TEACHERS' SENSE OF POWER
IN TWO WESTERN CANADIAN URBAN SCHOOL SYSTEMS

by

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ABSTRACT

The concept of an individual's "sense of power over his environment" evolved from Seeman's (1959) definition of alienation. Shortly after Clark (1959), Dean (1961) and Pearlin (1962) used Seeman's approach to sense of power. These studies generated considerable interest in the idea of sense of power and sparked Moeller's pioneer study (1962) of "teachers' sense of power." More recent studies by Hopson (1966), and by Meyers (1972), furnished additional and sometimes conflicting findings as to the organizational, demographic, and professional variables associated with teachers' sense of power.

The present study examined those statistically significant relationships found in prior studies between teachers' sense of power and age, experience, sex, grade level taught, level of training, and number of years taught in a school, to determine whether they could be replicated in two urban school systems in Western Canada. The data set came from the "Flexibility Study," a study of Western Canadian school systems conducted by Erickson, Robinson, and Hills (1969).

In addition the present study examined relationships between teachers' sense of power and the number of years the teacher had taught in the present school system, the number of years the teacher had once been a student in the

same system, and the number of years since taking the last college course.

The present study is designed to determine which findings from prior research could be substantiated in two new populations of teachers (thereby, hopefully, increasing the generalizability of some previous findings), with more powerful statistical techniques. The design is based upon a conceptual model which sought to explain and predict, by means of multivariate analysis of variance, teachers' sense of power. The individual teacher was the unit of analysis. The interactive effects of the multiple variables were controlled through multivariate procedures which had not been a feature of the earlier findings of Hopson and Moeller. In addition to tests of significance, the multivariate analysis provided an estimate of the explanatory power of the independent variables singly and in aggregate.

The independent variables included in the model explained less than one per cent of the total variance in teachers' sense of power as measured by Moeller's Teacher Sense of Power Scale. This finding calls into question the importance of the findings of previous studies and in addition challenges the validity and reliability of the scale. Clearly, the independent variables included in the model have not reduced substantially our ignorance of "teachers' sense of power," and the major determinants

of "teachers' sense of power" still remain unknown.

This study points out the dangers of research using less than optimal analytical methods. In quasi-experimental or field research the necessary conditions for experimental control of extraneous variables do not exist. Therefore, in school systems simple statistical significance is not adequate to the task of explaining differences. The findings also suggest the need for more adequate instrumentation than is commonly used in education research.

DEDICATION

This thesis is dedicated to my wife Audrey, to my son Layne, and to my daughter Taryn who was born during the time that this thesis was being completed.

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CHAPTER ONE

BACKGROUND AND REVIEW OF THE LITERATURE

Introduction

The last decade has witnessed a dramatic escalation of teacher militancy on a local and national scale. Newspapers report: teacher strikes, organized marches on local board offices and provincial legislatures, and teachers working to rule. In some cases, these confrontations have been sufficiently violent for riot police to be called to break up the demonstrations. Teacher militancy has also been evident in demands for higher salaries, learning and working conditions, contract negotiations, and demands for increased collegiality through participation in the decision-making process. Teacher groups have also become politically active. Funds have been donated in support of local school board candidates and even in support of political parties. In 1973, the political campaign by the British Columbia Teachers' Federation was perhaps instrumental in the defeat of the Social Credit Government. Subsequently, in 1976, the B. C. T. F. drafted a Teachers' Professional Act which was submitted to the New Democratic Party Government. Such an act, if passed, would have increased teacher autonomy in most aspects of education.

Teachers, on the whole, are better educated and better paid than in the past and yet they seem to be unsatisfied with their lot. One of the reasons for their

displeasure might well be a growing frustration at not having the right to make decisions in matters that affect their professional work.

In order to answer some of the questions about the growing assertiveness of teachers Dr. D. Erickson suggested that a study of alienation, and in particular empirical studies of teacher alienation, might be useful. The review of relevant literature, and the study which follows, are the result of following Dr. Erickson's suggestion.

Definitions of Terms

Powerlessness - Seeman's definition, "... as the expectancy or probability held by the individual that his own behavior cannot determine the occurrence of the outcomes, or reinforcements, he seeks." (Seeman, 1959, p. 784).

Sense-of-Power - a continuum in which teachers might be ordered: at one extreme are those who feel unlimited in their degree of influence over the system as a whole, and at the other extreme are those who feel completely unable to influence the system. (Moeller, 1964, p. 143).

Alienation - As defined by Clark, "... degree to which man feels powerless to achieve the role he has determined to be rightfully his in specific situations." (Clark, 1959, p. 849).

Professionalization - a dynamic process characterized by:

a) acquisition of a specialized technique supported by a body of theory.

b) development of a career supported by an association of colleagues; and

c) establishment of community recognition of professional status. (Vollmer and Mills, 1966, p. 44).

Origin of Powerlessness and Studies in Non-Educational Setting

Seeman's Concept of Alienation as Powerlessness

The concept of sense-of-power used in this study evolves from a 1959 publication by Seeman in which he defines alienation. In his definition, he identified five alternative, though complementary, meanings of alienation: powerlessness, meaninglessness, normlessness, isolation, and self-estrangement. Seeman derived these meanings by analyzing the literature on alienation in the fields of sociology and social psychology.

The first meaning, the one directly relevant to the present study, refers to alienation as a sense of powerlessness. This notion of alienation originated, "... in the Marxian view of the worker's condition in capitalist society: the worker is alienated to the extent that the prerogative and means of decision are expropriated by the ruling entrepreneurs." (Seeman, 1959, p. 784) Weber extended the idea beyond the Marxian notion of the industrial worker, to the soldier, scientist, and civil servant, who were also not in control of their own professional destinies. (Seeman, 1959, p. 784) This notion of powerlessness was found by Seeman to be the most frequently used meaning of 'alienation' in sociological and socio-psychological literature. Seeman defined powerlessness, "... as the expectancy or probability held by the individual that his own behavior cannot determine the occurrence of the outcomes, or reinforcements, he seeks." (Seeman, 1959, p. 784) This concept of powerlessness was distinctly a socio-psychological view, one that Seeman, felt could be "... handled like any other situational aspect of behavior--to be analyzed, measured, ignored, experimentally controlled or varied, as the research question demands." (Seeman, 1959, p. 784) A basis for empirical studies was thus provided by Seeman's belief in the measurability of

powerlessness.

Dean's Study of Seeman's Definitions

One of the first studies based on Seeman's definitions of alienation was carried out by Dean (1961) to determine what empirical relationships existed among the several meanings of alienation which Seeman had identified. In his Columbus, Ohio, study, Dean developed scales to measure three of the meanings--powerlessness, social isolation, and normlessness. For study, he selected subjects from four of nineteen city wards by criteria related to their voting incidence and socio-economic variables. "Within these four wards, precincts were selected by random sampling." (Dean, 1961, p. 757) The 1108 individuals were sent questionnaires and 433 questionnaires (or 38.8 percent) were returned. Of the 433 questionnaires returned, Dean was able to use 384 in his analyses. Dean reported a substantial correlation, $r = .41$ to $r = .90$, $p \leq .05$, between measures of powerlessness, normlessness, and social isolation for the population in his study (Dean, 1961, p. 757).

Clark's Study

Two years earlier, Clark's study (1959) had examined the membership of an institutional setting, in this case

a farm cooperative. From the 3000 members, Clark randomly selected and personally contacted 361 individuals. He reported a correlation of $r = -.62$ between the sense of satisfaction with the organization and the degree of alienation or powerlessness felt. He then examined the relationship of powerlessness to participation in the organization, finding a correlation of $r = -.37$. He also examined the relationship between powerlessness and knowledge of the organization, and reported a correlation of $r = -.30$. Clark concluded that, "The concept of alienation can be examined in an environment about which we are more adequately informed than we are with the 'whole of society'." (Clark, 1961, p. 851)

Pearlin's Study

Pearlin's (1962) study also narrowed his focus of study to subjects in a particular social setting. He tested the nursing staff in a large mental hospital and reported that the nurses' positional disparity in relations with authority figures related to alienation (as powerlessness). The relationship was significant ($\chi^2 = 30.5$, 12 df, $p \leq .01$). He further found that positional disparity in relations with authority figures could be explained by obeisance scores. He reported that groups with the personality characteristics of high obeisance

experienced less alienation than did those groups with low and moderate obeisance (Pearlin, 1962, p. 314).

Pearlin then examined the relations between feelings about work rewards, achievement, and alienation. The alienation scores of limited achievers who expressed satisfaction or dissatisfaction with pay differed significantly (χ^2 = 17.1, df = 4, $p < .01$). Similarly moderate achievers differed significantly (χ^2 = 33.3, 4 df, $p < .001$) and high achievers (χ^2 = 10.0, 4 df, $p < .05$). The alienation scores of limited achievers who expressed satisfaction or dissatisfaction with promotion differed significantly (χ^2 = 29.0, 4 df, $p < .001$). Similarly moderate achievers differed significantly (χ^2 = 30.2, 4 df, $p < .001$) and high achievers (χ^2 = 7.4, 4 df, $p < .20$). The alienation scores of limited achievers who expressed satisfaction or dissatisfaction with chances of getting ahead differed significantly (χ^2 = 30.8, 4 df, $p < .001$). Similarly moderate achievers differed significantly (χ^2 = 52.6, 4 df, $p < .001$) and high achievers (χ^2 = 5.6, 4 df, $p < .20$). Pearlin's conclusion was that limited and moderate achievers who were dissatisfied with work rewards experienced a greater degree of alienation than high achievers (Pearlin, 1962, p. 322).

