AN ILLUSTRATION OF A META-ANALYTIC INTEGRATION OF PREVIOUS RESEARCH FINDINGS USING SCHOOL BUREAUCRATIZATION AS AN EXAMPLE

Cemil YÜCEL[*]

ÖZET

Bu çalışmada genellemelere varabilmek için geçmişte yapılmış araştırmaların istatiksel olarak birleştirilmesinin bir örneği sergilenmektedir. Bu tür birleştirmelere **meta analiz** adı verilmektedir. Bu çalışmada geçmişte okullar üzerinde yapılmış örgütsel yapının boyutları arasındaki ilişkileri araştıran çalışmalar birleştirilmeye ve bir fonomen hakkında bir yargıya varılmaya çalışılmaktadır. Bu tür araştırmalar aynı fenomen üzerinde yapılmış araştırmaların sonuçlarını inceleyerek, söz konusu fenomenin ne derecede farklı mekanlarda, farklı zamanlarda, farklı gruplarda benzer bir şekilde ortaya çıktığı hakkında genellemelere varmamıza yardımcı olur. Ayrıca aynı fenomeni çalışmayı planlayan araştırmacıya ne tür sonuçlar beklemesi gerektiği hakkında bilgi sunar. **(Keywords: Meta-anaysis, organizational structure, educational administration)**

This is a study to illustrate how to integrate previous research findings to make an effective preparation for further research. In social sciences, some constructs are studied over and over again. New researchers who are interested in previously studied construct need a sense of what will happen when they study the same construct in a new sample. In this study, researches on bureaucratization are used an example. There are more than 70 empirical studies examining bureaucratic characteristics of schools. Those who plan for studying bureaucratization in schools need to know what kind of results they are likely to arrive at.

Purpose of this paper is to illustrate an alternative quantitative method to integrate research findings on measuring bureaucratization in educational organizations. The study is an attempt to use a meta analytic approach to answer the following questions: (1) What are the main characteristics of bureaucracy? (2)What are the relationships

---

*Yard. Doç. Dr., AKÜ, Uşak Eğitim Fakültesi

between the characteristics? (3)Can bureaucratic characteristics form a visible smaller overall pattern?

Method

First a qualitative integration of literature will be developed to clarify the bureaucratic theory. Literature is reviewed starting at 1940. Only empirical studies are considered in order to utilize the meta-analyses. Studies that provided correlation matrixes of bureaucratic characteristics and sample sizes are located. Correlation coefficients reported by researchers are averaged by using several meta-analytic computations to arrive at theoretical generalizations. Then, average correlation coefficients are used to test confirmatory measurement models that are suggested by the literature.

Literature

Dimensions of Bureaucracy

Hierarchy of Authority **(HA):** The extent to which the locus of decision making is pre-structured by the organization (Hall, 1968; p. 95). Division of labor or Specialization **(DL):** The extent to which work tasks are subdivided by functional specialization within the organization (Hall, 1968; p. 95). Rule Enforcement or Rules and Regulations **(RR)**: The degree to which the behaviors of organizational members subject to organizational control (Hall, 1968; p. 95). Procedural specification **(PS):** the extent to which organizational members must follow organizationally defined techniques in dealing with situations when they encounter (Hall, 1968; p. 95). Impersonality **(IM):** The extent to which both organizational members and outsiders are treated without regard to individual qualities (Hall, 1968; p. 95). Promotions based on Technical Competence **(TC):** The extent to which organizationally defined "universalistic" standards are utilized in the personnel selection and advancement (Hall, 1968; p. 95). In the ideal type bureaucracy all bureaucratic dimensions need to be present to a high degree (Hall, 1963).

The Origin of the Bureaucratic Theory

Weber (1946, in Gerth and Mills; p 214) argued as follows in favor of bureaucratic organization:

For bureaucratic organization is, other things being equal, always from a formal, technical point of view, the most rational type. For the needs of mass administration today, it is completely indispensable. The choice is only that between bureaucracy and dilettantism in the field of administration…….Precision, speed, unambiguity, knowledge of files, continuity, discretion, unity, strict subordination, reduction of friction, and of material and personal costs-- these are raised to the optimum point in the strictly bureaucratic administration, and especially in its monocratic form.

As compared with the ***collegiate, honorific,*** **and** ***avocation***, ***trained bureaucracy*** is superior on all these points….

Max Weber listed organizational attributes that when present, constitutes the bureaucratic form of organization. Bureaucratic organization functions accordingly: 1.They are personally free and subject to authority only with respect to their impersonal official obligations. 2. They are organized in clearly defined hierarchy of offices. 3. Each office has clearly defined sphere of competence in the legal sense. 4. The office is filled by free contractual relationship. Thus, in principle, there is free selection. 5. Candidates are selected on the basis of technical qualifications. They are appointed, not selected. 6. They are remunerated by fixed salaries in money, for the most part with right to pensions. 7. The office is treated as the sole, or at least the primary, occupation of the incumbent. 8. It constitutes a career. There is a system of "promotion" according to seniority or to achievement, or both. Promotion is dependent on the judgment of superiors. 9. The official works entirely separated from ownership of the means of administration and without appropriation of his position. 10. He is subject to strict and systematic discipline and control in the conduct of the office. According to Max Weber organizational tasks are as distributed among the various positions as official duties. The positions or offices are organized into a hierarchical authority structure. A formally established system of rules and regulations govern official decisions and actions, officials are expected to assume an impersonal orientation in their contacts with clients and with other officials. Employment by the organization constitutes a career for officials.

