

## CHAPTER V

### RESULTS OF THE RESEARCH SAMPLE ANALYSES

#### Replication of the Factor Structure of Items in Bureaucratic Dimensions

The 60 items that survived the item analyses conducted using the pilot sample were subjected to another factor analysis using the research sample. A principal axis factor analysis was used to extract the factors, which were rotated to an oblique solution using oblimin procedure. Seven factors accounted for 36% of the total variance. Table 21 reports the structure loading for each of the 60 items. To facilitate interpretation, loadings less than .20 were deleted and the items defining each factor were grouped together in Table 21.

Generally, the results of the factor analysis made sense from a posthoc perspective, even though somewhat different from the factor structure obtained in the pilot sample for a small number of items. An interpretation will be offered for each of the resulting factors shown in Table 21. A comparison of Table 18 and Table 21 revealed that the factor structure of only 12 items out of 60 items somewhat differ. The rest of the factor structure of items was found to be stable from the pilot sample to the research sample. In other words, the factor structure of 80% of items was replicated. Even though the structure of the 12 items changed somewhat in the research sample analysis, they still had high loadings on the factors that they previously loaded in the pilot sample. The instability of the structure of the 12 items may also be due to the fact that the pilot sample had a smaller sample size. The research sample is two times larger than the pilot sample.

The first factor was named hierarchy of authority (HA). As shown in Table 21, the highest loadings for this factor were associated with these items thought to be measuring hierarchy of authority. Grouped along with these items were three procedural specifications items and one rules and regulations item. A cross loading of three procedural specifications items revealed that they collectively addressed aspects of procedural specifications that might also be closely related to hierarchy of authority. Similarly, the rules and regulations item might also be related to hierarchy of authority as well as rules and regulations. In the pilot sample a very similar factor structure was obtained. The final alpha coefficient of this dimension is .82.

Table 21 The Replication of the Factor Structure Obtained in the Pilot Sample for Bureaucratic Dimensions.

Item	HA	CLM	RR	FRM	DL	TC	PS
HA8	.66		-.28			-.21	-.33
HA4	.63				-.22		-.28
PS18	.59						-.30
HA2	.57		-.31	.22			-.39
HA18	.57					-.26	-.29
HA17	.50		-.38				-.25
PS8	.50		-.21	.28	-.35	-.28	-.43
HA6	.49						
HA12	.48		-.27		-.28	-.21	-.25
PS17	.47						-.41
HA5	.47					-.46	-.28
RR10	.24					-.23	
IM4		.77	-.28				
IM6		.76	-.32			.25	
IM16		.70	-.30			.31	
TC2		.63	-.25			.42	
IM15	.31	.53	-.45				
IM14		.41		.20		.34	
TC5	.35	.43	-.24				
IM19		.23	-.21				
RR18	.22		-.83				
RR16	.23		-.77				-.25
RR17	.25	.28	-.76				
RR19	.21	.33	-.66				
RR14		.25	-.57				-.33
PS6	.41	.24	-.51	.23			-.35
RR8		.22	-.44		.25		
PS16	.33	.34	-.41	.24			-.38
RR11	.25	.20	-.38				
RR2			-.32				
RR13	.34		-.30	.27			-.20
IM10	.21	-.30		.65	-.21	-.20	-.22
IM11				.47			-.27
IM20				.46			
IM18				.44			
IM12	.25			.40		-.27	-.31
IM8		-.38		.34	-.27	-.40	-.21
IM9			-.21	.29			
DL23		.28			.62		
DL15					.45		
TC8	-.27				.44	.25	
DL13	-.23				.41		
DL19				-.21	.42		.22
DL22		.32			.37		
DL24	-.28		.29		.32	.30	.25
TC9	-.36				.22	.67	.27
TC7	-.25	.26		-.29	.30	.65	.24
TC6		.30			.29	.58	.20
TC3		.24				.55	
TC14	-.23	.27		-.32	.42	.50	.23
TC4		.28				.41	
TC12		.40	-.23			.41	
DL11					.20	.28	
PS9	.31			.29			-.71
PS10	.22			.23	-.25		-.71
PS11	.48			.35	-.26	-.32	-.65
PS12	.35		-.24				-.58
PS1	.37		-.27	.25			-.42
PS4	.27	.23	-.24	.30			-.41
PS19	.29						-.36

Note. Loadings lower than .20 were deleted.

The second factor is named climate (CLM). It was decided during the pilot analysis that the items loading on this factor were thought to be measuring something different from impersonality. Based on the pilot study it was suggested that items thought to be measuring impersonality dimension measured two separate things. The results of the factor analysis in the research sample also support this interpretation. Grouped along with these items are two technical competence items. A cross-loading of these two TC items revealed that they collectively address aspects of technical competence that might also be closely related to climate. It was decided that the climate factor was not a dimension of bureaucracy. Items loading on the second factor will be used as a separate variable in the subsequent analyses. The final alpha coefficient of this dimension is .79.

The third factor was named rules and regulations (RR). The name rule enforcement will also be used in subsequent analyses. As shown in Table 21, the highest loadings for this factor were associated with those items thought to be measuring rules and regulations. Grouped along with these items were two procedural specifications items. A cross-loading of two procedural specifications items revealed that they collectively addressed aspects of procedural specifications that might also be closely related to rules and regulations. In the pilot sample, the same two items highly loaded on the rules and regulation factor. The alpha coefficient of this dimension is .82.

The fourth factor was named formality (FRM) and was interpreted as the measure of impersonality. In the subsequent analyses this factor will be called formality instead of impersonality. As shown in Table 21 and Table 18, items loading on this factor were same for both the pilot study and the research study. The final alpha coefficient of this dimension is .64.

The fifth factor was named division of labor (DL). The name specialization was also used by researchers. As shown in Table 21, the highest loadings for this factor were associated with those items thought to be measuring division of labor. Grouped along with these items was one technical competence item. A cross-loading of this item suggested that it addressed aspects of technical competence that might also be closely related to division of labor. The final alpha coefficient of this dimension is .64.

The sixth factor was named technical competence (TC). As shown in Table 21, the highest loadings for this factor were associated with these items thought to be measuring

technical competence. Grouped along with these items was one division of labor item. A cross-loading of this DL item suggested that it addressed aspects of division of labor that might also be closely related to technical competence. The final alpha coefficient of this dimension is .75.

The seventh factor was named procedural specifications (PS). As shown in Table 21, the highest loadings for this factor were associated with those items thought to be measuring procedural specifications. No items from other dimensions of bureaucracy loaded on this factor. The final alpha coefficient of this dimension is .77.

A score for each of the seven factors was computed. The score for the hierarchy of authority dimension is computed by adding teachers' responses to items grouped under the first factor and dividing this added score by 12, which is the number of items grouped under the first factor. The score for the climate variable was computed by adding teachers' responses to eight items grouped under the second factor and by dividing this sum by eight. For each factor, the same procedure was followed to compute a score. These scores were used in the subsequent analyses.

#### Replication of the Sense of Power Factor Structure

The 10 sense of power items that survived the item analyses conducted using the pilot sample were subjected to a factor analysis conducted using the research sample. Principal axis factor analysis was used to extract the factors. Two factors with eigenvalue bigger than one emerged. The second factor was not interpretable. All items had positive and high loading on the first factor. The first factor accounted for 27 percent of the total variance. Table 22 reports the structure loadings for each of the 10 items. The scores of teachers on these ten items added together and divided by 10. This score was used as the measure of sense of power in subsequent analyses.

#### Relations Among the Dimensions

Score for each of the seven factors, identified in the factor analysis, were computed for each subject and these scores were correlated. The climate factor was excluded. The correlation matrix is presented in Table 23 along with means and standard deviations of each dimension. Inspection of Table 23 suggests that there are two sets of variables that are inversely related. The

Table 22 The Replication of the Factor Structure Obtained in the Pilot Sample for Sense of Power (N = 324).

item	Loading	
	Factor I	Factor II
SP1	.44	.37
SP2	.43	.35
SP3	.60	-.45
SP4	.50	-.34
SP6	.35	.39
SP7	.42	.27
SP9	.53	-.37
SP10	.33	.25
SP11	.22	
SP12	.57	
Eigenvalue	2.69	1.67
Percentage of variance	27	16
Cumulative percentage	27	43

Note. Loadings less than .20 were deleted.

Table 23 Correlation matrix for Six Bureaucratic Dimensions (N = 324)

Dimension	Mean	Std. Deviation	HA	DL	RR	PS	FRM	TC
HA	3.23	.76	1.00					
DL	3.19	.77	-.37	1.00				
RR	4.14	.64	.44	-.16	1.00			
PS	3.20	.79	.60	-.30	.42	1.00		
FRM	2.61	.74	.29	-.33	.13	.40	1.00	
TC	3.04	.83	-.34	.38	.03	-.31	-.34	1.00

Note. A correlation of .22 or higher is significant at the .01 level (2-tailed) and a correlation of .13 or higher is significant at the .05 level (2-tailed).