The studies by Dean, Clark, and Pearlin stressed the importance of studying powerlessness in specific groups

and in limited contexts. As the studies narrowed from groups in a community as a whole (as in Dean's work), to members of a farmer's cooperative (Clark), and to nurses in a mental hospital (Pearlin), it became evident that factors which contributed significantly to powerlessness could be identified.

Studies of Teachers' Sense-of-Power

Moeller's Pioneer Study

Introduction to Moeller's Study

The interest generated in the study of alienation or powerlessness prompted Moeller's (1962) study of powerlessness in schools. In his study Moeller was interested in the effect that a system with characteristics of high bureaucracy would have on teachers' feelings of powerlessness. He also included in his study independent variables, mainly of a demographic nature, to determine their relationship to teachers' feelings of powerlessness. Moeller also made a semantic change in the notion of powerlessness by calling it teachers' sense-of-power.

Moeller developed an extensive questionnaire which created new measures of bureaucracy, teacher sense of power, and repressive authority.

Development of Bureaucratic Hypothesis

Moeller (1962) felt that the concept of bureaucracy

provided a means for identifying a number of interrelated organizational dimensions which might have various effects upon teachers' sense-of-power, or conversely, powerlessness. Although powerlessness had been the subject of prior research, Moeller felt "... the central issue was the teachers' sense-of-power with respect to the school system at large -- his sense of ability or inability to influence the organizational forces which so importantly shape his destiny" (Moeller, 1964, p. 139). Moeller was not concerned about the teacher's feeling about himself, his feeling of autonomy in the classroom, his profession, or the society in which he lived, but rather his sense-of-power vis-a-vis his school system, as the system varied with regard to degree of bureaucratization:

> In the case of teachers, a sense-of-power may be examined with regard to affairs of the classroom or with regard to affairs of the autonomy in their classrooms, an autonomy protected by their physical insulation from observability and fortified by strong professional norms. With respect to school policies, however, teachers traditionally have lacked power. Subordinated to administrators, school boards, and vocal citizens, largely unorganized for (and even unsympathetic to) collective action on their own behalf, teachers frequently have been prey to arbitrary manipulations of their conditions of work. In consequence, a teacher might well feel fully in command of the classroom learning process, but feel essentially powerlessness to control his fate in the larger organizational setting. This study measured sense-of-power from the standpoint of the ability of the teachers to influence the larger organizational forces that importantly shape their destiny. (Moeller, 1970, p. 639)

Moeller felt that, enmeshed with the organizational structure of the school system, and apart from the degree

of bureaucracy per se, there are situational and social factors which serve to enhance or reduce the teacher's feeling of power. Among these factors are: first, positions of power held by the teacher, such as department and committee chairmanship; second, the style of leadership displayed by the superintendent; third, the teacher's personal relations with administrators; and fourth, the type of professional associations functioning in the district and other sources of corporate power upon which the teacher depends. In his study, Moeller introduced analyses intended to promote a more thorough understanding of the above variables.

Moeller reasoned that as school systems became larger they would become more bureaucratic, with more regulations regarding curriculum and more devices for coordination and control. His hypothesis was that bureaucracy induces in teachers a sense of powerlessness to affect school system policy. He predicted that (the general level of) sense-of-power in a school system would vary inversely with the degree of bureaucratization in that system. He also hypothesized that intra-school variations in sense-of-power were induced by factors lying within the individual teacher and his immediate social environment, factors such as: teacher's social origin, sex, length of service, teaching level, degree of particularism* in administrator-teacher

* friendship between teacher and administrators

relations, positions of authority held in the system, degree of repressive authority exercised by the superintendent, and ready accessibility by teachers to a corporate group. (Moeller, 1964, p. 144).

In order to test his hypotheses, Moeller selected twenty school systems of differing sizes from the St. Louis metropolitan area. These systems employed anywhere from 37 to 700 full time teachers. The superintendents of these systems were visited by members of the research staff for authorization to conduct the study. In each system, teachers were selected from faculty lists by using a table of random numbers. Twenty elementary and twenty secondary teachers were chosen, whenever numerically possible, from each school system to receive questionnaires. Questionnaires were mailed to the randomly selected teachers. The research staff reported 692 questionnaires returned or 88 percent of the total that had been sent out. (They did not report the exact number sent out.) In order to estimate bias represented by the non-returns, comparisons were made of the sense-of-power scores from questionnaires which were returned early and of those which were returned late. The differences in the scores were found to be statistically insignificant, suggesting that the 12 percent of questionnaires not-returned might not differ significantly

from the questionnaires returned.

Moeller reasoned,

> Since the bureaucratic model had been selected as the means for investigating the influence of organizational structure upon the teacher's sense-of-power, it was necessary either to find a suitable measure of bureaucratization or to construct one. After an unsuccessful search of the literature such a measure was constructed, using the characteristics of bureaucracy as described by Blau. (Moeller, 1964, p. 141)

Moeller viewed school systems as highly bureaucratized organizations, governed by a complex body of law and characterized by an elaborate division of labor and administrative authority. He assumed that teachers and other employees were certified for their jobs on criteria of technical competence and typically were promoted on the basis of seniority. He also assumed that in some systems teachers were protected in their employment by tenure. He therefore felt that distinctions drawn among school systems had to be within a relatively narrow range on a continuum of bureaucratization. An eight-item, forced-choice scale made up of the following items was developed accordingly: (Moeller, 1964, p. 142)

Uniform course of study
Communication through established channels
Uniform hiring and dismissing procedures
Secure tenure for non-teaching personnel
Explicit statement of school policies
Clearly delimited areas of responsibility
Specified lines of authority
Standard salary policies for new teachers

A group of persons (a panel of experts with first-hand knowledge of the school) in the twenty school systems in the study were asked to provide their judgements for ordering the twenty school systems on this bureaucratic scale.

> The method of scaling the data followed in general procedures outlined by Riley, Riley, and Toby for construction of an object scale, that is, data from individuals combined to represent collective responses. Each of the twenty school systems was rated by three, four, or five judges. If a majority of judges chose the "bureaucratic" alternative on a given item, a plus was entered for the school; if less than a majority chose the "bureaucratic" alternative, a minus was entered. In this way a single set of ratings over the eight items was obtained for each school system based upon the majority response of the system's judges. (Moeller, 1964, p. 141 - 142)

Development of Teacher's Sense-of-Power Scale

The next problem Moeller faced was the measurement of teachers' feelings of powerlessness, the dependent variable of the study. Teachers' self-awareness, purportedly measured by a sense-of-power scale is viewed as a continuum in which teachers might be ordered; at one extreme are those who feel unlimited in their degree of influence over the school system as a whole, and at the other extreme those who feel completely powerless as Seeman defined it, "... as the expectancy or probability held by the individual that his own behavior cannot determine the occurrence of the outcomes, or reinforcements,

he seeks." (Seeman, 1959, p. 784)

Moeller did an extensive search of the literature but was unable to discover a measure of sense-of-power adaptable to teachers; therefore, he constructed his own instrument. The teacher's sense-of-power scale was developed on Guttman standard scaling by a method similar to that used to create the bureaucratic scale.

The eight-item scale was judged to be suitable as a Guttman Type Scale because the coefficient of reproducibility was .93. The scale provided a pattern which described school systems from least to most bureaucratic, ranged from scale type 0 to scale type 8. A school system in which none of the items applied was scored 0 or least bureaucratic, while a system to which all items supplied was scored 8, or most bureaucratic. Because of the limited number of objects used in the development of the scale a further check on the suitability of the scaling was performed. "Following the analysis of variance design reported by Ebel when several raters are used, interrater reliability was computed to be .47." (Moeller, 1964, p. 142) A parallel scale analysis of the data was performed using the judges as the control. The correlation between the judges' ratings and system scores as measured by the contingency coefficient was zero. On this basis, Moeller was prepared to use the scale.

Moeller prepared a set of Likert-type questionnaire items, tested these items on a sample of one hundred teachers and subjected the items to Guttman scale analysis. Six of the items, "... whose marginal distributions were well distributed over a range between 0.2 and 0.8, whose cutting points were separated from one another, and whose error counts were low, were selected for the final measure." (Moeller, 1964, p. 144)

The six items selected for Moeller's Sense-of-Power Scale are listed in Table I by order of difficulty*, from highest to least high in sense-of-power. (Moeller, 1964, p. 144) The responses to each item were dichotomized, a "disagree" or "strongly disagree" were assigned a positive value and any of the other three alternatives a negative value. The second and sixth items had the procedure reversed, "agree" and "strongly agree" alternatives had the positive value.

Moeller conducted a second scale analysis, using the responses of the teachers in the main study to determine whether unidimensionality could be cross-validated on a different population. He found that the six items scaled in the same order as before with a coefficient of

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* from easy to hard, 1 - 6.

TABLE I

Guttman Scaling of Moeller's Teacher Sense-of-Power Scale Items

Item	Response	Scale Type
In the school system where I work, a teacher like myself:		
Considers that he has little to say over what teachers will work with him on his job	Disagree	6
Usually can find ways to get system-wide policies changed if he feels strongly enough about them	Agree	5
Feels he does not know what is going on in the upper levels of administration	Disagree	4
Feels he has little to say about important system-wide policies relating to teaching	Disagree	3
Never has a chance to work on school committees which make important decisions for the school system	Disagree	2
Believes he has some control over what textbooks will be used in the classrooms	Agree	1
(Reserved for respondents who indicated the powerless response to each of the above)		0

reproducibility* of .93, when chance reproducibility was found to be .85. (Moeller, 1964, p. 144)

For his questionnaire, Moeller also constructed and used a measure to determine particularism (whether administrators interacted with teachers impersonally or in a highly personal manner). Using self-reports by teachers, Moeller derived the scale by assigning the highest weight (3) when teachers and administrators reportedly had visiting relationships; the medium weight (2) when teachers and administrators reportedly addressed each other by their first names; and a low weight (1) to all other situations. (Moeller, 1964, p. 145) Measures of positions of responsibility held by the teacher were formed by including all teachers who had been committee chairman in the high category, and all others in a low category. The index of repressive authority exercised by the superintendent was measured by using teacher self-reports on how they perceived their relations with the superintendent. Corporate power was measured by asking teachers to name a teacher's organization capable of

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*The coefficient of reproducibility is the result of one minus the number of errors divided by the number of item responses. When two populations respond to the same items, the order of relative difficulty is experienced as the same.

changing unpopular administrative decisions. In addition, Moeller's questionnaire included a background-characteristics portion which provided the measures of the variables: social origins, sex, length of service, and teaching level.