Measuring Bureaucracy

Bureaucracy had been studied as a dichotomous construct until 60s. Moeller (1962) used analysis of dichotomous ratings by judges to classify school systems as highly or lowly bureaucratized. His rating system conceptualized the bureaucratic dimensions as present or absent attributes rather than as continuous variables. This kind of conceptualization was common among researchers who had used an approach named unitary approach. During 60's, unitary approach which was assuming bureaucracy as a single dimension and as an absent-present dichotomy was almost abandoned. Dimensional studies can be classified according to the instrument they use. The second widely used instrument is Structural Properties Inventory of Aiken and Hage that was modified by Bishop (1975) for use in educational organization. The third rarely used instrument is Aston Interview Schedule modified by Sackney (1976) for use in schools. The most widely used instrument is the modified versions of Organization

Inventory of Hall (1961) that was first modified by MacKay (1964) to measure bureaucratization in schools. In this study, the focus is on the Hall Approach (studies used Organization Inventory) utilized to measure school bureaucratization.

Hall (1961) developed an instrument to measure six bureaucratic dimensions after an extensive literature review on bureaucratic characteristics. "Hall's work in developing the Organizational Inventory represents the most systematic attempt to measure bureaucratization" (Punch, 1969; p. 44). *Hall integrated a list on bureaucratic characteristics and identified six most cited dimensions of the construct: Hierarchy of Authority (HA), Rule for Incumbents (RR), Specialization (DL), Procedural Specifications (PS), Impersonality (IM), Technical Qualifications (TC).* The dimensions were measured by means of likert-type scales, incorporating a total of sixty-two items. His hypotheses (Hall, 1961; p. 27) became the foundation of the research approach on bureaucratization known as dimensional approach or simply Hall Approach.

> *1. Bureaucracy is a condition that does not exist in a present-absent dichotomy; rather it exists in degrees along the six dimensions. 2. The degree of bureaucratization may not vary concomitantly among all dimensions. 3. Certain pairs of the dimensions may vary concomitantly, independent of the rest.*

MacKay used Hall's instrument first. He concluded that bureaucratization exists on continua along the six dimensions. *That is, an organization which is bureaucratic along one or more dimensions is not necessarily bureaucratic along all six dimensions.* That is, the six scales were not completely independent. Nevertheless, each of the scales was clearly measuring a different aspect of organizational structure. Robinson (1966) with his dissertation chair MacKay improved the instrument and named School Organization Inventory. Robinson found that HA, RR, PS, and IM positively intercorrelated as were DL, and TC. However, first four negatively correlated with the last two. Kolesar (1967) reconstructed Hall's instrument's six dimensions into two-dimensional one. Punch (1967) adapted Hall's instrument and concluded that bureaucracy is unitary if it constitutes only HA, RR, PS, and IM dimensions. Punch identified two distinct factors that he called *"Authority"* (composed of HA, RR, PS, and IM) and "*Expertise*."(composed of DL AND TC) Factor two (Expertise) is a partial index of *professionalism*. Punch's analysis revealed several weaknesses in the reliabilities of two scales. B. Anderson (1970), Isherwood (1971) and Sousa (1980) also tested and modified the instrument (School Organizational Inventory-*SOI*). Anderson used variation of items from SOI and also found two-second order factors. He found a non-significant

negative correlation between the _two_ higher order factors. After Punch's (1967) study researchers used exploratory factor analysis. Usually Image Factoring was used. Factor solution was rotated with _varimax rotation_ technique. Additionally, following his suggestion, _researchers dropped the dimensions of DL and TC_ when they were measuring bureaucratization. Some others integrated RR and PS claiming that these two measures the same thing. Sousa and Hoy (1981) _dropped IM due to low reliability_ of this dimension in addition to TC and DL. They suggested that IM is not a structural variable. IM was labeled as a dysfunction of bureaucratization by Merton (1957). He claimed that IM results in low morale. Hall (1963) concluded that HA may be the central dimension in the determination of the overall degree of bureaucratization. MacKay (1964) reported relatively **_high correlations between HA, RR, and PS._** He found that TC was not discriminating among schools. McKenna (1974) noted that promotional opportunity is schools an ambiguous aspect to assess.

Researchers consistently report two distinct factor..Usually, first factor composed of HA, RR, PS, and IM and second factor composed of TC and DL are negatively correlated. First factor was accepted as the measure of bureaucratization by most researchers. The second factor was either discarded or analyzed separately. The second factor was accepted as a partial measure of professionalism. The research on the topic almost stopped during the first part of the 80's. At the final stage, Isherwood and Hoy developed a four-fold typology of school bureaucracy by using Hall's instrument. They named first factor as control (Bureaucratic pattern) and the second as expertise (Professional pattern).