first set is composed of hierarchy of authority, rules and regulations, procedural specifications, and formality dimensions. The second set is composed of division of labor and technical competence scales. The dimensions in the first set are accepted as the measure of bureaucratization by researchers. The dimensions in the second set are considered partial measures of professionalism rather than bureaucratic variable. If teachers perceive high bureaucratization in their school, they also tend to perceive low professionalism in their school. Among the dimensions, the degree of rule enforcement was perceived to be highest (mean = 4.14) while the formality in relations was perceived to be lowest for teachers in this sample (mean = 2.61). All correlations are significant among dimensions at .05 level except for the correlation between the rule enforcement and the promotions based on technical competence scales. Moderate correlations among dimensions suggest that bureaucracy is not a unitary concept rather a school can be perceived to be bureaucratic in multiple ways in varying degrees. The correlation coefficients are higher among procedural specifications, hierarchy of authority and rules and regulations dimensions. Investigation of Table 23 reveals following: (1) The higher the degree of specialization in the school perceived by teachers, the lower the perceived degree of hierarchical exercise of authority in the school. (2) The higher the perceived degree of hierarchical exercise of authority in the school, the higher the rule enforcement perceived by teachers. (3) As the perceived degree of hierarchical exercise of authority in the school increased, an increase in the degree of procedural specifications was observed. (4) As the perceived degree of hierarchical exercise of authority in the school increased, an increase in the formality of relations was reported. (5) As the perceived degree of hierarchical exercise of authority in the school increased, a decrease in the perceived degree of promotions based on technical competencies of teachers was observed. (6) The higher the degree of specialization in the school perceived by teachers, the lower the perceived degree of rule enforcement. (7) As the perceived degree of specialization in the school increased, a decrease in the degree of procedural specifications was observed. (8) As the perceived degree of specialization in the school increased, a decrease in the formality of relations was reported. (9) As the perceived degree of specialization in the school increased, an increase in the perceived degree of promotions based on technical competencies of teachers was observed. (10) As the perceived degree of

specifications in operating procedures in the school increased, an increase in the degree of rule enforcement was observed. (11) As the perceived degree of rule enforcement increased, an increase in the formality of relations was reported. (12) There was no relationship between rule enforcement and formality in relations. (13) As the perceived degree of specifications in procedures increased, an increase in the formality of relations was reported. (14) As the perceived degree of specifications in procedures increased, a decrease in the perceived degree of promotions based on technical competencies of teachers was observed. (15) As the technical competence increases, a decrease in the degree of formality of relations was reported.

#### Examination of Higher Order Dimensions

After computing six scores for each of the bureaucratic dimensions identified in the factor analysis, to determine to which extend these six dimensions represent meaningful groupings, a second order principal axis factor analysis was run using the scores of six bureaucratic dimensions. Table 24 reports the results of unrotated and rotated factor solutions as well as eigenvalues of factors and percentage of variance and cumulative percentage of variance explained by each factor. The unrotated factor analysis yielded two factors with eigenvalues greater than one. The second factor in the unrotated solution was not interpretable. The unrotated factor analysis suggest that the six bureaucratic dimensions load on the first factor and they form a bipolar factor suggesting an inverse relationship between two sets of dimensions. The first factor in the unrotated solution explained 44% of the total variance. The four dimensions of bureaucracy (i.e., hierarchy of authority, rules and regulations, procedural specifications and impersonality) were grouped at the one end of the factor continuum. The two dimensions of bureaucracy (i.e., technical competence and division of labor) were grouped at the other end of the factor continuum as illustrated in figure 1. All dimensions had high loading scores on the first factor; however, specialization and technical competence had negative loadings on the first factor. Isherwood (1971) reported the same finding in his study in the U.S. When the scores of six dimensions were factor analyzed with an oblique rotation using oblinin procedure, two factors emerged. The two factors explained 47% of the total variance. The three dimensions (i.e., HA, RR, and PS) loaded highly on the second factor. The formality dimension loaded highly on the first factor, however, the formality dimension was at the opposite end of the factor continuum

Table 24 Factor Analysis of Six Bureaucratic Dimensions (N = 324)

Dimension	Loading			
	Unrotated Factor Solution		Rotated Solution	
	1	2	1	2
Hierarchy of authority (HA)	<b>.76</b>		.57	<b>.69</b>
Rules and Regulations (RR)	<b>.47</b>	.51		<b>.68</b>
Procedural specifications (PS)	<b>.75</b>		.56	<b>.69</b>
Formality in relations (FRM)	<b>.50</b>		.53	<b>.28</b>
Division of labor (DL)	<b>-.52</b>	.21	<b>-.55</b>	-.28
Technical competence (TC)	<b>-.52</b>	.51	<b>-.71</b>	
Eigenvalues	2.651	1.169	2.651	1.169
Percentage of total variance	44.179	19.481	35.745	10.816
Cumulative percentage	44.179	63.660	35.745	46.560

Note. Loading scores lower than .20 were deleted.

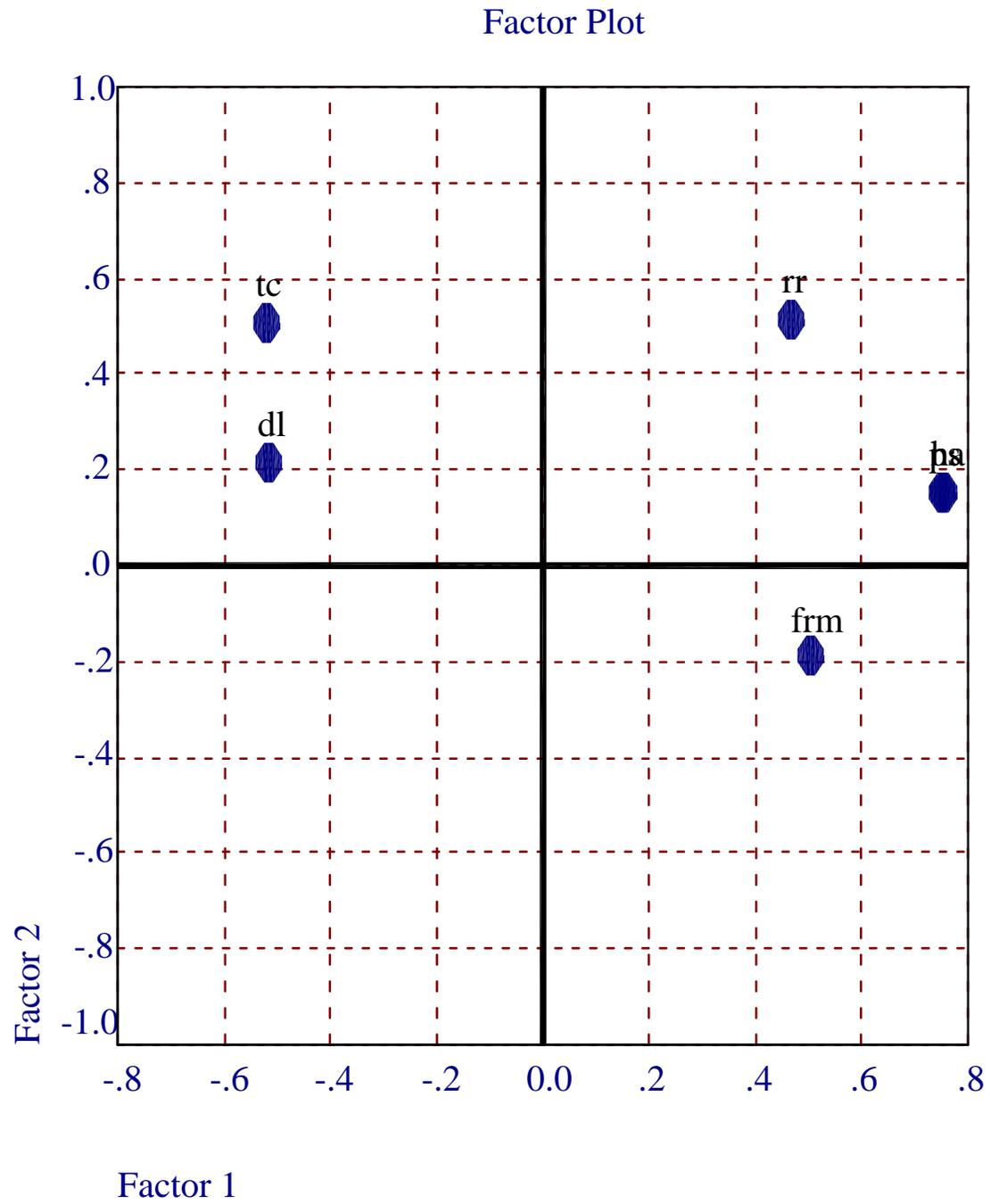


Figure 1 Factor-loading plot of six bureaucratic dimensions in an unrotated space

when it was compared to two dimensions (i.e., TC and DL) that loaded highly on the first factor. The results of factor analyses suggested that these six dimensions grouped under two higher-order dimensions. One of the higher-order dimension included hierarchy of authority, rules and regulations, procedural specifications, and formality in relations. This higher order dimension was named control. The other higher-order dimension included technical competence and division of labor. This higher order dimension was named expertise. The factor structure of dimensions suggested that the higher order dimension formed by HA, RR, PS, and FRM and the higher order dimension formed by TC and DL were inversely related. A score for control higher-order dimension was computed by adding the scores of hierarchy of authority, rules and regulations, procedural specifications, and formality first order dimensions and by dividing this sum by 4. A score of expertise higher-order dimension was computed by adding the scores of division of labor and technical competence dimensions and by dividing this sum by 2. The correlation between control and the expertise was  $-.45$  ( $p < .01$ ). The higher the degree of expertise in schools the lower the degree of control.

