candidates for moderating variables were public-professional subgroup and professional employee category.

First, career type differences (professional, nonprofessional) moderated the job satisfaction - organizational commitment relationship, substantiating conclusions drawn by Bartol (1979). This result suggests that specific attitudes, in this case, professional attitudes, toward the organization may be more important in the decision to remain than the more general attitudes toward one's particular job. The theory also indicates that further explorations are needed of the various professionalism dimensions as they impact on the job satisfaction - organizational commitment relation. For example, more sophisticated reward system as valuing professional behavior can be developed to increase the level of organizational commitment.

Considering the two moderators simultaneously, additional subgroup meta-analyses (See, Table 5) indicated public-professional subgroup became a strong moderating variable on job satisfaction - organizational commitment relation. In this paper, public organizations were pitted against private organizations to see whether organization type might alter effect sizes. Results show that this might be the case. Public organizations yield lower weighted-mean correlations (.557) between overall job satisfaction and organizational commitment than do private organizations (.59). In addition, sampling accounts for more observed variation in public organizations, whereas a significant amount of unexplained variance remains in the private firms. As shown in Table 5, the public-professional category plays a crucial role in reducing

total unexplained variance (reduced to 44%). This empirical result extends the argument that public sector professionals have their own distinctive view of public responsibility, responsiveness, and public interest. This discussion certainly offers some support for efforts to increase organizational commitment through resolving inherent conflicts (Friedlander, 1971; Flango & Brumbaugh, 1974) (e.g., strict rules and regulations, less autonomous public jobs, etc.) between professionals and their employing public organizations.

Those two strong moderators further suggests that future research efforts in the area of organizational commitment should differentiate between public employees who are less likely to perceive job satisfaction from extrinsic rewards (e.g., pay increase) and private employees who are more likely to do so. In this sense, it can be hypothesized that exchange-based organizational commitment model (Etzioni, 1975; O'Reilly & Chatman, 1986) may not be appropriate for studying public employee commitment procedure.

VI. CONCLUSION AND SOME LIMITATIONS

For the initial analyses (Table 4) in the present investigations, the amount of variance due to sampling error and attenuation ranged from 7% to 43% of the observed variance. According to Hunter, et al. (1982), when less than 75% of the variance can accounted for by artifacts, a search for a moderator should be undertaken. If a moderator is influencing the relationship, most of the observed variance within the subgroups will be accounted for.

In the present study, even when subgroups were done in search for moderating variables, in most instances, the majority of the variance remained unexplained. For example, even though organization type was found to moderate the relationship between job satisfaction and organizational commitment, the meta-analysis on the subgroup of public organization revealed that only 27.5% of the variance could be attributed to artifacts (Table 4).

However, the results may induce a strained interpretation as Spector and Levine (1987) warned. First, they studied the susceptibility of this meta-analysis technique to Type I and Type II errors. In the present study a Type I error would be committed if the procedure indicated that the variance remaining after correction for artifacts was sufficient to warrant a search for moderators when actually no moderators existed. Also, a Type II error would have been committed if the meta-analysis procedure indicated that 75% or more of the observed variance across studies was due to statistical artifacts when actually a search for moderators was warranted.

It is doubtful, however, that the two errors were committed in this study. Had the variance due to artifacts been closer to the 75% rule, the results may be questioned. The amount of variance due to artifacts was found to be 17% for job satisfaction and organizational commitment.

A second reason for these findings may be that only a few moderators could be

explored in the present study. The large amount of variance remaining may be attributable to variables such as task structure, role clarity, culture or other such moderators that have been studied. In addition, it was not possible to correct for restriction in range in the present investigation, due to a lack of information reported in the studies included in the meta-analysis. A portion of the unexplained variance may be attributable to this artifact.

The results of this study are important in several aspects. First, it provides support for contingency approach to the study of job satisfaction - organizational commitment relation. That is, several dimensions of job satisfaction will have different effects on individual organizational commitment process as the situation changes.

A second important result of this study is that public vs. private distinction was identified as moderator of this relationship. This finding will serve as a well constructed guidance toward the study of job satisfaction - organizational commitment relationship.

REFERENCES

Angle, H.L., & Perry, J.L. (1981). An empirical assessment of organizational commitment and organizational effectiveness. *Administrative Science Quarterly*, 26, 1, 1-13.

Balfour, D.L., & Wechsler, B. (1990). Organizational Commitment: A Reconceptualization and Empirical Test of Public-Private Difference. *Review of Public Personnel Administration*, 10, 23-40.

Ban, C. (1987). The crisis of morale and federal senior executives. *Public Productivity Review*, 43, Fall, 31-49.

Bartol, K.M. (1979). Professionalism as a predictor of organizational commitment, role stress, and turnover: A multidimensional approach. *Academy of Management Journal*, 22, 4, 815-821.