Integration

In sum, literature on organization theory suggests that bureaucracy is composed of relatively independent dimensions. Mostly cited dimensions are HA, DL, RR, PS, IM, and TC. These six dimensions form two higher order dimensions (Control and expertise). DL and TC dimensions form the "Expertise" second-order dimension and they are partial measures of professionalism. Remaining four dimensions form the "Control" second-order dimension. It has been suggested that these four dimensions (HA, RR, PS, IM) should be used as the measure of bureaucratization. The two second-order dimensions (Control and Expertise) are negatively correlated. But this correlation should be very low or non-significant since all researchers studying factor structure of the six dimensions used varimax rotation that assumes no correlation between the factors.

In order to examine the theory, studies that provide the correlation matrix and sample sizes are considered for the analysis. Number of studies

that fit these two criteria is 12. Five of which used "school" as the measurement unit. Responses from teachers were averaged school by school basis. Seven studies used "Teacher" as the unit. Studies used in the integration are as follow: David Allister MacKay (1964), Norman Robinson (1966), Keith Francis Punch (1967), Barry D. Anderson (1970), Ed Gerhardt (1971), Geoffrey B. Isherwood (1971), Don Kent King (1972), Bruce McKenna (1974), David Anthony Sousa (1980), Robert Weiner (1983), Andrew B. Zaller (1987), Wortman Neil Charles (1990). Units of measurement in each study are as follow: MACKAY=Teacher as unit, ROBINSON = Teacher as unit, PUNCH = School as unit, ANDERSON = Teacher as unit, GERHARDT = Teacher as unit, ISHERWOO = School as unit, KING = Teacher as unit, MCKENNA = Teacher as unit, SOUSA = School as unit, WEINER = Teacher as unit, ZALLER = School as unit, WORTMAN = School as unit Based on the literature, following hypotheses are formed:

1-   a. Correlations should be stable across studies. b. Dimensions should moderately correlate. c. HA, RR, PS, and IM should positively intercorrelate. d. DL and TC dimensions should positively correlate. e. Both TC and DL should negatively correlate to other four or correlation of TC and DL to other four should be non-significant.

2-   a. HA, RR, PS, and IM dimensions load on a single higher order factor (Control). b. DL and TC load on "Expertise" second order factor. c. Control and Expertise is negatively correlated or correlation is not significant.

3.   All dimensions are reliable.

<div align="center">Analysis</div>

A- Descriptive correlation coefficients

The r coefficient for each pair of dimensions entered into SPSS program as variables. Each study is the individual case. Mean Median and Minumum and Maximum correlations are calculated by the program.

B- Zr Transformation:

To solve difficulties arising from the skewness of the sampling distribution of the correlation coefficient, r's (correlation coefficients) are converted to Zr values. Zr values are approximately normally distributed.

Steps:

1-   Each correlation between every possible pair (HA-DL, HA-RR, HA-PS, HA-IM, HA-TC, DL-RR, DL-PS, DL-IM, DL-TC, RR-PS, RR-IM, RR-TC, PS-IM, PS-TC, IM-TC) of dimensions (HA, DL, RR, PS, IM and TC) for each study is converted to Zr values by using the Zr transformation table (Ferguson, 1966; p. 412).

Example: This is the correlation matrix provided in McKenna (1974, p. 56)

	HA	DL	RR	PS	IM	TC (N=366 teachers)
HA	.1.00					
DL	.44	1.00				
RR	.63	.33	1.00			
PS	.77	.50	.73	1.00		
IM	.45	.43	.39	.55	1.00	
TC	.11	-.11	.12	.06	.16	1.00

r (correlation coefficient) for HA-DL pair = .44, corresponding Zr value in the table = .47, r for RR-PS pair = .73, Zr value for this r = .62

All pairs in each study converted to Zr values this way.

2-   Zr values for each pair are added across studies and divided by the number of studies. Or; Zr values of same pairs across studies are averaged.

Example:

Study	Zr for HA-RR
MACKAY	.693
ROBINSON	.693
PUNCH	.865
ANDERSON	.172
GERHARDT	.762
ISHERWOO	.576
KING	.848
McKenna	.744
SOUSA	1.020
WEINER	.192
ZALLER	.719
WORTMAN	.563

Total   =   7.842 divided by 12 ➔ .65 for all studies together. See 2nd correlation table, row 4, clm 1

Average Zr's for HA-RR pairs across studies

Studies where School is the unit (see 2nd table 4th row 2nd clm)	Mean	.75	
	Sum	3.743	
	N		5 studies
Studies where Teacher is the unit (see 2nd table 4th row 3nd clm)	Mean	.59	
	Sum	4.104	
	N		7 studies
All 12 studies	Mean	.65 as seen above	
	Sum	7.847	
	N		12 all together

3-   Averaged Zr values are converted back to r's (Correlation coefficients) from the table (Ferguson, 1966; p. 412).

Example: The average Zr of HA-RR pair for all studies together was .65. Corresponding r for this value is .57. See 2nd correlation table 5th row 1st clmn.

4-   95% confidence intervals are calculated by SPSS for Zr's. Upper and lower limits of the intervals are Zr values. These Zr's are converted back to r's.

Example: 95% Zr-CI (Zr-confidence interval) for HA-RR is .49 ←→ .81. This interval is converted to r-value. Resultant interval is .46 ←→ .67. See 2nd table 6th row 1st clmn.