#### Typologies of Teachers' Perceptions of School Bureaucracy

A quick cluster analysis of scores of teachers on control and expertise, the higher order dimensions, yielded four distinct groups of teachers. The clusters are graphically displayed in Figure 2. It was of interest to see whether these four groupings of teachers differed significantly with regard to the two higher order dimension. Accordingly, two ANOVAs were carried out, each using the four clusters as independent variables. For the first ANOVA, control served as the dependent variable and for the second ANOVA expertise served as the dependent variable. The means on these two dependent variables are displayed in Table 25 and the associated ANOVA results are presented in Table 26. Both ANOVAs yielded significant F ratios. The first cluster was named authoritarian. There were 70 teacher in this cluster. The mean of control in this cluster was 3.89 that was higher than the overall mean of control for all teachers (3.30). The mean of expertise in this cluster was 2.27 that was lower than the overall mean of expertise for all teachers (3.11). The second cluster was named Weberian. There were 84 teacher in this cluster. The mean of control in this cluster was 3.59 that was higher than the overall mean of control for all teachers (3.30). The mean of expertise in this cluster was 3.43 that was higher than

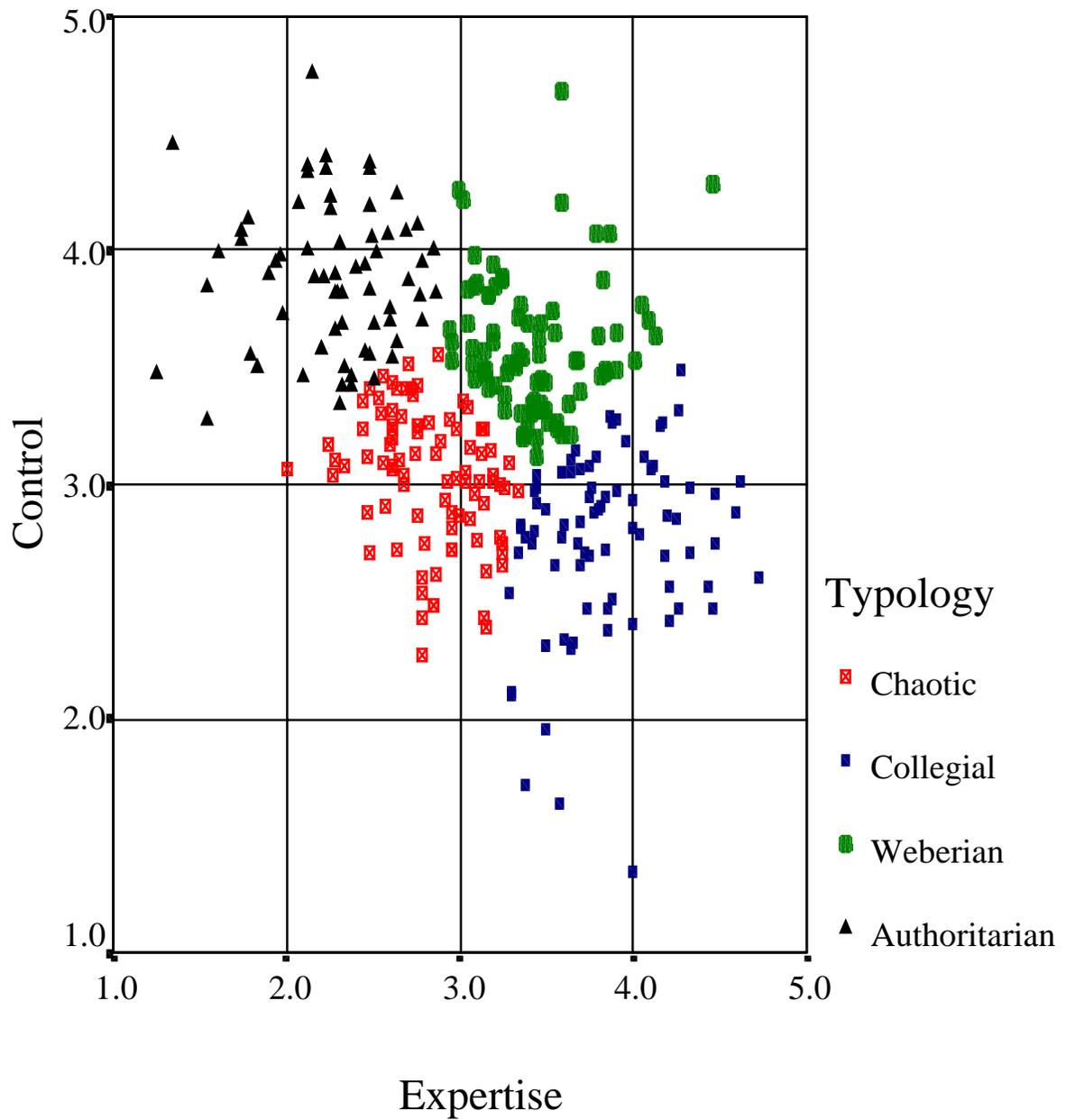


Figure 2 Bureaucratic typology of teachers' perceptions

Table 25 Quick Clusters of Cases Based on Two Higher Order Dimensions

Higher Order Dimension	Final Cluster Centers				Total
	1 Authoritarian N = 70	2 Weberian N = 84	3 Collegial N = 81	4 Chaotic N = 89	N = 324
<b>CONTROL</b>	3.89 High	3.59 High	2.77 Low	3.03 Low	3.30
<b>EXPERTISE</b>	2.27 Low	3.43 High	3.84 High	2.83 Low	3.11

Table 26 ANOVAs for Control and Expertise Higher Order Dimensions by Clusters.

Dependent variable	Mean	SD	Sig of test of Levene Statistic	Source	Sum of Squares	df	Mean Square	F	Sig
CONTROL	3.30	.54	.15	Between Groups	60.42	3	20.14	196.52	.00
				Within Groups	32.79	320	.10		
				Total	81.53	323			
EXPERTISE	3.11	.67	.10	Between Groups	108.94	3	36.32	339.56	.00
				Within Groups	34.22	320	.11		
				Total	143.17	323			

the overall mean of expertise for all teachers (3.11). The third cluster was named collegial. There were 81 teacher in this cluster. The mean of control in this cluster was 2.77 that was lower than the overall mean of control for all teachers (3.30). The mean of expertise in this cluster was 3.84 that was higher than the overall mean of expertise for all teachers (3.11). The fourth cluster was named chaotic. There were 89 teacher in this cluster. The mean of control in this cluster was 3.03 that was lower than the overall mean of control for all teachers (3.30). The mean of expertise in this cluster was 2.83 that was lower than the overall mean of expertise for all teachers (3.11).

Table 27 reports two separate multiple comparison analyses for four clusters using control and expertise as dependent variables. The mean of control was highest for teachers in the authoritarian cluster followed by Weberian, chaotic and collegial clusters. All comparisons between pairs of clusters yielded significant mean differences on control ( $p < .01$ ). The mean of expertise was highest for teachers in the collegial cluster followed by Weberian, chaotic and authoritarian clusters in this order. All comparisons between pairs of clusters yielded significant mean differences on control ( $p < .01$ ). As figure 2 shows, teachers in the chaotic cluster located at the center of the plot. Even though, a larger number of teachers were grouped in the chaotic cluster, schools did not have very low control and very low expertise. The mean of control for the teachers in chaotic category was higher than the mean of control for teachers in collegial category.

#### Relationships Between Bureaucratic Dimensions and Other Variables

Relationships between bureaucratic dimensions and other variables were explored using a variety of statistical techniques. For all of the statistical tests, a .05 statistical significance level was chosen. The variables that were categorical served as independent variables in a series of ANOVAs where the six dimension of bureaucracy and two higher order dimensions served as dependent variables. A separate analysis was conducted for each of six bureaucratic dimensions and for each of the two higher order dimensions. Pearson correlations were also computed between bureaucratic dimensions and continuous variables. Additionally, bureaucratic typology served as the independent variable in a series of ANOVAs where continuous variables served as the dependent variables. A chi-square test was also run to examine differences between bureaucratic typologies and categorical variables. A series of ANOVAs were carried out using

Table 27 Multiple Comparisons of Mean Difference Between Levels of Bureaucratic Typologies for Control and Expertise Higher-Order Dimensions (Tukey)

Dependent Variable	Levels of Independent Variable, typology		Mean Difference	Std. Error	Sig.
Control	Authoritarian	Weberian	.30	.05	.00
	Authoritarian	Collegial	1.12	.05	.00
	Authoritarian	Chaotic	.85	.05	.00
	Weberian	Collegial	.82	.05	.00
	Weberian	Chaotic	.56	.05	.00
	Chaotic	Collegial	.27	.05	.00
Expertise	Weberian	Authoritarian	1.16	.05	.00
	Weberian	Chaotic	.60	.05	.00
	Collegial	Authoritarian	1.58	.05	.00
	Collegial	Weberian	.42	.05	.00
	Collegial	Chaotic	1.02	.05	.00
	Chaotic	Authoritarian	.56	.05	.00

climate as dependent variable and using categorical variables as independent variable. Correlation coefficients between climate and continues variables were also computed.

#### Relationships Between Categorical Variables and Bureaucratic Dimensions

Tables 28 to 35 reports the data for analyses related to relationships between bureaucratic variables and categorical variables. Table 28 reports descriptive statistics for the levels of categorical variables for each dependent variable. Table 29 reports F ratios and significance level for a series of ANOVAs using bureaucratic variables and climate as dependent variables and categorical variables as independent variables. Table 30 reports the multiple comparisons for the analyses in Table 29. Table 31 reports observed and expected counts for each cell for the chi-square tests. Table 32 reports the results for chi-square tests between categorical variables and bureaucratic clusters. Table 33 reports descriptive statistics for the clusters. Table 34 reports F ratios and significance levels for ANOVAs using bureaucratic clusters as independent variable and continuous variables as dependent variables. Table 35 reports the multiple comparisons for Table 34.