Moeller's Findings

Moeller hypothesized that systems exhibiting characteristics of high bureaucracy would have teachers with low sense-of-power scores and conversely systems classified as low bureaucratic systems would have teachers with high sense-of-power scores. The results of Moeller's study denied his major research hypothesis. His findings, contrary to the hypothesis, revealed that teachers in high bureaucratic school systems were significantly higher in sense-of-power as measured by his scale than were those in the less bureaucratized systems ($F = 9.18$, $p \leq .01$). He also found that when the teacher responses from highly bureaucratic systems were grouped by non-structural variables these groups were higher in sense-of-power than similar groups in the less bureaucratic systems (Spearman rank correlation coefficient [r_s] = .40, $p \leq .05$). (Moeller, 1964, p. 146)

Moeller summarized results of the analyses of variance of bureaucracy and sense-of-power, holding disproportionate subgroups constant revealed the pervasive-

TABLE II

Sense-of-Power Means for Variables Disproportionately Distributed in High and Low Bureaucratic School Systems (Moeller 1964)

Teacher Characteristics	High Bureaucratic Systems		Low Bureaucratic Systems		Comparisons
	Means	N	Means	N	
Length of service:					
0-3 years.....	3.06	109	2.46	139	Hi vs. Lo Bur, F = 26.93**;
4+ years.....	3.19	221	2.55	178	Hi vs. Lo Serv, F = 3.29**
Social class origins:					
Professional.....	3.29	62	2.81	32	Hi vs. Lo Bur, F = 20.51**;
Managerial.....	3.15	84	2.41	58	between origins, F =
Clerical.....	3.32	28	2.25	31	2.40*
Labor.....	2.75	85	2.21	103	
Farm.....	3.23	69	2.83	89	
Particularism:					
High.....	3.73	60	2.64	77	Hi vs. Lo Bur, F = 3.80;
Low.....	3.01	160	2.50	101	Hi vs. Lo Part, F = 61.45**

TABLE II (continued

Teacher Characteristics	High Bureaucratic Systems		Low Bureaucratic Systems		Comparisons
	Means	N	Means	N	
Repressive authority:					
High.....	2.29	58	1.53	53	Hi vs. Lo Bur, F = 12.60**;
Medium.....	3.33	93	2.81	79	repressive authority, F =
Low.....	3.98	45	3.33	24	20.70**
Corporate groups:					
Union.....	3.63	30	2.60	10	Hi vs. Lo Bur, F = 31; or-
Welfare committee.	4.33	12	4.71	14	ganizations vs. no organi-
Local association.	4.56	141	3.39	92	zations, F = 12.54**; be-
No organization...	3.09	33	2.78	55	9.75**

* Significant at less than 0.05 level.
** Significant at less than 0.01 level.

ness of the bureaucratic variable in its effect upon teachers (See Table II). The only exception appeared when teachers chose the welfare committee as a corporate source of power. However, the small number of teachers involved indicated to Moeller that this variable was not a dominant factor in the hypothesized relationship.

Moeller then shifted his attention from studying the effects of bureaucracy to determine other factors to which sense-of-power might be sensitive. The first of these was particularism (or relations with administrators). Low bureaucratic systems had a higher percentage of teachers with many years of experience reporting informal relationships with administrators, yet teachers in high bureaucratic systems were significantly higher in sense-of-power ($\chi^2 = 6.79$, $p \leq .01$). Particularism did not contribute significantly to sense-of-power among teachers with many years of experience in low bureaucratic systems ($\chi^2 = .50$); or among teachers with few years of experience in high bureaucratic systems ($\chi^2 = .38$), or in low bureaucratic systems ($\chi^2 = .04$). Moeller concluded that in systems where few teachers have access to the administrator in an informal way, those teachers will have a higher sense-of-power, but in systems where relations with administrators are commonplace then particularism appears ineffective (Moeller, 1964, p. 148).

Moeller also examined the relationship between sense-of-power and the positions of authority held by teachers in the school system. The proportions of teachers with many years of teaching experience holding positions of authority were similar (See Table II, p.20). However, when such positions and sense-of-power were compared, a significant relationship was found among the teachers in the high bureaucratic systems ($\chi^2 = 4.56$, $p \leq .05$), but not among the teachers in the low bureaucratic systems ($\chi^2 = .23$). Moeller therefore concluded that teachers in low bureaucratic systems did not see positions of authority as a route to power. (Moeller, 1964, p. 149)

Moeller next examined the relationship between sense-of-power and the administrator's reputation for repressive authority. (The repressive authority measure was a self-report by the teachers, reporting the extent to which the superintendent exercised restrictive and oppressive authority over them.) The relationship was found to be significant ($F = 20.70$, $p \leq .01$, Table II). Moeller also examined the number of teachers reporting repressive authority in high bureaucratic and low bureaucratic systems and unexpectedly discovered that there were more teachers reporting repressive authority from high bureaucratic systems. Moeller reasoned that an element of bureaucratic

administration was the reliance upon reason or rationality to achieve the objectives of the organization. He assumed that high bureaucratic systems are rational and therefore should have had fewer teachers reporting repressive authority. He concluded that rationality in bureaucratic organization did not preclude the use of restrictive and coercive measures. (Moeller, 1964, p. 149)

Moeller's analysis of corporate group membership found that teachers with organizational ties possessed significantly higher sense-of-power than those without corporate ties ($F = 12.54$, $p \leq .01$, Table II). (Moeller, 1964, p. 150)

The social-class origins of teachers appeared to be a factor in sense-of-power. When Moeller grouped the teachers by social origins, and ranked them from high to low on sense-of-power, he found the following order: a) professional-farm, b) business-managerial, c) clerical-white collar, and d) labor (between all origins $F = 2.40$, $p \leq .05$, in Table II). Teachers employed in high bureaucratic systems exhibited higher sense-of-power than teachers in low bureaucratic systems in each of the social-class groupings ($F = 20.51$, $p \leq .01$, Table II). (Moeller, 1964, p. 151).

Moeller then examined the possible relationship of sense-of-power to the sex of the teacher and found that

TABLE III

Summary of Moeller's Sense-of-Power Relationship

Teacher Characteristics	High Bureaucratic	Low Bureaucratic	F-Ratio
Particularism			
0 - 3 years	χ^2 = .38	χ^2 = .04	
4 + years	χ^2 = 6.79**	χ^2 = .50	
Positions of Authority			
0 - 3 years	χ^2 = 4.56*	χ^2 = .23	
Sex			
Male vs. Female			F = 10.30**
Grade Level			
Elem. vs. Sec.			F = 12.63**
Bureaucracy			
High vs. Low			F = 19.18**

* Significant at less than 0.05 level ** Significant at less than 0.01 level

male teachers felt themselves to be more powerful than female teachers felt themselves to be ($F = 10.30$, $p \leq .01$) (Moeller, 1964, p. 151).

Elementary teachers, as a group, felt themselves to be more powerful than did secondary teachers ($F = 12.63$, $p \leq .01$, Moeller, 1964, p. 151). The differences between these groups when they were divided by sex were relatively small, with the exception of the 29 male elementary teachers who had the highest sense of power.

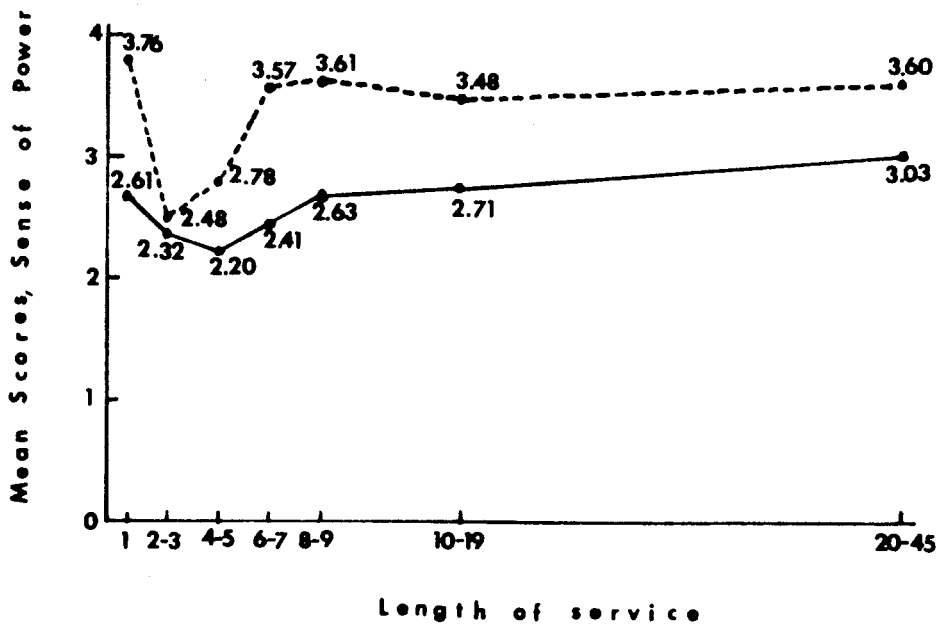
In examining length of service, Moeller discovered less teacher turnover in high bureaucratic systems, 67 per cent of teachers in these systems having 4 or more years of service; the low bureaucratic systems had only 56 per cent of teachers with 4 or more years of service. As has already been noted the teachers in high bureaucratic systems also had higher sense-of-power scores than the teachers in the low bureaucratic systems ($F = 26.93$, $p \leq .01$, Table II). High sense-of-power scores could be related to lower turnover. (As mentioned earlier Pearlin found job satisfaction related to powerlessness, and Sergiovanni's review of the literature (Sergiovanni, 1974, p. 71) indicated empirical evidence that job satisfaction and morale were closely related.) In other words, people with low sense-of-power could be inclined to be dissatisfied with their position and therefore leave more

readily than those with a high sense of power would do.