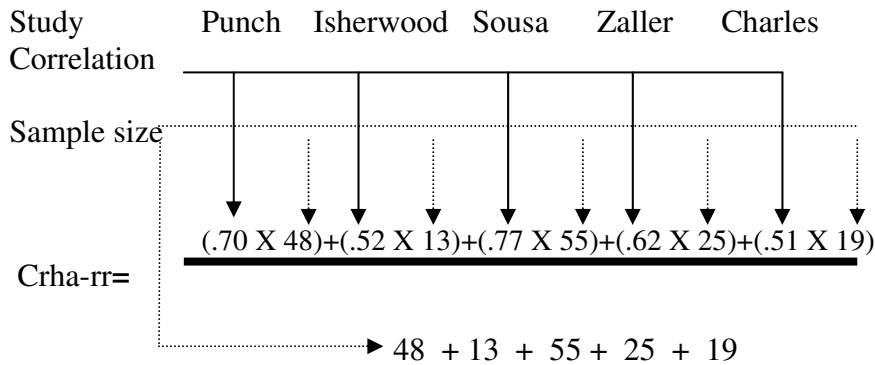C- Correlation coefficients corrected for sample size

Following formula used to adjust correlation coefficients.

N_i = is the number of subjects in the study i, r_i = is the correlation given in the study i, ř = adjusted

$$\check{r}= \frac{\sum N_i r_i}{\sum N_i}$$ (Winters, 1983; p. 28)

Example:

CORRELATIONS BETWEEN HA and RR Corrected r for HA-RR across 5 studies that use school as the measurement unit (Crha-rr)

Study   Punch   Isherwood Sousa   Zaller   Charles
Correlation

Sample size

Crha-rr= $\dfrac{(.70 \times 48)+(.52 \times 13)+(.77 \times 55)+(.62 \times 25)+(.51 \times 19)}{48 + 13 + 55 + 25 + 19}$

Result =======➔.67 see 2nd table the last row 2nd clmn.

If expectation 1 is true, minimum and maximum correlations among same dimensions across different studies should not be too much far away from each other. Sign of confidence interval limits should not be at opposite. Different computations (1- Mean 2- Median, 3- r's corresponding to Zrs found, and 4- Corrected for sample size) of the correlation for the same pair should look alike.

Findings

Findings are provided in Table 1. Table 1 contains 15 sub sections. Each sub-section of the table demonstrates different calculations of correlations between a particular pair of bureaucratic dimensions. Following the table a brief conclusion for each pair of relationships between dimensions is provided.

TABLE 1 CORELATIONS BETWEEN DIMENSIONS

TYPE	ALL STUDIES (12 STUDIES)	SCHOOL AS THE UNIT (5 STUDIES)	TEACHER AS THE UNIT (7 STUDIES)
SUB-SECTION 1 CORRELATIONS BETWEEN HA AND DL			
MEAN -MEDIAN CORRELATIONS	-.19 -.26	-.36 -.19	-.09 -.33
MIN-MAX	-.82 .44	-.82 -.07	-.45 .44
AVERAGED Zr's (TRANSFORMED r's)	-.24	-.47	-.09
CORRESPONDING r of Zr FOUND	-.23	-.44	-.09
95% Confidence Interval for r	-.58 .19	-.96 .80	-.58 .44
CORRECTED FOR SAMPLE SIZE	-.17	-.22	-.17
SUB-SECTION 2 CORRELATIONS BETWEEN HA AND RR			
MEAN- MEDIAN CORRELATIONS	.55 .61	.62 .62	.50 .60
MIN-MAX	.17 - .77	.51 - .77	.17 - .69
AVERAGED Zr's (TRANSFORMED r's)	.65	.75	.59
CORRESPONDING r of Zr FOUND	.57	.63	.53
95% Confidence Interval for r	.46 - .67	.47 - .76	.32 - .69
CORRECTED FOR SAMPLE SIZE	.50	.67	.50
SUB-SECTION 3 CORRELATIONS BETWEEN HA AND PS			
MEAN - MEDIAN CORRELATIONS	.64 .73	.69 .73	.58 .69
MIN-MAX	.15 .87	.34 .87	.15 .77
AVERAGED Zr's (TRANSFORMED r's)	.72	.91	.53
CORRESPONDING r of Zr FOUND	.62	.72	.49
95% Confidence Interval for r	.36 .79	.44 .87	-.16 .84
CORRECTED FOR SAMPLE SIZE	.63	.67	.64
SUB-SECTION 4 CORRELATIONS BETWEEN HA AND IM			
MEAN - MEDIAN CORRELATIONS	.48 .47	.56 .54	.43 .43
MIN-MAX	.22 .69	.47 .69	.22 .60
AVERAGED Zr's (TRANSFORMED r's)	.53	.64	.47
CORRESPONDING r of Zr FOUND	.49	.57	.44
95% Confidence Interval for r	.39 .57	.39 .70	.31 .55
CORRECTED FOR SAMPLE SIZE	.44	.56	.44
SUB-SECTION 5 CORRELATIONS BETWEEN HA AND TC			
MEAN - MEDIAN CORRELATIONS	-.23 -.39	-.45 -.55	-.06 -.12
MIN-MAX	-.68 .51	-.68 -.05	-.40 .51
AVERAGED Zr's (TRANSFORMED r's)	-.27	-.53	-.06
CORRESPONDING r of Zr FOUND	-.26	-.48	-.06
95% Confidence Interval for r	-.54 .07	-.79 .01	-.52 .43
CORRECTED FOR SAMPLE SIZE	.01	-.37	.03