#### Hierarchy of Authority and Categorical variables

The hierarchy of authority dimension yielded significant mean differences on four of the 12 demographic categorical variables. On average, teachers who work at schools that run two sessions a day (mean = 3.32) reported higher level of hierarchical exercise of authority in their schools than teachers who work at school that run only one session a day (mean = 3.14). On average, teachers in different grade levels reported different degree of hierarchical exercise of authority in their schools ( $p < .0001$ ). Elementary school teachers reported highest hierarchy of authority (mean = 3.40) followed by middle school teachers (mean = 3.22) and high school teachers (mean = 2.98) in this order. The Tukey procedure revealed that while the means for elementary teachers and middle school teachers did not differ, the mean for elementary school teachers were higher than the mean for high school teachers. The mean for middle school teachers also did not differ from the mean for high school teachers. Additionally, female teachers reported higher degree of hierarchy of authority than male teachers did ( $p = .004$ ). While the mean for female teachers was 3.37, the mean for male teachers was 3.12. Lastly, teachers who

**Table 28 Descriptive Statistics for the Levels of Categorical Variables on Bureaucratic variables and Climate**

HIERARCHY OF AUTHORITY					
Independent variable	Sig of Test of	LEVEL	Mean	N	Std.
Number of sessions	.02	1. ONE SESSION	3.14	165	.70
		2. TWO SESSION	3.32	159	.80
School level	.16	1.00 Elementary	3.40	156	.77
		2.00 Middle	3.22	60	.80
		3.00 High	2.98	108	.63
Gender of teacher	.88	1 Male	3.12	184	.75
		2 Female	3.37	140	.74
Type of college graduated	.16	1 NOT A TEACHER COLLEGE	3.01	50	.63
		2 CERTIFICATE	3.39	43	.72
		3 TEACHER COLLEGE	3.25	231	.78
Total			3.23	324	.76
DIVISION OF LABOR					
School level	.06	1.00 Elementary	3.12	156	.80
		2.00 Middle	3.09	60	.82
		3.00 High	3.36	108	.67
Principal's father's occupation	.35	1.00 FARMER	3.26	65	.74
		2.00 BLUE COLLAR	3.25	170	.72
		3.00 SMALL BUSINESS	2.89	28	.87
		4.00 CIVIL SERVANT	3.29	31	.79
		5.00 PROFESSIONAL	2.92	30	.90
Type of college graduated	.15	1 NOT A TEACHER COLLEGE	3.51	50	.73
		2 CERTIFICATE	2.93	43	.88
		3 TEACHER COLLEGE	3.17	231	.74
Total			3.19	324	.77
RULES AND REGULATIONS					
Name of location	.36	1 KARABUK	4.18	190	.64
		2 SAFRANBOLU	4.15	76	.58
		3 EFLANI	4.42	15	.47
		4 ESKIPAZAR	3.85	19	.69
		5 YENICE	3.80	20	.82
		6 OVACIK	3.89	4	.77
Number of sessions	.29	1.00 WHOLE DAY	4.05	165	.67
		2.00 TWO SESSION	4.23	159	.61
School level	.11	1.00 Elementary	4.24	156	.62
		2.00 Middle	3.98	60	.76
		3.00 High	4.07	108	.58
Urbanization	.002	1.00 CITY	4.19	62	.56
		2.00 SUBURBAN	4.20	188	.58
		3.00 RURAL	3.92	74	.81
Principal's father's occupation	.13	1.00 FARMER	4.22	65	.69
		2.00 BLUE COLLAR	4.03	170	.68
		3.00 SMALL BUSINESS	4.25	28	.58
		4.00 CIVIL SERVANT	4.29	31	.42
		5.00 PROFESSIONAL	4.30	30	.45
Total			4.14	324	.64

(table continues)

**Table 28 (Continues) Descriptive Statistics for Levels of Categorical Variables on Bureaucratic Variables and Climate**

PROCEDURAL SPECIFICATIONS					
Independent variable	Sig of Test of	LEVEL	Mean	N	Std.
Name of district	.45	1 KARABUK	3.33	190	.78
		2 SAFRANBOLU	3.00	76	.81
		3 EFLANI	2.88	15	.86
		4 ESKIPAZAR	2.91	19	.64
		5 YENICE	3.21	20	.64
		6 OVACIK	3.39	4	.67
Type of college graduated	.59	1 NOT A TEACHER COLLEGE	2.96	50	.70
		2 CERTIFICATE	3.11	43	.76
		3 TEACHER COLLEGE	3.27	231	.80
Total			3.20	324	.79
FORMALITY IN RELATIONS					
Father's occupation of principal	.63	1.00 FARMER	2.74	65	.70
		2.00 BLUE COLOR	2.56	170	.71
		3.00 SMALL BUSINESS	2.32	28	.68
		4.00 CIVIL SERVANT	2.72	31	.82
		5.00 PROFESSIONAL	2.82	30	.84
Type of college graduated	.08	1 NOT A TEACHER COLLEGE	2.42	50	.60
		2 CERTIFICATE	2.44	43	.65
		3 TEACHER COLLEGE	2.67	231	.77
Total			2.61	324	.74
TECHNICAL COMPETENCE					
Wants his/her child pursue a career in teaching	.64	1. NO	2.95	168	.82
		2. YES	3.13	156	.84
Total			3.04	324	.83
CONTROL					
Number of sessions	.17	1.00 WHOLE DAY	3.23	165	.52
		2.00 TWO SESSION	3.37	159	.55
School level	.06	1.00 Elementary	3.36	156	.55
		2.00 Middle	3.30	60	.58
		3.00 High	3.19	108	.48
Type of college graduated	.15	1 NOT A TEACHER COLLEGE	3.12	50	.44
		2 CERTIFICATE	3.27	43	.54
		3 TEACHER COLLEGE	3.34	231	.55
Total			3.30	324	.54
EXPERTISE					
School level	.98	1.00 Elementary	3.07	156	.67
		2.00 Middle	2.98	60	.64
		3.00 High	3.26	108	.65
Type of college graduated	.89	1 NOT A TEACHER COLLEGE	3.39	50	.59
		2 CERTIFICATE	2.94	43	.66
		3 TEACHER COLLEGE	3.09	231	.67
Total			3.11	324	.67
CLIMATE					
Number of sessions	.36	1.00 WHOLE DAY	3.23	165	.79
		2.00 TWO SESSION	3.46	159	.84
School level	.32	1.00 Elementary	3.57	156	.80
		2.00 Middle	3.04	60	.84
		3.00 High	3.19	108	.76
Total			3.34	324	.82

Table 29 ANOVAs for Bureaucratic Dimensions and Climate

HIERARCHY OF AUTHORITY			
Variable	Number of groups	F	Sig.
Number of sessions	2	4.23	.040
School level	3	10.29	.000
Gender of teacher	2	8.31	.004
Type of college graduated	3	3.18	.043
DIVISION OF LABOR			
School level	3	3.75	.025
Principal's father's occupation	5	2.76	.028
Type of college graduated	3	6.96	.001
RULES AND REGULATIONS			
Number of sessions	2	6.37	.012
School level	3	4.24	.015
Urbanization*	3	5.39	.005
Principal's father's occupation	5	2.76	.028
PROCEDURAL SPECIFICATIONS			
Name of district	6	3.14	.008
Type of college graduated	3	3.56	.030
FORMALITY IN RELATIONS			
Principal's father's occupation	5	2.69	.031
TECHNICAL COMPETENCE			
Wants to see his/her child pursue a career in teaching	2	4.03	.045
CONTROL			
Number of sessions	2	5.48	.020
School level	3	3.20	.042
Type of college	3	3.30	.038
EXPERTISE			
School level	3	4.11	.017
Type of college	3	6.09	.003
CLIMATE			
Number of sessions	2	6.32	.012
School level	3	12.87	.000

**Table 30 Multiple Comparisons for Categorical Variables on the Bureaucratic Variables and Climate (Tukey)**

Dependent variable	Independent variable	Levels of independent variable		Mean Difference	Sig
<b>Control</b>	Number of session	2. Two session	1. One session	.14	.02
	School level	1. Elementary	3. High	.17	.03
	Type of college	3. Teacher college	1. Not a teacher college	.21	.03
<b>Expertise</b>	School level	3. High	2. Middle	.27	.03
	Type of college	1. Not a teacher college	2. Certificate	.45	.00
		1. Not a teacher college	3. Teacher college	.30	.00
<b>HA</b>	Number of session	2. Two session	1. One session	.18	.04
	Gender	2. Female	1. Male	.25	.00
	School level	1. Elementary	3. High	.42	.00
	Type of college	2. Certificate	1. Not a teacher college	.38	.04
<b>DL</b>	School level	3. High	1. Elementary	.24	.03
	Type of college	1. Not a teacher college	2. Certificate	.57	.00
		1. Not a teacher college	3. Teacher college	.34	.01
<b>RR</b>	Name of district	3. Eflani	5. Yenice	.62	.04
	Number of session	2. Two session	1. One session	.18	.01
	School level	1. Elementary	2. Middle	.25	.02
	urbanization	1. Urban	3. Rural	.26	.04
		2. Suburban	3. Rural	.28	.00
<b>PS</b>	Name of district	1. Karabuk	2. Safranbolu	.33	.02
	Type of college	3. Teacher college	1. Not a teacher college	.31	.03
<b>FRM</b>	Type of college	3. Teacher college	1. Not a teacher college	.27	.05
<b>TC</b>	Child as a teacher	2. Yes	1. No	.18	.04
<b>CLIMATE</b>	Number of session	2. Two session	1. One session	.23	.01
	School level	1. Elementary	2. Middle	.53	.00
		1. Elementary	3. High	.38	.00

Table 31 Observed and Expected Counts for Typologies by Categorical Variables

Cross tabulation		TYPOLOGY BUREAUCRATIC TYPOLOGY				
		1 AUTHORITARIAN	2 WEBERIAN	3 COLLEGIAL	4 CHAOTIC	Total
<b>Number of Sessions</b>	1 One Session	26 (36)	45 (43)	41 (41)	53 (45)	<b>165</b>
	2 Two Sessions	44 (34)	39 (41)	40 (40)	36 (44)	<b>159</b>
	<b>Total</b>	<b>70</b>	<b>84</b>	<b>81</b>	<b>89</b>	<b>324</b>
<b>Father's occupation of principal</b>	1 Farmer	14 (14)	20 (17)	14 (16)	17 (18)	<b>65</b>
	2 Blue collar	32 (37)	41 (44)	46 (43)	51 (47)	<b>170</b>
	3 Small business owner	7 (6)	5 (7)	7 (7)	9 (8)	<b>28</b>
	4 Civil servant	4 (7)	15 (8)	7 (8)	5 (9)	<b>31</b>
	5 Professional	13 (7)	3 (8)	7 (8)	7 (8)	<b>30</b>
<b>Total</b>	<b>70</b>	<b>84</b>	<b>81</b>	<b>89</b>	<b>324</b>	
<b>Type of collage graduated</b>	1 Not a teacher college	6 (11)	12 (13)	22 (13)	10 (14)	<b>50</b>
	2 Certificate	10 (9)	9 (11)	8 (11)	16 (12)	<b>43</b>
	3 Teacher college	54 (50)	63 (60)	51 (58)	63 (64)	<b>231</b>
	<b>Total</b>	<b>70</b>	<b>84</b>	<b>81</b>	<b>89</b>	<b>324</b>

Note. Expected counts are in the parentheses. Numbers outside the parentheses are observed values.