Moeller also found a very striking pattern when he plotted the teachers' sense-of-power scores graphically (see Fig. 1). When the teachers' careers were compared with years of experience, teachers with one year of experience had high sense-of-power scores, the scores were lower for teachers with 2-3 years of experience, the scores were higher again with 4-5 years of experience, higher still with 6-7 years of experience, and yet again higher with 8-9 years of experience. Scores then leveled off in the next two length of service categories, 10-19 and 20-45 years. (The low bureaucratic systems had similar patterns, with the exception of lower scores in the 2-3 and 4-5 years of experience category; higher after that.) Moeller concluded that a similar pattern between the sense-of-power of teachers from high and low bureaucratic systems suggested that length of service related to sense-of-power in a manner unrelated to bureaucracy.

One of Moeller's graphs (Fig. 1) shows a striking difference between first-year teachers in the high and low bureaucratic systems. Moeller found that a t-test showed a difference significant at less than the .05 level. (He cautioned however, that the data were obtained after the first-year teachers had been teaching for 5 months and

Figure 1 - Sense-of-power among teachers in high bureaucratic systems (dotted line) and among teachers in low bureaucratic systems (solid line). Moeller 1964.



that there might have been different results if the data had been collected earlier in the year.) (Moeller, 1964, p. 152).

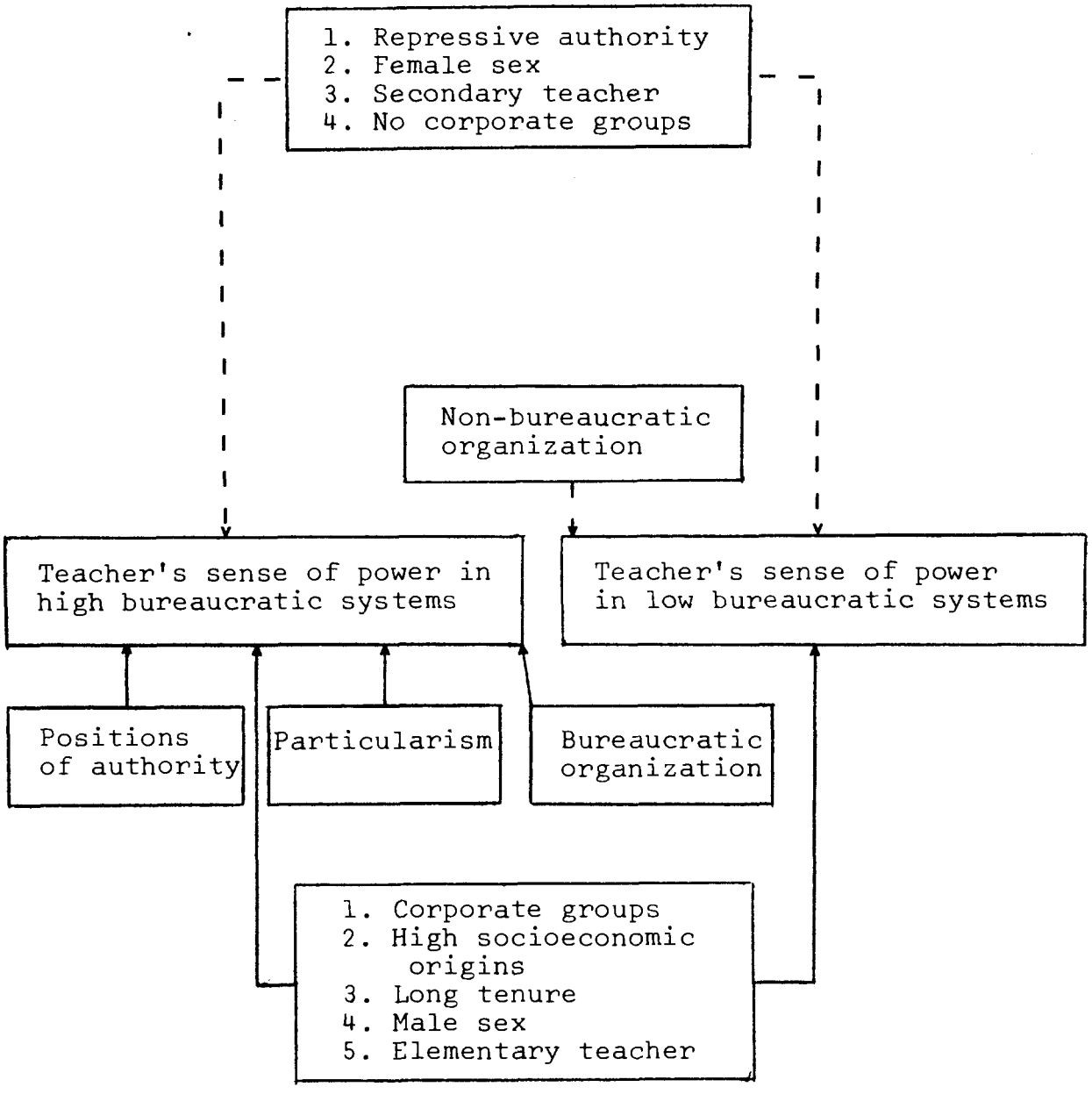
Moeller's Summary and Conclusions

Moeller summarized his findings by incorporating those variables which "augmented" or "reduced" a teacher's sense-of-power in the form of a diagram (See Fig. 2).

Teacher's sense-of-power to influence the direction of policy was found to be high in the high bureaucratic systems. However, teacher's sense-of-power was consistently low in the low bureaucratic systems whatever the comparison. In order to explain his findings, Moeller speculated along the following lines: i.e. he saw teachers, not as "free" agents, but as subject to many restrictions imposed by law, local customs, limited finances, and by their own indecisiveness. He felt that the policy direction of the high bureaucratic system would protect the teacher from capricious and poorly-conceived decisions made by an administration, and this protection would enhance teachers' sense-of-power.

In the low bureaucratic systems, conversely, everyone had access to the administrative policy-makers on a friendship basis, or realized he could go to the superintendent if he chose. Also the lack of a compre-

Figure 2. Summary of major findings: variables augmenting (solid lines) or reducing (dotted lines) a teacher's sense of power. Moeller 1964.



hensive and written set of rules meant that decisions arose for which adequate policy was unavailable. These features of low bureaucratic systems would lead to uncertainty in the minds of teachers and tend to reduce their sense-of-power.

Moeller decided that teachers in high bureaucratic systems were better able to influence the direction of policy due to orderly and predictable features of the organization. Teachers who knew that most events would follow a prescribed course and events would be dealt with in a predictable and rational manner were in a much better position to influence those events than were teachers who never knew what direction or action the administration would take. Moeller felt that these features of the high bureaucratic systems might be to the advantage of the teachers and might underlie their higher sense-of-power.

When the focus was shifted to the individual teacher as a member of the high bureaucratic system, Moeller surmised that the teacher in high bureaucratic systems was able to assess his power in relation to others. The knowledge of position in the power hierarchy enabled teachers who had more experience, were of higher social-class origins, and who were male to score higher in sense-of-power. Moeller also suggested that sense-of-power appeared to be influenced by many diverse variables within the

teacher himself, in his past, in his social groups, in his relations with his superiors, and in the organization of the school in which he was employed. Moeller suggested that the school system established the level of sense-of-power and the teachers varied from this level by their own personal orientation toward power.

Hopson's Study

Hopson extended Moeller's study under the direction of his advisor, W. W. Charters, Jr., in 1966. Hopson investigated in a longitudinal study whether the feelings of powerlessness concerning school system affairs of teachers changed during their first three years of service; and in a concurrent cross-sectional study whether school system affairs were of interest to short-tenure teachers and were related to sense-of-power; and whether sense-of-power could be interpreted as a function of variables specific to a school situation or a reflection of teachers' general alienation level.

Hopson's subjects were short-tenure teachers from fifteen school districts of the St. Louis metropolitan area and teachers from the same districts who were in their fifth through seventh years of experience and whose sense-of-power had been measured by Moeller's study. The first group yielded cross-sectional sense-of-power data for

comparisons of a great number of variables and the second group yielded sense-of-power data longitudinally as they had been measured previously by Moeller in 1961.

The variables related to the school situation Hopson investigated were: positions of authority in the school system, sense of school system rationality, sense of classroom power, social rewards of association with staff members, and perceived attention of the principal.

Hopson discovered changes in the sense-of-power of teachers with one to three years of experience similar to those reported by Moeller. He found, however, that the drop in sense-of-power scores after the first year was not as great as the drop found by Moeller in teachers with one to three years of experience.

Hopson found that short-tenure teachers were less interested in school system affairs than were the long-tenure teachers. He also found indications that neither group was very interested in such affairs, and that prior experience in another school system did not appreciably affect their interest.