SUB-SECTION 6 CORRELATIONS BETWEEN DL AND RR			
MEAN - MEDIAN CORRELATIONS	-.14 -.20	-.32 -.22	-.02 -.19
MIN-MAX	-.72 .33	-.72 -.03	-.29 .33
AVERAGED Zr's (TRANSFORMED r's)	-.15	-.39	-.01
CORRESPONDING r of Zr FOUND	-.15	-.37	-.01
95% Confidence Interval for r	-.44 .17	-.91 .64	-.34 .33
CORRECTED FOR SAMPLE SIZE	-.07	-.22	-.07
SUB-SECTION 7 CORRELATIONS BETWEEN DL AND PS			
MEAN - MEDIAN CORRELATIONS	.003 .004	-.21 -.08	.22 .42
MIN-MAX	-.64 .50	-.64 .09	-.27 .50
AVERAGED Zr's (TRANSFORMED r's)	.004	-.25	.20
CORRESPONDING r of Zr FOUND	.004	-.25	.19
95% Confidence Interval for r	-.39 .39	-.88 .70	-.39 .66
CORRECTED FOR SAMPLE SIZE	.15	-.07	.17
SUB-SECTION 8 CORRELATIONS BETWEEN DL AND IM			
MEAN - MEDIAN CORRELATIONS	-.11 -.18	-.27 -.18	-.02 -.18
MIN-MAX	-.56 .43	-.56 -.07	-.43 .43
AVERAGED Zr's (TRANSFORMED r's)	-.12	-.29	-.02
CORRESPONDING r of Zr FOUND	-.12	-.29	-.02
95% Confidence Interval for r	-.40 .18	-.78 .42	-.46 .43
CORRECTED FOR SAMPLE SIZE	-.11	-.17	-.10
SUB-SECTION 9 CORRELATIONS BETWEEN DL AND TC			
MEAN - MEDIAN CORRELATIONS	.06 .11	.06 .32	.06 -.11
MIN-MAX	-.58 .44	-.58 .44	-.21 .43
AVERAGED Zr's (TRANSFORMED r's)	.24	.49	.08
CORRESPONDING r of Zr FOUND	.23	.45	.08
95% Confidence Interval for r	-.04 .47	.08 .72	-.30 .45
CORRECTED FOR SAMPLE SIZE	.04	.20	.03
SUB-SECTION 10 CORRELATIONS BETWEEN RR AND PS			
MEAN - MEDIAN CORRELATIONS	.65 .66	.70 .68	.59 .56
MIN-MAX	.46 .85	.46 .85	.52 .73
AVERAGED Zr's (TRANSFORMED r's)	.77	.92	.63
CORRESPONDING r of Zr FOUND	.65	.72	.56
95% Confidence Interval for r	.51 .75	.48 .86	.38 .70
CORRECTED FOR SAMPLE SIZE	.60	.68	.60
SUB-SECTION 11 CORRELATIONS BETWEEN RR AND IM			
MEAN - MEDIAN CORRELATIONS	.33 .36	.38 .43	.30 .32
MIN-MAX	.03 .65	.03 .65	.09 .44
AVERAGED Zr's (TRANSFORMED r's)	.35	.43	.31
CORRESPONDING r of Zr FOUND	.34	.41	.30
95% Confidence Interval for r	.21 .46	-.07 .73	.19 40
CORRECTED FOR SAMPLE SIZE	.32	.39	.31

SUB-SECTION 12 CORRELATIONS BETWEEN RR AND TC			
MEAN - MEDIAN CORRELATIONS	-.09 -.25	-.27 -.32	.05 .03
MIN-MAX	-.59 .65	-.59 .14	-.28 .65
AVERAGED Zr's (TRANSFORMED r's)	.06	.04	.08
CORRESPONDING r of Zr FOUND	.06	.04	.08
95% Confidence Interval for r	-.26 .37	-.62 .67	-.43 .54
CORRECTED FOR SAMPLE SIZE	.13	-.19	.15
SUB-SECTION 13 CORRELATIONS BETWEEN PS AND IM			
MEAN - MEDIAN CORRELATIONS	.49 .51	.62 .64	.35 .40
MIN-MAX	.07 .72	.48 .72	.07 .55
AVERAGED Zr's (TRANSFORMED r's)	.47	.74	.25
CORRESPONDING r of Zr FOUND	.44	.63	.25
95% Confidence Interval for r	.18 .64	.44 .78	-.18 .60
CORRECTED FOR SAMPLE SIZE	.40	.58	.39
SUB-SECTION 14 CORRELATIONS BETWEEN PS AND TC			
MEAN - MEDIAN CORRELATIONS	-.20 -.14	-.24 -.26	-.14 -.14
MIN-MAX	-.54 .10	-.54 .10	-.34 .06
AVERAGED Zr's (TRANSFORMED r's)	-.17	-.26	-.08
CORRESPONDING r of Zr FOUND	-.17	-.26	-.08
95% Confidence Interval for r	-.38 .05	-.65 .25	-.39 .24
CORRECTED FOR SAMPLE SIZE	-.16	-.11	-.16
SUB-SECTION 15 CORRELATIONS BETWEEN IM AND TC			
MEAN - MEDIAN CORRELATIONS	-.03 -.13	-.03 -.14	-.02 -.12
MIN-MAX	-.51 .55	-.51 .55	-.25 .33
AVERAGED Zr's (TRANSFORMED r's)	-.02	-.03	-.02
CORRESPONDING r of Zr FOUND	-.02	-.03	-.02
95% Confidence Interval for r	-.33 .28	-.91 .90	-.33 .30
CORRECTED FOR SAMPLE SIZE	.03	-.04	.03