Table 32 Significant Chi-square Values for Typology by Categorical Variables

Pearson chi-square			
Factor	Value	df	Sig. (2-sided)
Type of session	8.21	3	.04
Father's Job of Principal	21.88	12	.04
Type of collage graduated	14.39	6	.02

Table 33 Descriptive Statistics for Continuous Variables that Differ Across Typologies

Dependent Variable	Levels of independent variable	N	Mean	Std. Deviation	Std. Error
Climate	1 AUTHORITARIAN	70	3.01	.86	.10
	2 WEBERIAN	84	3.74	.60	.07
	3 COLLEGIAL	81	3.41	.91	.10
	4 CHAOTIC	89	3.18	.74	.08
	Total	324	3.34	.82	.05
Friendship with Administrators	1 AUTHORITARIAN	70	2.57	1.46	.17
	2 WEBERIAN	84	3.42	1.45	.16
	3 COLLEGIAL	81	3.22	1.40	.16
	4 CHAOTIC	89	3.16	1.38	.15
	Total	324	3.11	1.45	.08
Age of principal	1 AUTHORITARIAN	70	46	5.12	.61
	2 WEBERIAN	84	42	5.70	.62
	3 COLLEGIAL	81	43	5.22	.58
	4 CHAOTIC	89	43	4.93	.52
	Total	324	43	5.48	.30
Administrative experience of principal	1 AUTHORITARIAN	70	16	6.81	.81
	2 WEBERIAN	84	12	6.11	.67
	3 COLLEGIAL	81	13	6.08	.68
	4 CHAOTIC	89	14	5.97	.63
	Total	324	14	6.34	.35
Principal's service years in education	1 AUTHORITARIAN	70	24	6.02	.72
	2 WEBERIAN	84	19	6.21	.68
	3 COLLEGIAL	81	20	5.21	.58
	4 CHAOTIC	89	20	5.84	.62
	Total	324	21	6.01	.33
Socioeconomic status of students	1 AUTHORITARIAN	70	2.31	.67	.08
	2 WEBERIAN	84	2.50	.72	.08
	3 COLLEGIAL	81	2.62	.77	.09
	4 CHAOTIC	89	2.35	.72	.08
	Total	324	2.45	.73	.04
Teacher's total years in administrative positions	1 AUTHORITARIAN	70	.81	2.03	.24
	2 WEBERIAN	84	.48	1.38	.15
	3 COLLEGIAL	81	1.83	4.11	.46
	4 CHAOTIC	89	1.53	3.75	.40
	Total	324	1.18	3.11	.17

Table 34 ANOVAs for Continuous Variables by Typology

Dependent Variable	Sig. of test of Homogeneity of Variances	F	Sig.
Climate	.00	12.81	.00
Friendship with administrators	.24	4.86	.00
Age of principal	.74	10.76	.00
Administrative experience of principal	.82	4.95	.00
Total service years of principal	.51	7.94	.00
Socioeconomic status of students	.39	2.98	.03
Administrative experience of teacher	.00	3.37	.02

Table 35 Multiple Comparisons for Continuous Variables by Typology (Tukey)

Dependent Variable	Typology		Mean Difference	Std. Error	Sig.
Climate	2.WEBERIAN	1. AUTHORITARIAN	.73	.13	.00
		3. COLLEGIAL	.33	.12	.04
		4 CHAOTIC	.56	.12	.00
	3. COLLEGIAL	1 AUTHORITARIAN	.40	.13	.01
Friendship with school administrators	2.WEBERIAN	1. AUTHORITARIAN	.85	.23	.00
	3. COLLEGIAL	1. AUTHORITARIAN	.65	.23	.03
	4 CHAOTIC	1. AUTHORITARIAN	.59	.23	.05
Age of principal	1. AUTHORITARIAN	2.WEBERIAN	4.65	.85	.00
		3. COLLEGIAL	3.48	.86	.00
		4 CHAOTIC	3.35	.84	.00
Total years of principal in administrative positions	1. AUTHORITARIAN	2.WEBERIAN	3.80	1.01	.00
		3. COLLEGIAL	2.75	1.02	.03
Total service years of principal	1. AUTHORITARIAN	2.WEBERIAN	4.27	.94	.00
		3. COLLEGIAL	3.75	.95	.00
		4 CHAOTIC	3.12	.93	.00
Socioeconomic status of students	3. COLLEGIAL	1. AUTHORITARIAN	.30	.12	.05
Total years of teacher in administrative positions	3. COLLEGIAL	2.WEBERIAN	1.35	.48	.02

were graduated from teacher colleges (mean = 3.25), teachers who were not graduated from teacher colleges (mean = 3.01), and teachers who were not graduated from teacher colleges but earned teaching certificates (mean = 3.39) reported different degrees of hierarchy of authority in their schools ( $p = .04$ ). At a .05 family wise error rate, on average, teachers who were not graduated from teacher colleges but earned teaching certificates perceived a higher level of hierarchical exercise of authority in their schools than teachers who were not graduated from teacher. On average, teachers who were graduated from teacher colleges did not differ in their perception of hierarchy of authority in their schools from teachers who were not graduated from teacher colleges but earned teaching certificates. Graduates of teacher colleges and graduates of non-teacher colleges also did not differ on their means.

#### Division of Labor and Categorical Variables

The division of labor dimension yielded significant mean differences on two of the 12 demographic categorical variables. On average, teachers in different grade levels reported different degree of specialization in their schools ( $p < .025$ ). High school teachers reported the highest level of specialization (mean = 3.36) in their schools followed by elementary school teachers (mean = 3.12) and middle school teachers (mean = 3.09) in this order. The Tukey procedure revealed that the means for elementary teachers and middle school teachers as well as means for middle school and high school teachers did not differ, the mean for elementary school teachers was lower than the mean for high school teachers. Additionally, teachers who were graduated from teacher colleges (mean = 3.17), teachers who were not graduated from teacher colleges (mean = 3.51), and teachers who were not graduated from teacher colleges but earned teaching certificates (mean = 2.93) reported different degrees of specialization in their schools ( $p = .001$ ). At a .05 family wise error rate, teachers who were not graduated from teacher colleges perceived a higher level of specialization in their schools than teachers who were graduated from teacher colleges and than teachers who were not graduated from teacher colleges but earned teaching certificates. Teachers who were graduated from teacher colleges did not differ in their perception of specialization level in their schools from teachers who were not graduated from teacher colleges but earned teaching certificates.

### Rules and Regulations and Categorical Variables

The rules and regulations dimension yielded significant mean differences on four of the 12 demographic categorical variables. First, teachers across six district reported different degrees of rules enforcement in their schools ( $p = .016$ ). Teachers who work at schools in the district of Eflani reported the highest rule enforcement (mean = 4.42) followed by teachers in Karabuk-central (mean = 4.18), teachers in Safranbolu (mean = 4.15), teachers in Ovacik (mean = 3.89), teacher in Eskipazar (mean = 3.85), and teachers in Yenice (mean = 3.80). The Tukey procedure revealed that the mean for teachers in Eflani significantly differed from the mean for teachers in Yenice. Second, teachers who work at schools that run two sessions a day (mean = 4.23) reported higher rule enforcement in their schools than teachers who work at schools that run only one session a day (mean = 4.05) ( $p = .012$ ). Third, on average, teachers in different grade levels reported different degree of rule enforcement in their schools ( $p = .015$ ). Elementary school teachers reported the highest level of rule enforcement (mean = 4.24) in their schools followed by high school teachers (mean = 4.07) and middle school teachers (mean = 3.98) in this order. The Tukey procedure revealed that the means for high school teachers and middle school teachers as well as the means for middle school teachers and elementary school teachers did not differ, the mean for high school teachers was lower than the mean for elementary school teachers. Fourth, teachers who work in urban (mean = 4.19), suburban (mean = 4.20), and rural (mean = 3.92) schools reported different degree of rule enforcement in their schools ( $p = .005$ ). The Tukey procedure, at a .05 family wise level of significance, revealed that on average, teachers in suburban schools as well as teachers in urban schools perceived higher degree of rule enforcement in their schools than teachers in rural schools.

### Procedural Specifications and Categorical Variables

The procedural specifications dimension yielded significant mean differences on two of the 12 demographic categorical variables. First, teachers across six district reported different degrees of procedural specifications in their schools ( $p = .008$ ). Teachers who work at schools in the district of Ovacik reported the highest procedural specifications (mean = 3.39) followed by teachers in Karabuk-central (mean = 3.33), teachers in Yenice (mean = 3.21), teachers in Safranbolu (mean = 3.00), teacher in Eskipazar (mean = 2.91), and teachers in Eflani

(mean = 2.88). The Tukey procedure revealed that the mean for teachers in Karabuk central district was higher than the mean for teachers in Safranbolu. Second, on average, teachers who were graduated from teacher colleges (mean = 3.27), teachers who were not graduated from teacher colleges (mean = 2.96), and teachers who were not graduated from teacher colleges but earned teaching certificates (mean = 3.11) reported different degrees of specifications in procedures in their schools ( $p = .03$ ). At a .05 family wise significance level, teachers who were not graduated from teacher colleges perceive lower level of specifications in procedures in their schools than teachers who were graduated from teacher colleges. Teachers who were not graduated from teacher colleges but earned teaching certificates did not differ in their perception of specifications in procedures in their schools from teachers who were graduated from teacher colleges and from teachers who were not graduated from teacher colleges.