Hopson also investigated, but could not prove, the proposition that resignations of teachers with high or low sense-of-power scores accounted for the differences in mean scores between the tenure levels. Hopson concluded

that actual changes in teachers' sense-of-power constituted a more adequate explanation. Hopson also found evidence that teachers coming into the profession from year to year varied significantly, and that even though general trends were followed, the differences persisted for periods of one to four years. He concluded that an enduring attribute, such as general alienation, appeared to affect the sense-of-power of teachers.

Meyers' Study

A more recent study by Russell Meyers (1972) presented a further investigation of Moeller's study. Meyers gathered data from thirty-one school districts (K-12) in Illinois during 1969-70. The target population included all Illinois school systems (K-12) with the exception of the Chicago Public Schools. He selected districts by a stratified sampling procedure based on the size of the teaching staff. The smallest district staff numbered 27 teachers while the largest district staff numbered 1,405 teachers.

He obtained data by personal interviews with superintendents and from Principal Information Questionnaires mailed to all principals in each of the districts. Teacher Information Questionnaires were sent to random stratified samples of thirty-five teachers in each of the districts. Additional data were gathered from staff lists

and other printed materials made available by the districts. Principals returned 98.7% of the questionnaires or 449 out of 455 schools; and teachers returned 91.7% or 954 out of 1,040 teacher questionnaires. The percentage of teacher questionnaires returned for the districts varied from 77.1% to 100% (Meyers, 1972, p. 3).

Meyers' study examined the relationship between numerous bureaucratic characteristics and teachers' sense-of-power. His study used a multidimensional concept of bureaucracy, one rather dramatically different from the one used by Moeller. Moeller identified eight characteristics of bureaucracy. He treated bureaucracy as a unidimensional concept, and brought the eight characteristics into a dichotomized scale of high and low bureaucracy. Moeller used a single score to indicate the degree of bureaucratization and then divided his sample of twenty districts into ten high bureaucratic and ten low bureaucratic systems.

Meyers' study, on the other hand, identified ten specific dimensions of bureaucracy and gave them conceptual and operational definitions. He defined bureaucracy broadly as a form of administrative organization designed to achieve efficiency of organizational behaviors. Meyers drew "... primarily upon Blau and

Scott's (1956) interpretation of Weber." (Meyers, 1972, p. 1) The five constructs which Meyers identified as relating to bureaucracy are presented in Table IV. Each construct is also shown defined in terms of two dimensions.

Moeller's use of the unidimensional concept of bureaucracy permitted only investigation of a single directional effect. Meyers' multi-dimensional concept allowed consideration of the possibility that increased bureaucracy of one dimension might enhance sense-of-power while increased bureaucracy in other dimensions might very well decrease sense-of-power. Meyers incorporated the possibility of two-way impact in his basic hypothesis.

The methodology of the studies also differed in two ways. Moeller used questionnaires responded to by a panel of experts to determine the degree of bureaucratization in the twenty systems. However, Meyers obtained his measures of the degree of bureaucratization from data readily available from the systems: the number of teachers, administrators, and non-certified personnel; the number of clerks assigned to central administrative offices; the number of teachers with provisional certification; and the titles of positions within the organization. The second methodological difference pertained to the unit

TABLE IV

Five Constructs of Bureaucracy Defined in Terms of Two Dimensions (Meyer, 1972)

A. SPECIALIZATION OF WORK: the manner in which organization tasks are distributed among positions as official duties.

Dimension 1: Specialization of Functions at the Production Level: the division of labor in the performance of product level tasks.

Dimension 2: Specialization of Functions Throughout the Organization: the division of the total tasks of the organization in such a manner that particular tasks are performed by specialists.

B. HIERARCHY OF AUTHORITY: the manner in which the superior-subordinate relationships are formally arranged as positions or offices within the organization.

Dimension 3: Intensity of Subordinate-Superordinate Relationships: the degree to which the formal arrangement of hierarchical positions permits a frequency of subordinate-superordinate contact that approximates a condition of constant supervision of the subordinate by his immediate superordinate.

Dimension 4: Distance Between Hierarchial Levels: the degree of removal of personnel at any one hierarchial level from immediate supervision by the superordinate occupying the monocratic position.

C. RULES AND REGULATIONS: the institutionalization of prescribed patterns of behavior within organizations.

Dimension 5: Rules as Extension of Hierarchial Authority in Production Tasks: the degree of formalization of standardized procedures in the technical production of the organization.

TABLE IV (continued)

Dimension 6: Rules Governing Conditions of Affiliation and Advancement: the degree of formalization of standardized procedures under which participants may continue in affiliation with or advance in the organization.

D. EMPLOYMENT BASED ON TECHNICAL QUALIFICATIONS: the application of universalistic, competence-based criteria in the determination of who will perform what role in the organization.

Dimension 7: Merit Selection by the Organization: the determination of legal certification, completion of required training, or prior experience which have been established as criteria for selection for initial affiliation with the organization.

Dimension 8: Merit Assignment to a Particular Role: the application of competence-based criteria when assigning personnel to positions.

E. SIZE: the relative largeness of the organization.

Dimension 9: Number of Offices in the Organization

Dimension 10: The Amount or Value of the Product Produced or the Number of Clients Served.

of analysis. While Moeller had used the teacher as the unit of analysis, Meyers used the school system as the unit of analysis. The differences in the importance of the explanatory importance of the variables may well be related to the differing variances in the unit of analysis.

Meyers' study was similar to Moeller's in that the dependent variable, teachers' sense-of-power, was the same. In fact, Meyers used Moeller's Teacher Sense-of-Power Scale. Meyers performed a validity check on scalability of Moeller's scale using 100 questionnaires selected randomly out of the 954 which had been returned. Meyers' results were checked on a scalogram - Gray's "Scale Analysis with Grad gram." (Meyers, 1971, p. 91) The responses to each of the items were weighted using a Likert Type Scale. The items were found to scale in the same order as Moeller's items with a coefficient of reproducibility of .903. The responses were then totalled to arrive at respondent scores from which district means were calculated. These were placed in rank order with the district mean scores obtained by Moeller's scoring methods, and a Spearman rank score of .916 calculated. (Meyers, 1971, p. 92).

Meyers developed the hypotheses that:

> Increased bureaucratization of the organizational structural characteristics called specialization of work and employment based on technical qualifications is positively related to teachers' sense-of-power.
>
> Increased bureaucratization of the structural characteristics called hierarchy of authority and rules is negatively related to teachers' sense-of-power. (Meyers, 1972, p. 3)

In addition to investigating ten structural variables of bureaucracy in his study, Meyers also investigated seventeen non-structural variables, such as the mean age of the teachers, the percentage of male staff members, the tenure of the superintendent, and the total administrative experience of the principals and superintendents.

Meyers found that neither of his central hypotheses was supported by analysis of the data. He states that only one of the bureaucratic structural variables, degree of specialization throughout the system, was a statistically-positive determinant of teachers' sense-of-power (not the same definition as technical qualifications - certification, degree held, etc.). Five other variables (non-structural) accounted for significant variance in teachers' sense-of-power scores. Measure of positions of authority held by teachers, level of superintendent training, age of teachers, and prior tenure of the superintendent in the district were all negatively-related to teachers' sense-of-power. Level of teacher training was the only variable

relating positively to teachers' sense-of-power. (Meyers, 1972, p. 3). These five variables explained 58.6% of the total variance in teacher sense-of-power scores. (Meyers, 1971, p. 126).

Meyers' findings failed to support Moeller: bureaucracy of the school system structure is not related significantly to teachers' sense-of-power. Meyers concluded that the traditional statement of bureaucratic organization (Weberian concept) was not useful in explaining teachers' sense-of-power (Meyers, 1971, p. 125 and 204). However, the concept of bureaucracy and methodology employed by Meyers differed dramatically from Moeller's. The studies also differed in that Meyers used the school system as the unit of analysis, whereas Moeller had used the individual as the unit of analysis. The studies were, however, similar in that the dependent variable, teachers' sense-of-power, was the same.

Muth's Study

Another study with different characteristics was carried out more recently by Rodney Muth (1973). Muth examined the teachers' perceptions of principals' behavior. More specifically, he examined the relationships between power and conflict.

Muth designed a Likert-type scale, The Administrator

Behavior Scale, using items suggested by Moeller's Scale. Muth's instrument represented three sub-types of power: authority, coercion and influence. Items corresponding to 'authority' deal with duties, such as, seeing that assignments are completed, and maintaining impartial relations through standardization of expectations. Items corresponding to coercion and influence are those which seemed to support the force and persuasion notions inherent in coercion and influence. The data from The Administrator Scale was correlated with another scale, called the School Situation Scale, which was composed of two sub-types of conflict: policy and infringement. The items chosen included: participation in policy making, curriculum control, general school-wide concerns, classroom control, and value conflicts. Respondents were asked to rate each item on two Likert-type scales: first according to "The way things are," and then "How things should be." The absolute difference between the two ratings provided a measure of conflict in the school. (Muth, 1973, p. 1-2)

Muth's study sampled only public schools in suburban Cook County, Illinois and north-western Indiana. Respondents were randomly selected from thirty-five schools which ranged in size of staff from fewer than 25 to more than 200 teachers, and represented rural, suburban, and urban set-

tings. Of the 767 teachers contacted, there were 366 usable returns. (Muth, 1971)

The portion of Muth's study that is of direct relevance to the present study was The School Situation Scale composed of the Policy Conflict and Infringement Conflict sub-scales. The Policy Conflict sub-scale signified the degree of participative control teachers felt in matters vital to the functioning of the school. High policy conflict scores indicated the teachers' sense of powerlessness in making decisions, or participating in decisions which directly affected the structure of the situation in which they performed the tasks for which they were hired and trained. Those teachers with high scores were judged unable to control those structures and processes which influenced their competence in carrying out the job for which they were trained. These decision-making structures were elements of bureaucratic systems with which the teachers had to contend in their attempts to gain control over their work environment. (Muth, 1973, p. 2).