SUB-SECTION 1 reveals that when all 12 studies taken together different calculations of correlations (Mean, Median, corresponding r, and corrected r) between HA and DL dimensions are closer than the different calculations of correlations in other two classification (School-as-the-Unit classification and Teacher-as-the unit-classification). It seems that HA and DL tend to be negatively correlated which is what theory says. However, confidence interval and minimum maximum range is too wide to arrive at this conclusion. Since confidence interval includes a zero value, we may not claim that population correlation is actually different from zero. The theory is somewhat supported. According to theory Control and Expertise second order factors is negatively correlated or the correlation is non-significant. HA is a sub dimension of Control and DL is a sub dimension of expertise.

SUB-SECTION 2 suggests that the theory is supported. Correlations are similar and positive. Confidence interval is narrow does not contain zero. It can be expected to have a correlation around .50s between HA and RR. Studies use school as the measurement will reveal stronger relationship between HA and RR. SUB-SECTION 3 suggests that the theory is supported for the same reason as in section 2. Correlation between HA and PS is expected to be higher than correlation between HA and RR. If school as the unit, magnitude of correlation is stronger than teacher as the unit. Choosing teacher as the unit of the measurement is not a good choice. SUB-SECTION 4 suggests that the theory is supported. There is a positive relationship between HA and IM. Relationship of IM with HA is weaker than relationship of RR and PS with HA. School should be chosen as the unit of analysis if stronger correlation is wanted. SUB-SECTION 5 suggests that TC is not a bureaucratic dimension if HA is the most important predictor of bureaucratization as Hall claimed. TC tends to be negatively correlated to HA. This conclusion is more accurate if school is the unit of measurement since signs of confidence interval limits almost the same. SUB-SECTION 6 suggests that the correlation tends be negative as the theory suggests. Correlation is higher if the school is the unit. Confidence interval suggests that there is no relationship between DL and IM. SUB-SECTION 7 shows that the Median correlation is not similar to other correlations if the teacher is the unit. If school is the unit correlation is negative but confidence intervals suggest that there is no relationship between DL and PS. SUB-SECTION 8 shows that the correlations between DL and IM are similar within the same classifications, except teacher-as-the-unit classification. The correlation is negative but not significant. SUB-SECTION 9 shows that the theory is supported only if the school is the unit. The theory suggests that DL and TC is positively correlated. The correlations are not high enough to consider DL and TC to be subdimensions of a second order factor, Expertise. SUB-SECTION 10 shows that RR and PS are highly correlated. Theory is supported. SUB-SECTION 11 shows that when the school is the unit, IM may not be correlated with RR since confidence limits have opposite signs. All correlations look alike. SUB-SECTION 12 shows that the correlations are not very similar. There is no systematic relationship between TC and RR. SUB-

SECTION 13 shows that there is a positive relationship between PS and IM. Due to opposite signs of confidence interval limits in teacher-as the-unit classification, similar studies are likely to find no relationship between these two variable. SUB-SECTION 14 shows that the relationship tends to be negative, but not significant, between PS and TC. SUB-SECTION 15 shows that there is no relationship between TC and IM

In sum; the theory is confirmed when individual dimensions are considered. HA, RR, PS, and IM positively correlated. TC and DL is positively correlated if the school is the unit of analysis. DL and TC seem to be abureaucratic dimensions. Different calculations reveal similar correlation coefficients. Moderate correlations suggest that dimensions can vary independently from each other.

<div align="center">Confirmatory Models</div>

Based on four different average correlation coefficients (1- Mean, 2-Median, 3-Corrected and 4- Corresponding r 9of Zr's) and three classifications of studies (1- All Studies together, 2- Studies use "school" as the unit, and 3- Studies use "teacher" as the unit), 12 correlation matrixes (type of correlation X 3 type of study classification = 12) are generated. These 12 correlation matrixes entered into Lisrel8 program to run 12 measurement models to see whether the theory will be confirmed.