#### Formality in Relations and Categorical Variables

The formality in relations dimension yielded significant mean differences on one of the 12 demographic categorical variables. On average, teachers who were graduated from teacher colleges (mean = 2.69), teachers who were not graduated from teacher colleges (mean = 2.42), and teachers who were not graduated from teacher colleges but earned teaching certificates (mean = 2.44) reported different degrees of formality in relationships in their schools ( $p = .017$ ). At .05 family wise significance level, teachers who were not graduated from teacher colleges perceive a lower level of formality in relationships in their schools than teachers who were graduated from teacher colleges. Teachers who were not graduated from teacher colleges but earned teaching certificates did not differ in their perception of formality in their schools from teachers who were graduated from teacher colleges and from teachers who were not graduated from teacher colleges.

#### Technical Competence and Categorical Variables

The promotions based on technical qualifications dimension yielded significant mean differences on one of the 12 demographic categorical. On average, at a .05 level, the mean of technical competence was higher for teachers who wish their child pursue a career in teaching

(mean = 3.13) than teachers who wish their child does not pursue a career in teaching (mean = 2.95).

### Control and Categorical Variables

The control higher-order dimension yielded significant mean differences on three of the 12 demographic categorical variables. First, teachers who work at schools that run two sessions a day reported a higher degree of control in their schools (mean = 3.37) than teachers who work at schools that run only one session a day (mean = 3.23) ( $p = .02$ ). Second, teachers in different grade levels reported different degrees of control in their schools, on average ( $p = .04$ ). Elementary school teachers reported the highest level of control (mean = 3.36) in their schools followed by middle school teachers (mean = 3.30) and high school teachers (mean = 3.19) in this order. The Tukey procedure revealed that only the means for elementary and high school teachers differed. The mean for middle school teachers did not differ from the means for elementary and high school teachers.

### Expertise and Categorical Variables

The expertise higher-order dimension yielded significant mean differences on two of the 12 demographic categorical variables. First, teachers in different grade levels reported different degrees of expertise in their schools, on average ( $p = .017$ ). High school teachers reported the highest level of expertise (mean = 3.26) in their schools followed by elementary school teachers (mean = 3.07) and middle school teachers (mean = 2.98) in this order. The Tukey procedure revealed that only the means for middle and high school teachers differed. The mean for elementary school teachers did not differ from the means for middle and high school teachers. Second, teachers who were graduated from teacher colleges (mean = 3.09), teachers who were not graduated from teacher colleges (mean = 3.39), and teachers who were not graduated from teacher colleges but earned teaching certificates (mean = 2.94) reported different degrees of expertise in their schools ( $p = .003$ ). At a .05 family wise error rate, teachers who were not graduated from teacher colleges perceived higher level of expertise in their schools than teachers who were graduated from teacher colleges and than teachers who were not graduated from teacher colleges but earned teaching certificates. Teachers who were graduated from teacher

colleges did not differ in their perception of expertise level in their schools from teachers who were not graduated from teacher colleges but earned teaching certificates.

### Climate and Categorical Variables

The intimate climate scale yielded significant mean differences on two of the 12 demographic categorical variables. First, teachers who work at schools that run two sessions a day reported a higher degree of intimate climate in their schools (mean = 3.46) than teachers who work at schools that run only one session a day (mean = 3.23) ( $p = .012$ ). Second, teachers in different grade levels reported different degrees of intimate climate in their schools, on average ( $p < .0001$ ). Elementary school teachers reported the highest level of intimate climate (mean = 3.57) in their schools followed by high school teachers (mean = 3.19) and middle school teachers (mean = 3.04) in this order. The Tukey procedure revealed that the mean for elementary school teachers was higher than both high school teachers and middle school teachers. The mean for middle school teachers did not differ from the means for high school teachers.

### Relations Between the Bureaucratic Typology and Categorical Variables

The bureaucratic typology yielded significantly different chi square values on three of the 12 demographic categorical variables. (1) Teachers in one session schools and teachers in two-session schools disproportionately distributed across four bureaucratic typologies ( $p = .04$ ). One session schools were less likely to be authoritarian than they are any other type. They were more likely to be chaotic than any other type. Two-session schools more likely to be authoritarian than they are any other type. They are less likely to be chaotic than they are any other type. (2) Teachers, who work under principals whose father was a government employee, are more likely to be in Weberian typology than they are in any other typology. Teachers, who work under principals whose father was a professional, more likely to be in authoritarian schools than they are in any other type. (3) Teachers' training level disproportionately distributed across four typologies ( $p = .02$ ). Teachers who were not graduated from teacher colleges were more likely to be in collegial schools than they are in any other type. Teachers who were not graduated from teacher colleges were less likely to be in authoritarian schools than they are in any other type.

### Relations Between Continuous Variables and Bureaucratic Typology Categories

The seven continuous variables out of 19 continuous variables yielded significant mean differences on the bureaucratic typology. (1) The perceived degree of intimate climate differed across bureaucratic typologies ( $p < .0001$ ). On average, at a .05 family wise significance level, teachers in Weberian cluster reported a higher degree of friendliness in their school climate (mean = 3.74) than teachers in authoritarian (mean = 3.01), teachers in chaotic (mean = 3.18), and teachers in collegial (mean = 3.41) clusters. On average, teachers in the collegial cluster reported a higher degree of friendliness in their school climate than teachers in the authoritarian cluster.

(2) The mean for friendship relations with school administrators outside school hours differed across typologies ( $p = .001$ ). The highest mean for friendship with administrators was observed in Weberian typology (mean = 3.42) followed by collegial (mean = 3.22), chaotic (mean = 3.16), and authoritarian (mean = 2.57) typologies, in this order. Teachers in the authoritarian cluster reported that in their schools teachers are less likely to engage in friendship with school administrators outside the school hours than teachers in Weberian, collegial, or chaotic clusters. On average the mean for friendship with school administrators, did not differ across Weberian, collegial, and chaotic clusters.

(3) The age of principal yielded significant mean differences on four bureaucratic typologies ( $p < .0001$ ). On average, principals of teachers in authoritarian cluster (mean = 46) were older than principals of teachers in Weberian (mean = 42), collegial (mean = 43), and chaotic (mean = 43) clusters. On average, ages of principals of teachers in Weberian, collegial, and chaotic clusters were about the same.

(4) Total years of administrative experience of principals differed across four bureaucratic typologies on average ( $p < .001$ ). On average, principals of teachers in authoritarian cluster had four more years in administrative positions (mean = 16) than principals of teachers in Weberian cluster (mean = 12) and had three more years in administrative positions than teachers in collegial clusters.

(5) Total service years of principals as an educator yielded significant mean differences across four bureaucratic typologies ( $p < .001$ ). The means for total service years of principals for

teachers in Weberian cluster was 19 years and the mean for total service years of principals for teachers in collegial and chaotic cluster were 20 years. The mean for the authoritarian cluster was 24 years. On average, principals of teachers in authoritarian cluster had longer service years than principals of teachers in Weberian, collegial, or chaotic clusters.

(6) On average, socioeconomic status of students yielded significant mean differences across four clusters ( $p = .03$ ). On average, socioeconomic status of students was higher for collegial cluster (mean = 2.62) than it was in authoritarian cluster (2.31).

(7) Total years of teacher in administrative position yielded significant differences across clusters ( $p = .02$ ). The differences were not important from a practical point of view. None of the cluster means were more than two years. An overwhelming majority of teachers in this sample did not have administrative experience.

#### Relations Between Bureaucratic Dimensions and Continuous Variables

Pearson correlation coefficients were used to analyze the relationships between bureaucratic variables and continuous variables as well as relationships between climate and continuous variables. The data were reported in Table 36.

#### Hierarchy of Authority and Continuous Variables

The hierarchy of authority dimension was significantly ( $p < .05$ ) correlated with eight of the 18 continuous variables: (1) As the perceived hierarchy of authority increased, a decrease was observed in the friendship with school administrators outside school hours ( $r = -.15$ ). (2) As the number of students increased in the teacher's school, a decrease was observed in the hierarchy of authority ( $r = -.16$ ). (3) When the number of teachers increased, teachers reported a decrease in hierarchical exercise of authority in their schools (4) As the number of classroom increased, teachers reported a decrease in the hierarchical exercise of authority in their schools ( $r = -.23$ ). (5) When the number of administrators increased, teachers reported a decrease in the hierarchical exercise of authority in their schools ( $r = -.21$ ). (6) When the percentage of male teachers increased, teachers reported a decrease in the hierarchical exercise of authority in their schools ( $r = -.11$ ). (7) As total service years of teachers increased an increase was observed in the perceived level of hierarchy of authority ( $r = .12$ ). (8) As the perceived degree of hierarchical

Table 36 Correlation Matrix for Bureaucratic Variables and Climate (N = 324)

Variable	HA	DL	RR	PS	FRM	TC	CON	EXP	CLM
Climate	.13	.09	.43	.12	-.14	.46	.17	.34	1.00
Friendship with school administrators	-.15	.01	.04	-.04	-.06	.23	-.08	.15	.31
Political connections of teacher	-.08	-.13	-.06	.10	.16	.01	.05	-.07	-.05
Number of students	-.16	.02	-.02	.01	.06	.00	-.04	.01	-.10
Number of teacher	-.20	.09	-.02	-.02	.06	.06	-.07	.09	-.13
Student-teacher ratio	.05	-.11	.06	.04	-.03	-.04	.04	-.08	.12
Number of classroom	-.23	.09	-.09	-.03	.05	.02	-.10	.06	-.19
Age of principal	.04	-.14	.02	.18	.18	-.19	.15	-.20	-.16
Age of school	.02	-.12	.00	.03	.01	-.08	.02	-.12	-.04
Total years of principal in administrative positions	.01	-.14	.04	.05	.09	-.13	.07	-.16	-.11
Total service years of principal	.12	-.18	.03	.19	.16	-.20	.18	-.23	-.10
Number of administrators	-.21	.05	-.05	-.03	.08	.04	-.07	.05	-.15
Percentage of male teachers	-.11	.05	-.18	-.07	-.04	-.02	-.13	.02	-.14
Socioeconomic status of students	-.09	.15	.03	-.15	.02	.08	-.07	.14	.05
Age of teachers	-.03	-.16	.11	-.06	-.05	-.01	-.02	-.10	.11
Total service years of teacher	.07	-.19	.15	.03	-.06	-.03	.06	-.13	.18
Total years of teacher in administrative positions	-.08	-.01	-.03	-.10	-.11	.08	-.11	.04	.06
Number of brothers and sisters of teacher	.00	.01	.04	.11	.05	-.09	.07	-.05	.05

Note. A correlation coefficient of .11 or higher is significant at .05 level and a correlation coefficient of .14 or higher is significant at .01 level (two tailed).

exercise of authority increased an increase was observed in the perceived degree of friendliness in the school climate ( $r = .13$ ).