Bateman, T.S., & Strasser, S. (1984). A longitudinal analysis of the antecedents of organizational commitment. *Academy of Management Journal*, 27, 1, 95-112.

Blau, G., & Boal, K. (1989). Using job involvement and organizational commitment interactively to predict turnover. *Journal of Management*, 15, 1, 115-127.

Brayfield, A.H., & Rothe, H.F. (1951). An index of job satisfaction. *Journal of Applied Psychology*, 35, 307-311.

Buchanan, B. II (1974). Building organizational commitment: The socialization of managers in work organizations. *Administrative Science Quarterly*, 19, 533-546.

Cook, J.D., Hepworth, S.J., Wall, T.D., & Warr, P.B. (1981). *The experience of work: A compendium and review of 249 measures and their use.* New York: Academic Press.

Curry, J.P., Wakefield, D.S., Price, J.L., & Mueller, C.W. (1986) On the causal ordering of job satisfaction and organizational commitment. *Academy of Management Journal*, 29, 4, 847-858.

DeCotiis, T.A., & Summers, T.P. (1987). A path analysis of a model of the antecedents and consequences of organizational commitment. *Human Relations*, 40, 7, 445-470.

Etzioni, A. (1975). *A comparative analysis of complex organizations: On power, involvement and their correlates.* New York: Free Press.

Flango, V.E., & Brumbaugh, R.B. (1974). The dimensionality of the cosmopolitan-local construct. *Administrative Science Quarterly*, 19, 198-210.

Friedlander, R. (1971). Performance and orientation structures of research scientists. *Organizational Behavior and Human Performance*, 6, 169-183.

Glisson, C., & Durick, M. (1988). Predictors of job satisfaction and organizational commitment in human service organizations. *Administrative Science Quarterly*, 33, 61-81.

Hackman, J.R., & Oldham, G.R. (1980). *Work redesign.* Reading, MA: Addison-Wesley.

Hunter, J.E., Schmidt, F.L., & Jackson, G.B. (1982). *Meta-analysis: Cumulating research findings across studies.* Beverly Hills: Sage.

Katz, D., & Kahn, R. (1966). *The social psychology of organization.* New York; John Wiley and Sons, Inc.

Kornhauser, A. (1965). *Mental Health of the Industrial worker.* New York: Wiley.

Kunin, T. (1955). The construction a new type of attitude measure. *Personal Psychology*, 8, 65-78.

Marsh, R.M., & Mannari, H. (1977). Organizational commitment and turnover: A prediction study. *Administrative Science Quarterly*, 22, 57-75.

Mathieu, J.E., & Hamel, K. (1989). A causal model of the antecedents of organizational commitment among professionals and nonprofessionals. *Journal of Vocational Behavior*, 34, 299-317.

Morris, J.H., & Sherman, J.D. (1981). Generalizability of an organizational commitment model. *Academy of Management Journal*, 24, 512-526.

Mowday, R.T., Steers, R.M., & Porter, L.W. (1979). The measurement of organizational commitment. *Journal of Vocational Behavior*, 14, 224-247.

O'Reilly, C.A., & Caldwell, D.F. (1980). Job choice: The impact of intrinsic and extrinsic factors on subsequent satisfaction and commitment. *Journal of Applied Psychology*, 65, 5, 559-565.

O'Reilly, C.A., & Chatman, J. (1986). Organizational commitment and psychological attachment: the effects of compliance, identification, and internalization on prosocial behavior. *Journal of Applied Psychology*, 71, 492-499.

Peters, L.H., Bhagat, R.S., & O'Connor, E.J. (1981). An examination of the independent and joint contributions of organizational commitment and job satisfaction on employee intentions to quit. *Group and Organization Studies*, 6, 73-82.

Peters, L.H., Hartke, D.D., & Pohlmann, J.T. (1985). Fiedler's contingency theory to leadership: An application of the meta-analysis procedures of Schmidt and Hunter. *Psychological Bulletin*, 97, 274-285.

Porter, L.W., & Lawler, E.E. (1968). *Managerial attitudes and Performance.* Homewood, Ill: Irwin Dorsey.

Porter, L.W., Steers, R.M., Mowday, R.T., & Boulian, P.V. (1974). Organizational commitment, job satisfaction, and turnover among psychiatric technicians. *Journal of Applied Psychology*, 59, 603-609.

Putti, J.M., Aryee, S., & Liang, T.K. (1989). Work values and organizational commitment: A study in the Asian context. *Human Relations*, 42, 3, 275-288.

Reichers, A. (1985). A review and reconceptualization of organizational commitment. *Academy of Management Review*, 10, 3, 465-476.

----------. (1986). Conflict and organizational commitments. *Journal of Applied Psychology*, 71, 3, 508-514.

Rusbult, C.E., & Farrell, D. (1983). A longitudinal test of the investment model: The impact on job satisfaction, job commitment and turnover of variations in rewards, costs, alternatives, and investments. *Journal of Applied Psychology*, 68, 3, 429-438.