The infringement conflict sub-scale contained annoyance factors typified by routine duties, paper work, and 'going through channels.' This part of the scale measured teachers' feelings that their jobs were controlled by someone or something other than themselves, by structures

that were beyond their immediate control. The two sub-scales, Policy Conflict and Infringement Conflict reflected those factors which testified to teachers' powerlessness in the school. (Muth, 1973, p. 3)

Muth hypothesized that power was related to conflict and consensus. Coercion, the more repressive form of power, was expected to relate positively to conflict, and influence was expected to relate positively to consensus. Authority was expected to relate positively with consensus but not strongly. Each of the predictions were verified. (Muth, 1973, p. 3)

Secondary hypotheses, that various traits of teachers would influence their perceptions of conflict and consensus, revealed a few statistically significant relationships. Young married women were more likely to see conflict than their older married colleagues. The most interesting relationship appeared between conflict and the age and teaching experience of the teacher. The older and more experienced a teacher, the less conflict he saw. This finding was generally compatible with Moeller's finding that teachers' sense-of-power increased with experience. Muth interpreted this phenomena as "adaptation" and contended that the longer a teacher remains in a school the more the teacher will adapt and thus perceive lesser

disparity between his conception of how things are and how they ought to be. (Muth, 1973, p. 3)

Relationships between power variables and conflict and consensus were found to be significant even when the effects of all the other variables were statistically removed. Muth concluded that teachers who perceived their principals as coercive would see conflict regardless of the tendency to adapt. (Muth, 1973, p. 3)

Summary of Studies

Seeman's study identified five meanings of alienation. One of these meanings, that of powerlessness, he found to be the most frequently used meaning in the sociological and socio-psychological literature. Seeman's belief that powerlessness could be measured served as the basis for the studies of Dean, Clark, and Pearlin. Dean's study found correlations among Seeman's meanings of alienation. Clark's study found that powerlessness was related to an individual member's satisfaction with, participation in, and knowledge of an organization. Pearlin's study found that powerlessness was related to personality variables such as obeisance, achievement, and feelings about specific work rewards -- pay, promotion, and chances of getting ahead.

Moeller's study defined powerlessness as lack of sense-

of-power and he conducted the first study in an educational setting. His cross-sectional study was concerned mainly with organizational and demographic variables. He reported that teacher sense-of-power was related positively to organizational variables, namely, the degree of bureaucratization in the school system, the grade level taught, positions of authority, administrative repressive authority, and corporate power. He also reported a positive relationship of teacher sense-of-power to the demographic variables of sex, social origin, and length of service.

Hopson, in a longitudinal study, verified Moeller's finding that teacher sense-of-power was positively-related to length of service; he also verified Moeller's finding regarding differences in sense-of-power with respect to years of experience.

Meyers' study, like Moeller's, was concerned with organizational and demographic variables and their relationship to teacher sense-of-power. Meyers' study, however, reported findings which contradicted Moeller's findings. He found that degree of bureaucratization in the system was not related to teacher sense-of-power. He found that only level of teacher training was positively-related, whereas positions of authority, age of the teacher, level of superintendent training, and prior tenure of the superintendent were negatively-related.

Muth's study, which investigated powerlessness in terms of the amount of conflict, reported that younger teachers experienced more conflict (powerlessness) than older, more experienced teachers. These findings were generally compatible with the findings of Moeller, Hopson, and Meyers. Muth also contended that the longer a teacher remained in a school, the less conflict or powerlessness he would experience.

Table V has been constructed to summarize the finding from education on teachers' sense-of-power.

TABLE V

Summary Table of Variables Found to Contribute Significantly to Teachers' Sense-of-Power

Moeller	Hopson	Meyers	Muth
High Bureaucracy +			Length of Service +
Length of Service +	Length of Service +		
Social Class Origin +			
Particularism +			
Repressive Authority +			
Corporate Groups +			
Positions of Authority +		Positions of Authority -	
Sex +			
Grade Level +			
		Teacher Training +	
		Age -	Age +
		Tenure of Superintendent -	
		Training of Superintendent -	
			Marital Status +

- negative relationship
+ positive relationship

Purpose of the Study

A review of the literature raised a number of issues concerning teachers' sense-of-power. The findings reported in the empirical studies were somewhat contradictory, and as a result the generalizability of these findings is questionable. Furthermore, except for Meyers' study there was no indication of the importance of the findings in predicting teachers' sense-of-power. This study, therefore, has several purposes.

The first purpose is to determine if the American studies concerning the relationship between teachers' sense-of-power, and variables such as age, experience, sex, grade level taught, level of training, number of years in a school, the number of years in a system, and the number of years as a student in the system could be examined in two Western Canadian urban school systems. If new studies supported the findings from previous research, there would be a better chance of arriving at appropriate generalizations.

The second purpose of this study is to determine whether the variable of 'number of years since taking the last college course' is statistically significant to teachers' sense-of-power. Teachers are urged by the school system to upgrade their certification in order to

stay abreast of current teaching methods and teaching concepts. The data was available to examine how the recency of taking college courses related to teachers' sense-of-power. This variable has not been examined in previous research.

The third purpose is to test the overall explanatory power of the regression model. The ten independent variables incorporated in this study are viewed as endogenous variables, while the variables not tested in this study are viewed as exogenous variables. If the endogenous variables explain a large proportion of variance in teachers' sense-of-power, then the model can be used as a tool for predicting teachers' sense-of-power. But if the endogenous variables explain very little in terms of teachers' sense-of-power, and the exogenous variables account for a large per cent of the explanatory power, then the model would be of little value as a predictive tool.

CHAPTER TWO

RESEARCH DESIGN AND METHODOLOGY

A Statement of the Problem

In part, the problem of this study was to test the six demographic variables found to be statistically significant in prior research, and to attempt to replicate these findings in two Western Canadian urban school systems. In addition, two independent variables related to experience which were tested in previous research and found to be statistically insignificant were also included. These two variables were number of years in the system and number of years as a student in the system. The nature of the data also made it possible to test another independent variable not tested previously: number of years since taking the last college course.

A linear regression model (Figure 3, page 53) was constructed in order to determine the explanatory power of each of the above mentioned variables of teachers' sense-of-power. To determine the relative importance of each of the independent variables, the data was subjected to SPSS N-WAY analysis of variance.

On the whole, the problem was to test the overall explanatory power of the regression model (Figure 3, page 53). If the endogenous variables (the ten independent variables included in this study) could explain a large proportion of variance in teachers' sense-of-power, then the model could be used as a tool for predicting teachers'

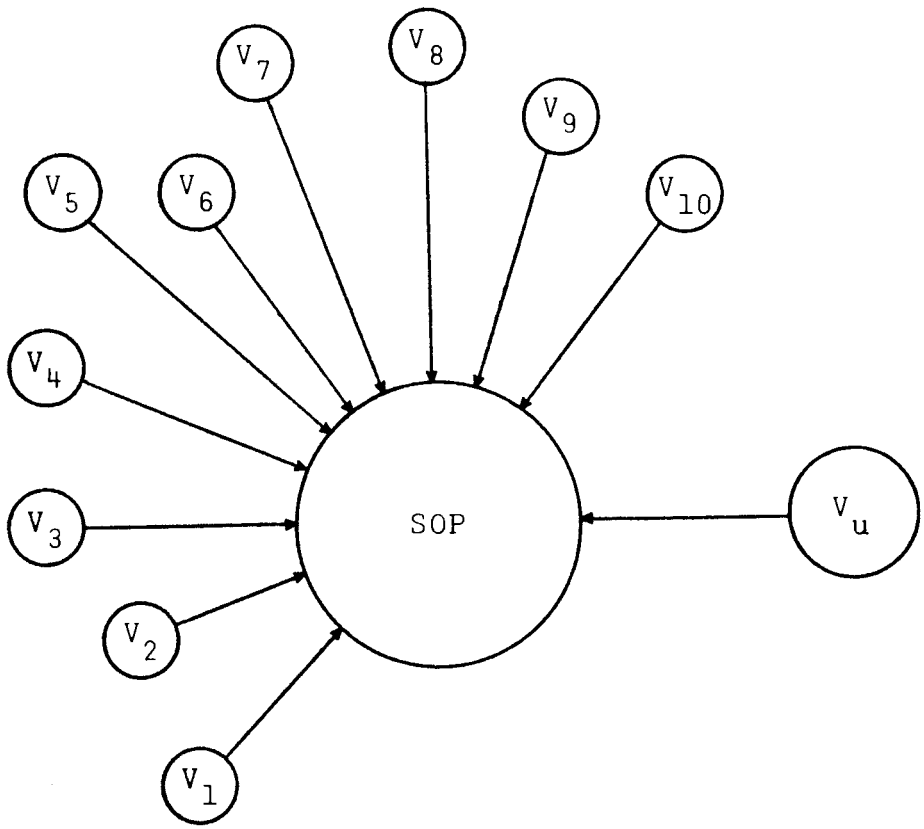
Figure 3. Linear regression model of teachers' sense-of-power.

ENDOGENOUS VARIABLES

V_1 - Age
V_2 - Experience
V_3 - Sex
V_4 - Grade Level Taught
V_5 - Level of Training
V_6 - Number of Years in a School
V_7 - System
V_8 - Number of Years in the System
V_9 - Number of Years Since Last Course
V_{10} - Number of Years as a Student in the System

V_u - Exogenous Variables

SOP - Sense of Power



sense-of-power. But if the endogenous variables explained very little in terms of teachers' sense-of-power, and if the exogenous variables accounted for a large percent of the explanatory power, then the model would be of little value as a predictive tool.