#### Division of Labor and Continuous Variables

The division of labor dimension was significantly correlated with eight of the 18 continuous variables ( $p < .05$ ): (1) The higher the political connections, lower the degree of reported specialization ( $r = -.13$ ). (2) The perceived level of specialization was lower if the principal of teachers was older ( $r = -.14$ ). (3) As the schools became older, a lower degree of specialization was reported by teachers ( $r = -.12$ ). (4) As the principals had more years in administrative positions, teachers reported a lower degree of specialization in their schools ( $r = -.14$ ). (5) As the principals had more service years, teachers reported a lower degree of specialization in their schools ( $r = -.18$ ). (6) As socioeconomic status of students increased, an increase was observed in the reported level of specialization ( $r = .15$ ). (7) As teachers became older, they reported a lower degree of specialization ( $r = -.16$ ). (8) As teachers had more service years, the reported level of specialization decreased ( $r = -.19$ ).

#### Rules and Regulations and Continuous Variables

The rules and regulations dimension was significantly correlated with four of the 18 continuous variables ( $p < .05$ ). (1) The higher the rule enforcement, the higher the perceived friendliness in climate reported by teachers ( $r = .43$ ). (2) The higher the percentage of male teachers, the lower the rule enforcement reported by teachers ( $r = -.18$ ). (3) The older the teacher, the higher the perceived rule enforcement ( $r = .11$ ). (4) As more years of service years was reported by teachers, an increase was observed in the perceived level of rule enforcement ( $r = .15$ ).

#### Procedural Specifications and Continuous Variables

The procedural specifications dimension was significantly correlated with four of the 18 continuous variables ( $p < .05$ ). (1) The higher the perceived level of procedural specifications, higher the perceived level of friendly climate ( $r = .12$ ). (2) The older the principal, the higher the reported procedural specifications ( $r = .18$ ). (3) As the principal had more years of experience in

administrative positions, an increase was reported in procedural specifications by teacher ( $r = .19$ ). (4) The higher the socioeconomic status of students, the lower the reported degree of procedural specifications ( $r = -.15$ ).

#### Formality in Relations and Continuous Variables

The formality dimension was significantly correlated with five of the 18 continuous variables ( $p < .05$ ). (1) As the formality in relations increased, the degree of friendliness in the climate decreased ( $r = -.14$ ). (2) As the political connections of teachers increased, the formality in relations increased ( $r = .16$ ). (3) The older the principal, the higher the reported formality ( $r = .18$ ). (4) The longer the administrative experience of principal, the higher the teachers' perception of formality in their schools ( $r = .19$ ). (5) The longer the administrative experience of teachers, the lower the perceived level of formality ( $r = -.11$ ).

#### Technical Competence and Continuous Variables

The technical competence dimension was significantly correlated with five of the 18 continuous variables ( $p < .05$ ). (1) the higher the perceived degree of promotions based on technical competence of teachers, the higher the perceived friendliness in the climate ( $r = .34$ ). (2) The higher perceived level of technical competence, the higher the degree of friendship with school officials outside the school hours ( $r = .23$ ). (3) The older the principal, the lower the promotions based on technical competence ( $r = -.19$ ). (4) the longer the principal's administrative experience, the lower the promotions based on technical competence of teachers ( $r = -.13$ ). (5) The longer the service years of principals, the lower the promotions based on technical competence ( $r = -.20$ ).

#### Control and Continuous Variables

The control higher-order dimension was significantly correlated with five of the 18 continuous variables ( $p < .05$ ). (1) the higher the control, the higher the perceived friendliness of the school climate ( $r = .17$ ) (2) The older the principal, the higher the control reported by teachers ( $r = .15$ ). (3) The longer the total service years of the school's principal as an educator, higher the control in the school felt by teachers ( $r = .18$ ). (4) The higher the percentage of male teachers in

the school, the lower the perceived control ( $r = -.13$ ). (5) As teacher teachers had more years of administrative experience, they perceived less control in their schools ( $r = -.11$ ).

### Expertise and Continuous Variables

The expertise higher-order dimension was significantly correlated with eight of the 18 continuous variables. (1) The higher the degree of perceived expertise, the higher the perceived degree of friendliness in the climate ( $r = .34$ ) (2) The higher the expertise, the higher the degree of friendship relations with school administrators outside the school hours ( $r = .15$ ). (3) The older the principal, the lower the expertise reported by teachers ( $r = -.20$ ). (4) The older the school, the lower the expertise ( $r = -.12$ ). (5) The longer the years of the principal in administrative positions, the lower the expertise level ( $r = -.16$ ) (6) The longer the service years of principal, the lower the expertise ( $r = -.23$ ). (7) The higher the socioeconomic status of students, the higher the perceived expertise ( $r = .14$ ). (8) The longer the service years of teachers, the lower the perceived expertise ( $r = -.13$ ).

### Climate and Other Continuous Variables

The intimate climate was significantly correlated with eight of the other 17 continuous variables ( $p < .05$ ). (1) The higher the degree of friendship with school administrators outside school hours, the higher the perceived friendliness in school climate ( $r = .31$ ). (2) The larger the number of students, the lower the perceived friendliness in the climate ( $r = -.13$ ). (3) The larger the student-teacher ratio, the higher the perceived friendliness in the climate ( $r = .12$ ). (4) The larger the number of classrooms, the lower the perceived friendliness in the school climate ( $r = -.19$ ). (5) The older the principal, the lower the friendliness in the climate ( $r = -.16$ ). (6) The larger the number of administrators, the lower the friendliness in school climate ( $r = -.15$ ). (7) The higher the percentage of male teachers, the lower the friendliness in school climate ( $r = -.14$ ). (8) The longer the service years of teachers, the higher the perceived degree of friendless in school climate ( $r = .18$ ).

## Bureaucracy and Sense of Power

A score for sense of power was computed by adding 10 items identified in the factor analysis and dividing this sum by 10. A series of statistical analyses were conducted to explore relations between bureaucratic variables and sense of power. First, relations between sense of power and categorical variables were examined. Second, correlation coefficients between sense of power and continuous variables were examined. Third, a series of regression analyses were run with variables that significantly correlated with sense of power.

### Relationships Between Teachers' Sense of Power and Variables

#### Sense of Power and Categorical Variables.

Sense of power scale yielded significant mean differences on one of the 12 demographic categorical variables in addition to a mean difference on the bureaucratic typology variable. On average, teachers who wish their child become a teacher and teachers who do not wish their child become a teacher differ on their sense of power. On average, at .002 level of significance, teachers who reported that they would support their child's decisions if the child wants to become a teacher (mean = 3.05) had a higher sense of power than teachers who reported that they would discourage their child if the child wants to become a teacher (mean = 2.81).

Sense of power scale yielded a significant mean difference on the bureaucratic typology variable ( $p < .0001$ ). On average, at any reasonable significance level, teachers in Weberian cluster, teachers in collegial cluster, teachers in chaotic cluster, and teachers in authoritarian cluster reported different degrees of sense of power. Teachers whose perceptions of school bureaucracy fits into the collegial type felt the highest sense of power (mean = 3.43) followed by teachers in the Weberian category (mean = 2.97), teachers in category chaotic (mean = 2.93), and teachers in authoritarian category (mean = 2.29). On average, teachers who perceived their school as collegial had a higher sense of power than teachers who perceived their schools as authoritarian, Weberian, or chaotic. Teachers who perceived their schools as authoritarian had the lowest sense of power. On average, teachers in Weberian cluster and teachers in chaotic clusters had similar degree of sense of power.

Table 37 reports the F ratios for the series of ANOVAs using the sense of power as the dependent variable. Table 38 reports the descriptive statistics for significant findings in the table 37 followed by multiple comparisons in Table 39.

### Sense of Power and Continuous Variables

At a .05 significance level, sense of power scale was correlated significantly with hierarchy of authority ( $r = -.53$ ), division of labor ( $r = .36$ ), rules and regulations ( $r = -.12$ ), procedural specifications ( $r = -.36$ ), formality ( $r = -.36$ ), and technical competence ( $r = .54$ ) dimensions. It was also significantly correlated to control ( $r = -.48$ ) and expertise ( $r = .55$ ) higher-order dimensions. A lower sense of power was observed for teachers who reported a higher degree of hierarchical exercise of authority in their schools. Teachers who perceive a high level of specialization in their schools reported a high level of sense of power. A lower sense of power was observed for teachers who perceived a high level of rule enforcement in their schools. Teachers who perceive a high level of specifications in operating procedures in their schools reported a low level of sense of power. A low level of sense of power observed for teachers who find interactions in their schools highly formal. Teachers who reported low sense of power perceived a low level of promotions based on technical competence in their schools. Teachers who scored high on sense of power reported a low level of control in schools. Teachers who perceived a high level of expertise in their schools reported a high level of sense of power.