Model Labels used in Table 2 are as follow: Zr12= Uses matrix of correlations " r's corresponding to Zr's." All twelve studies taken together. Zr5= Uses matrix of correlations " r's corresponding to Zr's." Five studies used "school" as the unit. Zr7= Uses matrix of correlations " r's corresponding to Zr's." Seven studies used "teacher" as the unit. MEAN12= Uses matrix of mean correlations obtained from twelve studies together. MEAN5= Uses matrix of mean correlations obtained from five studies that used "school" as the unit. MEAN7= Uses matrix of mean correlations obtained from seven studies that used "teacher" as the unit. MEDIAN12= Uses matrix of median correlations obtained from twelve studies. MEDIAN5= Uses matrix of median correlations obtained from five studies where "school" was the unit. MEDIAN7= Uses matrix of median correlations obtained from seven studies where "teacher" was the unit. ADJUSTED12= Uses matrix of mean correlations adjusted for sample sizes (twelve studies). ADJUSTED5= Uses matrix of adjusted mean correlations obtained from five studies that used "school" as the unit. ADJUSTED7= Uses matrix of adjusted mean correlations obtained from seven studies that used "teacher" as the unit. Results of loadings and reliabilities are provided in tables 2 and 3. As Table 2 shows, loadings of HA, RR, PS, IM on control

factor is acceptable for almost all models. IM has lower loadings. It may not be a bureaucratic dimension. These four dimensions are the measures of bureaucratization as the theory suggested. Expertise dimension did not emerge. Expertise and Control tend to be negatively correlated if DL and TC really measure what they are supposed to measure. As Table 3 suggest HA, RR, and PS are reliable measures of bureaucratization. Impersonality may be dropped. PS seems to be the most reliable measure.

TABLE 2 Loadings: Second order factors

MODEL	CONTROL				EXPERTISE		Correlation between Control and Expertise
	LOADINGS				LOADINGS		
	HA	RR	PS	IM	DL	TC	r
Zr12	.78	.75	.82	.54	-.42	-.55	.36
Zr5	.82	.77	.90	.66	-.79	-.57	.49
Zr7	.73	.74	70	.46	.62	.13	-.19
MEAN12	.76	.73	.86	.56	-.17	-.34	.62
MEAN5	.83	.76	.86	.65	.25	.24	-1.44
MEAN7	.72	.70	.82	.47	.08	.08	-.06
MEDIAN12	.86	.74	.85	.56	.25	.43	-.73
MEDIAN5	.84	.74	.88	.66	.37	.86	-.49
MEDIAN7	.86	.69	.83	.49	-.06	-.03	-.37
ADJUSTED12	.75	.69	.85	.50	.05	.87	-.07
ADJUSTED5	.85	.78	.82	.63	.40	.50	-.53
ADJUSTED7	.75	.68	.86	.49	-.02	.04	-3.20

TABLE 3 Reliabilities: Second order factors

| MODEL	CONTROL				EXPERTISE	
	RELIABILITY				RELIABILITY	
	HA	RR	PS	IM	DL	TC
Zr12	.61	.56	.56	.29	.18	.31
Zr5	.68	.59	.81	.44	.63	.33
Zr7	.54	.55	.49	.21	.39	.02
MEAN12	.58	.53	.75	.31	.03	.12
MEAN5	.69	.58	.75	.42	.06	.06
MEAN7	.53	.49	.68	.23	.01	.01
MEDIAN12	.74	.54	.72	.31	.06	.19
MEDIAN5	.71	.55	.78	.44	.14	.74
MEDIAN7	.74	.48	.64	.24	.07	03
ADJUSTED12	.56	.47	.72	.25	.01	.75
ADJUSTED5	.73	.61	.68	.40	.16	.25
ADJUSTED7	.57	.47	.73	.24	.01	.01

If TC and DL are the measures of professionalism, the degree of professionalism of teachers does not depend on how autocratic schools are. Professionalism of teachers is changing independently of structure. To increase collegiality in schools, restructuring schools will not help. Changing school organizational structure to have collegial environment is questionable. Before we suggest any reform on how we run schools, more evidence is required.

Example Model

Model Zr5

Model based on five studies
that used "school" as the unit of measurement
An illustrative Lisrel Model

Based on correlations from Zr transformation.
All loadings are significant at .05 level. Correlation
between control and expertise is .49.
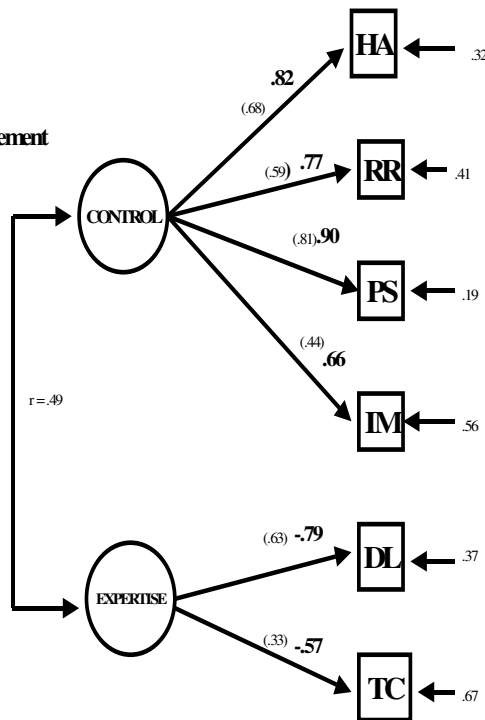
Numbers in parenthesis are reliability indictors. Numbers next to reliability indicators are factor loadings.
Numbers behind the outside arrows are errors.