Smith, F.J. (1976). Index of Organizational Reactions (IOR). *JSAS Catalog of Selected Documents in Psychology*, 6, (1), 54, No. 1265.

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

Steers, R.M. (1977). Antecedents and outcomes of organizational commitment. *Administrative Science Quarterly*, 22, 1, 46-56.

Weiss, D.J., Dawis, R.V., England, G.W., & Lofquist, L.H. (1967). *Manual for the Minnesota satisfaction questionnaire; Minnesota studies in vocational rehabilitation.* Vocational Psychology Research, Univ. of Minnesota.

Wiener, Y., & Vardi, Y. (1980). Relationships between job, organization, and career commitments and work outcomes: An integrative approach. *Organizational Behavior and Human Performance*, 26, 81-96.

APPENDIX A
Studies included in the Meta-Analysis

* Balfour, D.L., & Wechsler, B. (1990). Organizational Commitment: A Reconceptualization and Empirical Test of Public-Private Difference. *Review of Public Personnel Administration,* 10, 23-40.
* Bateman, T.S., & Strasser, S. (1984). A longitudinal analysis of the antecedents of organizational commitment. *Academy of Management Journal,* 27, 95-112.
* Curry, J.P., Wakefield, D.S., Price, J.L., & Mueller, C.W.(1986). On the causal ordering of job satisfaction and organizational commitment. *Academy of Management Journal,* 29, 4, 847-858.
* DeCotiis, T.A., & Summers, T.P. (1987). A path analysis of a model of the antecedents and consequences of organizational commitment. *Human Relations,* 40, 7, 445-470.
* Glisson, C., & Durick, M. (1988). Predictors of job satisfaction and organizational commitment in human service organizations. *Administrative Science Quarterly,* 33, 61-81.
* Magenau, J.M., Martin, J.E., & Peterson, M.M. (1988). Dual and unilateral commitment among stewards and rank-and-file union members. *Academy of Management Journal,* 31, 2, 359-376.
* Mathieu, J.E., & Hamel, K. (1989). A causal model of the antecedents of organizational commitment among professionals and nonprofessionals. *Journal of Vocational Behavior,* 34, 299-317.
* Meyer, J.P., Paunonen, S.V., Gellatly, I.R., Goffin, R.D., & Jackson, D.N. (1989). Organizational commitment and job performance: It's the nature of the commitment that counts. *Journal of Applied Psychology,* 74, 1, 152-156.
* Reichers, A. E. (1986). Conflict and organizational commitments. *Journal of Applied Psychology,* 71, 3, 508-514.
* Stumpf, S.A., & Hartman, K. (1984). Individual exploration to organizational commitment or withdrawal. *Academy of Management Journal,* 27, 2, 308-329.
* Welsh, H.P., & LaVan, H. (1981). Inter-relationships between organizational commitment and job characteristics, job satisfaction, professional behavior, and organizational climate. *Human Relations,* 34, 12, 1079-1089.
* Wiener, Y., & Gechman, A.S. (1977). Commitment: A behavioral approach to job involvement. *Journal of Vocational Behavior,* 10, 47-52.

APPENDIX B
Formulas used in the Meta-analysis

1. Weighted-mean correlation, M_r

$$= \frac{\sum(n_i r_{i)}}{\sum n_i}$$ where r_i: the zero-order correlations in study i

n_i: the sample size of study i

2. Observed variance across studies, $\sigma^2_{r(xy)}$

$$= \frac{\sum n_i (r_i - M_r)^2}{\sum n_i}$$

3. Variance due to sampling error, σ^2_e

$$= \frac{(1 - M_r^2)^2 K}{N}$$ where K: the total number of studies in the meta-analysis

4. Variance after corrected for sampling error, $\sigma^2_{p(xy)}$
   = observed variance - error variance

5. Weighted-mean correlations corrected for attenuation, $M_{p(TU)}$

$$\frac{M_r}{M_a * M_b} \quad \text{where} \quad M_a = \frac{\sum\sqrt{r_{xx}}}{K}$$

$$M_b = \frac{\sum\sqrt{r_{yy}}}{K}$$

6. Variance after correction for sampling error and attenuation,

$$\sigma^2_{p(TU)} = \frac{\sigma^2_{p(xy)} - M_{p(TU)}{}^2 (M_a^2 \sigma_b^2 + M_b^2 \sigma_b^2)}{M_a^2 * M_b^2}$$

where $$\sigma_a^2 = \frac{\sum(\sqrt{r_{xx}} - M_a)^2}{K}$$

$$\sigma_b^2 = \frac{\sum(\sqrt{r_{yy}} - M_b)^2}{K}$$

7. Total amount of variance due to error, $\sigma^2_{e(TU)}$
   $= \sigma^2_{r(xy)} - \sigma^2_{p(xy)}$