In addition to bureaucratic dimensions, sense of power was significantly correlated to seven of the 18 continuous variables at .05 significance level. (1) Teachers who reported high level of sense of power perceived a high level of friendliness in their school climate ( $r = .27$ ). (2) A lower level of sense of power was observed for teachers who report low levels of friendship relations with school hours outside school hours. ( $r = .25$ ). (3) The level of sense of power was higher for teachers who worked at schools that houses students from higher socioeconomic status ( $r = .16$ ). (4) Teachers who worked under older principals tended to report low level of sense of powers ( $r = -.11$ ). (5) Teachers who scored high on sense of power found to be working for more experienced principals who have longer years in administrative positions ( $r = -.12$ ). (6) Similarly, Teachers who work for principals with longer service years reported a low level of sense of power ( $r = -.15$ ). (7) A higher level of sense of power was observed for teachers who had more

Table 37 Descriptives for Levels of Variables on Which Sense of Power Differs

Independent Variable	Sig of Test of Homogeneity of Variances	LEVEL	MEAN	N	STD DEV.
TYPOLOGY	.24	1 AUTHORITARIAN	2.29	70	.66
		2 WEBERIAN	2.97	84	.53
		3 COLLEGIAL	3.43	81	.61
		4 CHAOTIC	2.93	89	.55
Wants his child pursue a career in teaching	.12	1 NO	2.81	168	.73
		2 YES	3.05	156	.65
Total			2.93	324	.70

Table 38 ANOVAs for Sense of Power by Categorical Variables

Independent Variable	Number of groups	F	Sig
Typology	4	47.79	.00
District name	6	1.26	.28
Number of times school runs in a day	2	2.21	.14
School Level	3	2.10	.12
Urbanization	3	.75	.47
Principal's father's job	5	1.02	.40
Gender of teacher	2	.02	.90
Grownup location of teacher	5	.54	.71
Teacher's father's job	4	1.20	.31
Work experience outside teaching	2	1.05	.31
Wishing his child to become a teacher	2	9.70	.002
Birth place	2	.01	.93
Type of college graduated	3	2.22	.11

Table 39 Multiple Comparisons for Sense of Power by Typology and Teacher's Desire for His/Her Son/Daughter to Become a Teacher (Tukey)

DEPENDENT	INDEPENDENT	LEVEL		Mean Difference	Std. Error	Sig.
SENSE OF POWER	CHILDTCH	2 YES	1 NO	.24		.00
	TYPOLOGY	2.WEBERIAN	1 AUTHORITARIAN	.68	.09	.00
		4 CHAOTIC	1 AUTHORITARIAN	.63	.09	.00
		3 COLLEGIAL	1 AUTHORITARIAN	1.14	.10	.00
			2 WEBERIAN	.46	.09	.00
			4 CHAOTIC	.51	.09	.00

years of administrative experience than teachers who lacked such experience ( $r = .11$ ). Table 40 reports the correlation coefficients between sense of power and all continuous variables including bureaucratic variables.

The six bureaucratic dimensions were entered in a regression analysis along with the seven variables to explore whether bureaucratic variables would explain an additional portion of variation in teachers' sense power above and beyond all seven variables. As shown in table 41, a regression analysis using enter method revealed that the linear combination of these seven variables and six bureaucratic dimensions together explained 49% of total variance in sense of power ( $p < .0001$ ). When a stepwise procedure was used a linear combination of technical competence, hierarchy of authority, friendly climate, formality in relations, and socioeconomic status of students still explained 48% of the total variance in sense of power ( $p = .03$ ). In the stepwise solution as it was reported in Table 42, hierarchy of authority was the most important variable in the explanation of variance in sense of power followed by technical competence, climate, formality, and socioeconomic status of students. When a block wise regression analysis using enter method in each block was run, the explained variance in sense of power was 49% when all blocks were considered because. In the first block five demographic variables (i.e., age of principal, total years of principal in administrative positions, total service years of principal, SES of students, and total years of administrative experience of teacher) were entered. In the second block, the climate and friendship variables were entered. At the last block six bureaucratic variables were entered. The linear combination of variables in the first block explained 6% of the variance. Friendship and climate variables contributed a 9% increment to the explained variance when they were entered at the second block. Above and beyond the contribution of the first two blocks of variables, the six bureaucratic dimensions together add an increment of 34% to the already explained variance in sense of power holding other blocks constant. Regardless of regression method (i.e., enter, block-wise, or stepwise) hierarchy of authority, technical competence, climate, and formality turned out to be significantly contributing to the variance in sense of power. All other variables did not contribute an increment into the variation in sense of power above and beyond the contribution of the four variables. The unique contributions of each variable as a percentage term in the models can be

Table 40 Correlation Coefficients Between Sense of Power and All Variables (N = 324)

Variables	Sense of Power
Hierarchy of authority	-.53
Division of labor	.36
Rules and regulations	-.12
Procedural specifications	-.36
Formality in relations	-.36
Technical competence	.54
Control	-.48
Expertise	.55
Climate	.27
Friendship with school administrators	.25
Political connections	.02
Number of students	.01
Number of administrators	.05
Student teacher ratio	.01
Number of classrooms	.04
Age of principal	-.11
Age of school	-.05
Principal's total years in administrative positions	-.12
Total service years of principal	-.15
Number of administrators	.04
Percentage of male teachers	-.01
Socioeconomic status of students	.16
Age of teacher	.05
Total service years of teacher	.05
Total year of teacher in administrative positions	.11
Teacher's number of sisters and brothers	-.03

Note. A correlation of .11 or higher is significant at the .05 level (two tailed)

Table 41 Summary of Regression Analysis for Six Bureaucratic Dimensions Predicting Sense of Power Using Enter Method

R Square	.487						
Adjusted R Square	.466						
Std. Error of the Estimate	.512						
F	22.670 (p<.0001)						
Variables	B	Std. Error	Beta	t	Sig.	Partial r	Part r
(Constant)	2.50	.46		5.49	.00		
Age of principal	.01	.01	.09	1.15	.25	.07	.05
Total years of principal in administrative positions	-.01	.01	-.11	-1.73	.08	-.10	-.07
Total service years of principal	.00	.01	.00	-.02	.99	.00	.00
SES of students	.09	.04	.09	2.15	.03	.12	.09
Teachers years in administrative positions	.01	.01	.04	.90	.37	.05	.04
CLM	.14	.05	.16	2.91	.00	.16	.12
Friendship with school administrators	.03	.02	.06	1.36	.18	.08	.06
HA	-.37	.05	-.39	-6.79	.00	-.36	-.28
DL	.04	.04	.04	.92	.36	.05	.04
RR	.00	.06	.00	-.05	.96	.00	.00
PS	.00	.05	.00	.07	.95	.00	.00
FRM	-.12	.05	-.12	-2.60	.01	-.15	-.11
TC	.22	.05	.26	4.72	.00	.26	.19

Table 42 Summary of Final Stepwise Regression Analysis for six bureaucratic dimensions predicting Sense of Power

R Square	.475						
Adjusted R Square	.467						
Std. Error of the Estimate	.512						
F	57.608 (p< .000)						
Independent Variables	B	Std. Error	Beta	t	Sig.	Partial r	Part r
(Constant)	3.08	.25		12.4	.00		
TC	.23	.04	.27	5.16	.00	.28	.21
HA	-.39	.04	-.42	-8.81	.00	-.44	-.36
CLIMATE	.15	.04	.18	3.67	.00	.20	.15
FRM	-.12	.04	-.13	-2.83	.01	-.16	-.11
SES	.09	.04	.09	2.18	.03	.12	.09

competed by squaring the part correlation coefficients provided at the last columns of tables. A partial correlation is the percentage of contribution of a variable when it was entered last into the equation.

As shown in Table 43, when an enter method was used, a linear combination of higher-order dimensions (i.e., control and expertise) and the seven variables together explained 44% of the variance in sense of power ( $p < .0001$ ). Control and expertise contributed an additional 29% increment into the explained variance above and beyond other seven variables. As it was mentioned earlier the seven variables together explained 15% of the variation in sense of power in the absence of any bureaucratic variables in the equation. When a stepwise procedure was used as it is shown in Table 44, the linear combination of control, expertise and climate and friendship with school administrators explained 42% of variance. The most important variable was control followed by expertise, climate and friendship. When relevant variables taken into consideration, the analyses in the sample revealed that at least one third of the variance in sense of power of teacher can be attributed to variations in perceived bureaucracy.

Table 43 Summary of Regression Analysis for Two Higher-Order Dimensions Predicting Sense of Power Using Enter Method

R Square	.438						
Adjusted R Square	.422						
Std. Error of the Estimate	.533						
F	27.198 (p <.000)						
Variables	B	Std. Error	Beta	t	Sig.	Partial	Part
(Constant)	1.99	.46		4.35	.00		
Age of principal	.02	.01	.17	2.09	.04	.12	.09
Total administrative experience of principal	-.01	.01	-.08	-1.26	.21	-.07	-.05
Total service years of principal	-.01	.01	-.07	-.85	.40	-.05	-.04
SES	.08	.04	.08	1.88	.06	.11	.08
Total years of teacher in administrative positions	.01	.01	.05	1.05	.30	.06	.04
Climate	.18	.04	.21	4.08	.00	.22	.17
Friendship with school administrators	.05	.02	.11	2.38	.02	.13	.10
Control	-.49	.07	-.38	-7.19	.00	-.38	-.30
Expertise	.30	.06	.28	5.20	.00	.28	.22

Table 44 Summary of Final Stepwise Regression Analysis for Two Higher-Order Dimensions Predicting Sense of Power

R Square	.422						
Adjusted R Square	.415						
Std. Error of the Estimate	.536						
F	58.328 (p <.0001)						
Model	b	Std Error	Std B	t	Sig.	Partial r	Part r
(Constant)	2.82	.32		8.93	.00		
Expertise	.31	.06	.30	5.53	.00	.30	.24
Control	-.49	.07	-.37	-7.18	.00	-.37	-.31
Climate	.17	.04	.20	3.87	.00	.21	.16
Frindship with school administrators	.05	.02	.11	2.47	.01	.14	.10