Conclusion

This study illustrated how to integrate previous research to clarify what will happen in the future. This kind of integration is also useful to make generalization about phenomena that were studied over and over again. For this study, integration of previous research on bureaucratization revealed that bureaucracy and professionalism do not get along together. Usually, three dimensions of bureaucracy (hierarchy of authority, rule enforcement, and procedural specifications) vary concomitantly. Division of labor and

promotions based on staff's technical qualification vary concomitantly. However, technical qualifications and division of labor both negatively associated with other control mechanism in the organizations. In brief, it is very hard to find professionalism in organizations where there is bureaucracy and authoritarianism. Of course, even though this might be the case, it is hard to conclude that bureaucracy causes a decline in professionalism in the organization. Indeed, it might also be argued that administrators tend to be more authoritarian in organizations where professionalism is low. Administrators in organizations where people behave in a professional manner and where people are highly qualified might not feel a need to closely supervise their employees. The issue that needs to be studied in future is that is bureaucracy and authoritarianism diminish professionalism or lack of professionalism in an organization promotes bureaucracy and authoritarianism. If we can clarify this issue we may better understand what is going on in the organizations. We may have an answer for why some organizations have more autocratic structure than others or why people in some organizations are more free than others.

REFERENCES

- Anderson, B. D. Bureaucratization and Alienation: An Empirical Study in Secondary Schools. *Unpublished Dissertation.* University of Toronto. 1970.
- Barakat, H.. I. Alienation from the school system: The Dynamics and structure. *Doctoral dissertation.* University of Michigan. 1966.
- Bishop, L. & George, J. Organizational structure: A factor analysis of structural characteristics of public elementary and secondary schools. *Educational Administration Quarterly, 9(1),* 1973. 66-80.
- Ferguson, George A. *Statistical analysis in psychology and education.* New York: McGraw-Hill. 1966.
- Gerhardt, E. (). Staff conflict, Organizational Bureaucracy, and Individual Satisfaction in selected Kansas school Districts. *Doctoral dissertation.* University of Kansas. 1971.
- Gerth, H. H. & Mills, C. W. *From Max Weber: Essays in Sociology.* New York: Oxford University Press. 1946.
- Gouldner, A. W. *Patterns of industrial bureaucracy.* Glencoe, Ill: The Free Press. 1954.
- Hall, R. H. An empirical study of bureaucratic dimensions and their relation to other organizational characteristics. *Doctoral dissertation.* Ohio State University. 1961.
- Hall . The Concept of Bureaucracy: An Empirical Assessment. *American Journal of Sociology;* 69 (1), 1963. 32-40.

- Hall, R. H.. Professionalization and bureaucratization. *Administrative Science Quarterly*; 3(1), 1968. 92-104.
- Isherwood, Geoffrey B. Bureaucracy, alienation and teacher work values. *Doctoral dissertation.* Rutgers University, New Brunswick, New Jersey. 1971.
- King, Don Kent. The relationship between selected dimensions of bureaucracy and the militancy of secondary teachers. *Doctoral dissertation.* Oklahoma State University. 1972.
- Kolesar, H. An empirical study of client alienation in the bureaucratic organization. *Doctoral dissertation.* University of Alberta, Edmonton Canada. 1967.
- MacKay, D. A. An empirical study of bureaucratic dimensions and their relation to other characteristics of school organization. *Doctoral dissertation.* University of Alberta, Edmonton Canada. 1964
- McKenna Bruce. A Study of relationships between teachers' perceptions of job satisfaction and of organizational bureaucratization in public high schools. *Doctoral dissertation.* Boston University. 1974.
- Merton, K. *Social theory and social structure.* New York; The Free Press. 1957.
- Moeller, G. The relationship between bureaucracy in school system organization and teacher sense of power. *Doctoral dissertation.* Washington University. 1962.
- Robinson, Norman. A Study of the professional role orientations of teachers and principals and their relationship to bureaucratic characteristics of school organizations. *Doctoral dissertation.* University of Alberta, Edmonton, Alberta. 1966.
- Punch, Keith Francis. Bureaucratic Structure in Schools and Its Relationship to Leader Behavior. *Doctoral dissertation.* University of Toronto, Canada. 1967.
- Sackney, L. E. The relationship between organizational structure and behavior in secondary schools. *Doctoral dissertation.* University of Alberta, Edmonton, Canada. 1976.
- Sousa, David Anthony. Measuring bureaucracy in schools: a comparison of Hall and Aston Approaches. *Doctoral dissertation.* Rutgers University, New Brunswick, New Jersey. 1980.
- Sousa, D. A. & Hoy, W. Bureaucratic structure in schools: a refinement and synthesis in measurement. *Educational Administration Quarterly,* 17(4), 1981. 21-39.
- Weiner, Robert. The cosmopolitan-local orientation of elementary school principals. *Doctoral dissertation.* New York University, New York. 1983.
- Winters, Linda. A Meta analysis of bureaucratic structure and teacher job satisfaction. Doctoral dissertation. University of Kansas. 1983.
- Wortman, Neil Charles. The relationship between bureaucratization and effectiveness in secondary schools. *Doctoral dissertation.* University of North Carolina, Chapel Hill, North Carolina. 1990.
- Zaller, Andrew B. The relationship between school bureaucratization and academic achievement. *Doctoral dissertation.* The University of Tulsa. Arizona. 1987.