In order to avoid any confusion of terms, the independent variables included in the model are further defined as follows:

1) Age - the teacher's chronological age at the time of the study,
2) Experience - the total number of school years taught (10 months = 1 year) by the teacher,
3) Sex - biological definition,
4) Grade level taught - the major teaching assignment of the teacher in the public school, grade K-7 (Elementary) and grade 8-12 (Secondary),
5) Level of training - the formal years of university study and teacher training,
6) Number of years in a school - the total number of years taught by a teacher in the school at the time of the study,
7) System - teachers employed in Vancouver Public School System or teachers employed in System X,
8) Number of years in the system - the total number

of school years teacher was employed in the system at the time of the study,

9) Number of years since last course - the total number of years (12 months) since last taking a course at an accredited university,

10) Number of years as a student in the system - the total number of years that a teacher had been a student from K-12 in the system he was now employed in as a teacher.

Statement of Hypotheses

The first purpose of this study is to replicate the findings from previous research concerning the independent variables of age, experience, sex, grade level taught, level of training, number of years in a school, number of years in a system, and number of years as a student in a system. The eight null hypotheses were formed to test the variables.

Hypothesis #1 - The means of teachers' sense-of-power scores by age groups are equal.

$$H_{0_1} : \mu_{a_1} = \mu_{a_2} = \mu_{a_3} = \mu_{a_4}$$

The age groups are defined as follows:

a_1 teachers whose ages are from 20-29;
a_2 teachers whose ages are from 30-39;
a_3 teachers whose ages are from 40-49;

a_4 teachers whose ages are from 50-59;

Hypothesis #2 - The means of teachers' sense-of-power scores by years of experience categories are equal.

$$H_{O_2} ; \quad \mu_{e_1} = \mu_{e_2} = \mu_{e_3} = \mu_{e_4} = \mu_{e_5} = \mu_{e_6} = \mu_{e_7} = \mu_{e_8} = \mu_{e_9}$$

The categories of teachers by experience are defined as follows:

e_1 teachers with one year of experience,
e_2 teachers with two years of experience,
e_3 teachers with 3 - 5 years of experience,
e_4 teachers with 6 - 9 years of experience,
e_5 teachers with 10 - 14 years of experience,
e_6 teachers with 15 - 21 years of experience,
e_7 teachers with 22 - 34 years of experience,
e_8 teachers with 35 - 43 years of experience,
e_9 teachers with more than 43 years of experience.

Hypothesis #3 - The means of teachers' sense-of-power scores by sex are equal.

$$H_{O_3} : \quad \mu_{s_1} = \mu_{s_2}$$

The two groups are defined as follows:

s_1 representing male teachers and
s_2 representing female teachers.

Hypothesis #4 - The means of teachers' sense-of-power scores by level taught are equal.

$$H_{0_4} : \mu_{l_1} = \mu_{l_2}$$

The two groups are defined as follows:

l_1 representing elementary teachers and
l_2 representing secondary teachers.

Hypothesis #5 - The means of teachers' sense-of-power scores by level of training are equal.

$$H_{0_5} : \mu_{t_1} = \mu_{t_2} = \mu_{t_3}$$

The level of training categories are defined as follows:

t_1 representing teachers with a four year bachelor's degree or less,
t_2 representing teachers with more than a four year bachelor's degree but less than a master's degree, and
t_3 representing teachers with a master's degree or more training.

Hypothesis #6 - The means of teachers' sense-of-power scores by categories of number of years taught in the school are equal.

$$H_{0_6} : \mu_{y_1} = \mu_{y_2} = \mu_{y_3} = \mu_{y_4} = \mu_{y_5} =$$

$$\mu_{y_6} = \mu_{y_7} = \mu_{y_8} = \mu_{y_9}$$

The number of years taught in a school categories are defined as follows:

y_1 representing 1 year,
y_2 representing 2 years,
y_3 representing 3 - 5 years,
y_4 representing 6 - 9 years,
y_5 representing 10 - 14 years,
y_6 representing 15 - 21 years,
y_7 representing 22 - 34 years,
y_8 representing 35 - 43 years,
y_9 representing more than 43 years.

Hypothesis #7 - The means of teachers' sense-of-power scores by categories of the number of years as a student in the system are equal.

$$H_{O_7} : \mu_{y_1} = \mu_{y_2} = \mu_{y_3} = \mu_{y_4} = \mu_{y_5} = \mu_{y_6} = \mu_{y_7}$$

The number of years as a student in the system are categorized as follows:

y_1 representing 1 year,
y_2 representing 2 - 3 years,
y_3 representing 4 - 5 years,
y_4 representing 6 - 7 years,
y_5 representing 8 - 9 years,

y_6 representing 10 - 11 years,
y_7 representing 12 years or more.

Hypothesis #8 - The means of teachers' sense-of-power scores by the number of years taught in the system are equal.

$$H_{O_8}: \mu_{y_1} = \mu_{y_2} = \mu_{y_3} = \mu_{y_4} = \mu_{y_5} = \mu_{y_6} = \mu_{y_7} = \mu_{y_8} = \mu_{y_9}$$

The number of years taught in the system categories are defined as follows:

y_1 representing 1 year,
y_2 representing 2 years,
y_3 representing 3 - 5 years,
y_4 representing 6 - 9 years,
y_5 representing 10 - 14 years,
y_6 representing 15 - 21 years,
y_7 representing 22 - 34 years,
y_8 representing 35 - 43 years,
y_9 representing more than 43 years.

If the null hypotheses 1 - 6 are rejected, then the findings on these six independent variables as reported by the prior empirical studies will be supported. However, if any of the first six null hypotheses are to be retained, then this study of teachers' sense-of-power for these two school systems in Western Canada will not support

the findings from previous empirical research in the United States. A confidence level of $p \leq .05$ was established for the rejection of the null hypothesis.

If either or both null hypotheses #7 and #8 are rejected, then the findings on these two variables will not support the findings from previous empirical research in the United States. If null hypotheses #7 and #8 are retained, they will substantiate the United States empirical studies. A confidence level of $p \leq .05$ was also selected for the rejection of these two variables.

The second purpose of this study is to test the effects of an independent variable not tested in previous research. The variable is the number of years since taking a college course, and the following null hypothesis is to be tested.

Hypothesis #9 - The means of teachers' sense-of-power scores by the number of years since taking a college course are equal.

$$H_{O_9} : \mu_{c_1} = \mu_{c_2} = \mu_{c_3} = \mu_{c_4}$$

The number of years since taking the last college course categories are as follows:

c_1 representing teachers having taken courses within the last year,
c_2 representing teachers having taken courses within the last 3 years,

c_3 representing teachers having taken courses within the last 6 years,
c_4 representing teachers having taken courses more than 6 years ago.

In order to test the generalizability of the findings of this study it became necessary to check if there were significant differences between the two systems incorporated in this study. The following hypothesis was formed to test if any significant differences existed.

Hypothesis #10 - The means of teachers' sense-of-power scores by system are equal.

$$H_{O_{10}} : \mu_{s_1} = \mu_{s_2}$$

The two systems are defined as follows:

s_1 representing the Vancouver System,
s_2 representing the System X.

If the null hypothesis, #9, is rejected then the variable of interest in the hypothesis rejected will be interpreted as having a significant relation to teachers' sense-of-power scores. However, if the null hypothesis is retained then the variable will be interpreted as having no significant relation. Similarly, Hypothesis #10 will be interpreted as significantly or insignificantly related to teacher sense-of-power.

In order to reject either of the two hypotheses (the number of years since taking a last college course and

TABLE VI

Independent Variables Included in the Model

From Prior Research	Additional Variables
1. Age	1. System
2. Experience	2. Years Since Last College Course
3. Sex	
4. Grade Level Taught	
5. Level of Training	
6. Years in a School*	
7. Years in a System*	
8. Years as a Student in the System**	

* Muth's study reported years in a school related to reduced conflict.

** Meyers' study found these two variables insignificant. Variable #8 had been classified as graduate of the system by Meyers.

system), the sub-populations should vary at a significance $p \leq .05$.

The third purpose of this study is to test the overall explanatory power of the ten independent variables as a single group. In order to test the overall importance of the ten independent variables the following hypothesis was generated:

Hypothesis #11 - The ten independent (endogenous) variables account for at least 10 percent of the variance of teachers' sense-of-power scores.

In order to reject the above hypothesis, the ten independent variables should contribute less than 10 percent of the total variance of the teachers' sense-of-power scores. If the hypothesis is rejected, the model will be considered to have little explanatory or predictive value.

Source of Data

Teacher sense-of-power data to test the implications of the model were readily available. The data were originally gathered for the Flexibility Study undertaken by Erickson, Hills, and Robinson in 1969, a study conducted in two urban public school systems in Western Canada. One of these systems was the Vancouver Public

System located in the city of Vancouver, British Columbia. The other system, System X, was located in City A (System X and City A must remain unidentified due to a guarantee made at the time of the Flexibility Study.)

The Vancouver System and System X are located in cities having approximately similar populations of 500,000. However, Vancouver and its environs have a total population of 1,000,000 whereas City A has a metro population of 500,000.

In 1969, at the time of the Flexibility Study, the Vancouver System had 112 schools (when annexes were counted separately): 94 elementary, and 18 secondary; System X had 150 schools: 117 elementary and 33 secondary. The Vancouver System staff numbered 2,977 teachers, while System X numbered 3,616 teachers.

A total of 6612 teacher questionnaires were sent out to the two systems. The returned questionnaires numbered 5151 or 83.6% of the total. The Vancouver System had 2698 questionnaires returned out of 2996 (90% returned). System X had 2453 questionnaires returned out of 3616 (68% returned).

Prior Analysis, Scale, and Scaling

The Flexibility Study Teacher Questionnaire had included the items from the sense-of-power instrument

originally developed by Moeller. The items are shown in Table VII.

The teachers were asked to respond to each question by checking one of the responses on the five-point Likert scale. The responses ranged from 'strongly agree', 'tend to agree,' 'maybe and maybe not,' to 'tend to disagree,' and 'strongly disagree.' Responses were weighted on a Likert scale from 1 to 5. Items a and e had the procedure reversed and were weighted from 5 to 1. Teachers with high sense-of-power were expected to agree with items, a and e, and to disagree with the remainder. As a result of the scoring procedure, higher sense-of-power scores are indicative of a higher sense-of-power.

Factor Loading

The Flexibility Study subjected the teachers' sense-of-power scale to a factor analysis. They reported:

> The major difficulty with scales of this type is that the items do not always "reinforce" each other in the manner that the researcher anticipates. There is a notable tendency for respondents to read meanings into things that were not intended. When this happens, the various items in a scale sometimes measure such different phenomena as to ruin the scale as a useful measure. Several techniques have been developed for dealing with the problem. For a number of reasons, including the necessity of obtaining computer output as quickly as possible, we selected the option of subjecting every scale not well analyzed in previous research to a principal components factor analysis and verifying individual scores on each item by their loadings on the unrotated factor accounting for the greatest

TABLE VII

The Sense-of-Power Scale Items and Factor Score Coefficients

In the school system where I work, a teacher like myself...

(-.34) a. Believes he has some control over what textbooks will be used in the classroom.

(+.52) b. Feels he does not know what is going on in the upper level of administration.

(+.62) c. Never has a chance to work on school committees which make important decisions for the school system.

(+.58) d. Considers that he has little to say over what teachers will work with him on his job.

(-.47) e. Usually can find ways to get system-wide policies changed if he feels strongly enough about them.

(+.41) f. Feels he has little to say about important system-wide policies relating to teaching.

from Flexibility Study (Erickson et al., 1969, p. 2-10)

proportion of the variance...."
(Erickson, et al., 1969, p. 2-10)

The factor score coefficients on the first principal factors are shown in Table VII, p. 66. The individual Likert scores for each of the items were multiplied by their factor score coefficients and then summed to produce a scaled score for each subject.

Reliability of the Sense-of-Power Instrument

Moeller, in developing the sense-of-power scale, had initially subjected the items to a Guttman scale analysis. (See p. 16) He conducted a second scale analysis using the teachers' responses in the main study. He found the items scaled in the same order as in the Guttman scaling. The Flexibility Study (see p. 65) had subjected this scale, which was not well-analyzed in previous research, to a principal components factor analysis. Individual scores were weighted on each item by their factor score coefficients on the unrotated factor that accounted for the greatest proportion of the variance in order to produce a more unidimensional scaled score. (Erickson et al., 1969, p. 2-10)

For the purpose of the present study a test of scale reliability using Cronbach's Alpha Test of the internal consistency was applied to the unweighted item scores from

TABLE VIII

Item Analysis of Teachers' Sense-of-Power Based on Flexibility Study Data

(Items 1 and 5 reversed) No weighting.

Scale Mean 19.2579

S. D. 10.5755

Cronbach's Alpha .9110

Item	Mean	S. D.	Item/Scale Correlation Coefficient
1.	3.58	1.988	.7707
2.	2.82	2.096	.8670
3.	3.68	2.065	.8501
4.	3.11	2.261	.8496
5.	3.06	2.132	.8221
6.	3.02	2.161	.8314

the population of System Vancouver and System X. Items 1 and 5 were reversed and no weighting was used. The internal consistency of the scale (Cronbach's Alpha) was .9110, an acceptable value for the purposes of this study.

Frequency Distributions

The frequency distribution of teachers' sense-of-power scores was calculated. Based on a five point Likert Scale for six items the maximum possible score was 30 and if every item had been answered the minimum score possible was 6. Scores ranged from a low of 4 to a high of 30.

The frequency distribution is shown on the following page. The histogram (Figure 4, p. 70) reveals that the distribution is not normal, and that considerable variance is evident. However, according to Cohen (Cohen, 1975, p. 51), even though the distribution is not normal, the data are still useful because relaxation of normal distribution does not impede the power of the ANOVA procedure. On this basis, this study is prepared to use the data.

Frequency distribution was also checked for responses to each item of the sense-of-power scale. The analysis of responses is shown on a following page. (Table X, p. 72)

Analysis of responses reveals wide variations.

Figure 4:
Histogram: Frequency Distribution of Teachers' Sense-of-Power Scores.

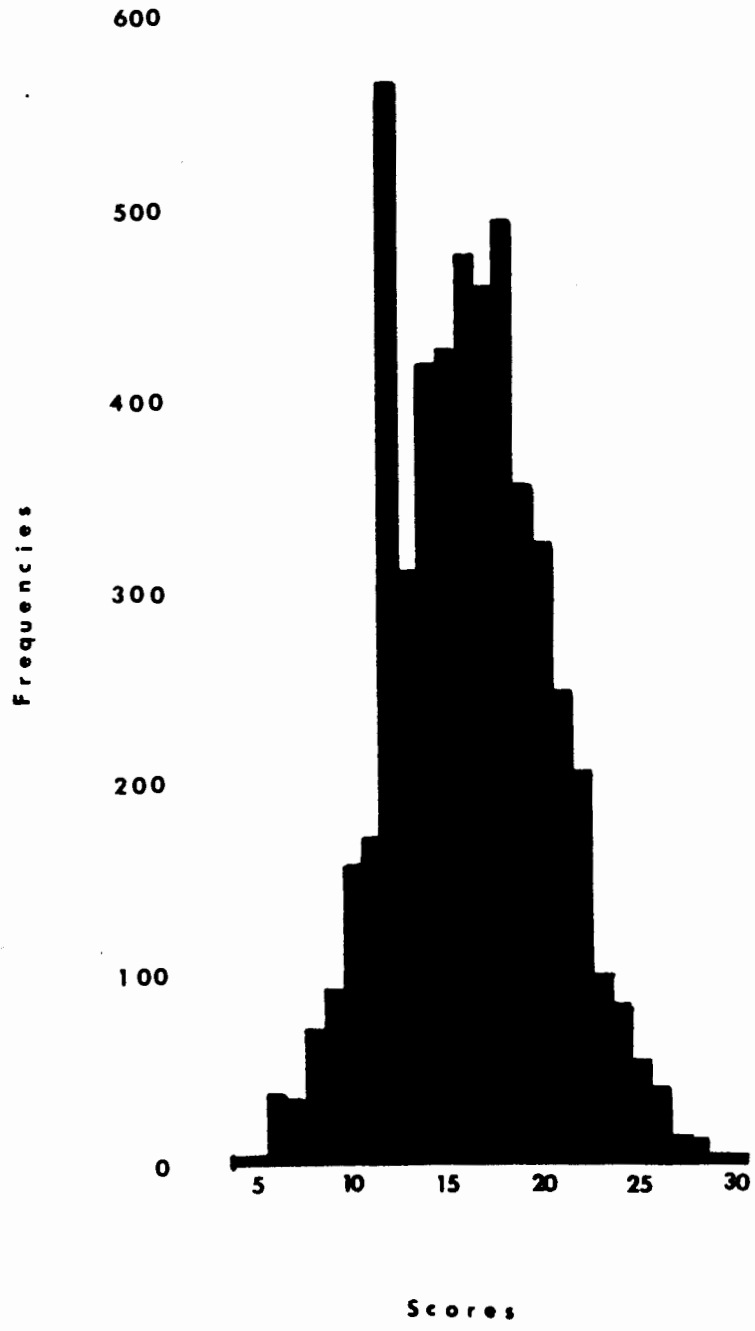


TABLE IX

Frequency Distribution of Teacher Sense-of-Power Scores
(Flexibility Study Data)

Score	Absolute Freq.	% Relative Freq.	% Cumulative Freq.
4	3	0.1	0.1
5	3	0.1	0.1
6	37	0.7	0.8
7	33	0.6	1.5
8	71	1.4	2.9
9	92	1.8	4.6
10	157	3.0	7.7
11	172	3.3	11.0
12	564	10.9	22.0
13	310	6.0	28.0
14	418	8.1	36.1
15	426	8.3	44.4
16	475	9.2	53.6
17	458	8.9	62.5
18	492	9.5	72.0
19	356	6.9	78.9
20	323	6.3	85.2
21	248	4.8	90.0
22	205	4.0	94.0
23	99	1.9	95.9
24	84	1.6	97.5
25	54	1.0	98.6
26	40	0.8	99.4
27	13	0.3	99.6
28	12	0.2	99.8
29	4	0.1	99.9
30	4	0.1	100.0
Total	5153	100.0	

TABLE X

Percentage Distribution of Responses to Items on the Sense-of-Power Scales (Flexibility Study Data)

	Code	Adjusted Frequency %
Item 1	1	9.8
	2	41.0
	3	14.0
	4	23.5
	5	11.7
Item 2	1	18.1
	2	44.7
	3	17.3
	4	17.2
	5	2.7
Item 3	1	6.9
	2	16.6
	3	24.8
	4	41.7
	5	10.1
Item 4	1	15.5
	2	33.3
	3	23.9
	4	23.2
	5	4.2
Item 5	1	2.4
	2	13.8
	3	31.3
	4	35.1
	5	17.5
Item 6	1	17.2
	2	36.8
	3	20.3
	4	19.2
	5	6.5

Similarly the independent variables revealed a great deal of variability. A summary table of the independent variables by variable is shown on page 74 Table XI.

TABLE XI

Frequency Distribution of Independent Variables

Level of Training	N
1. Less than Bachelor's Degree	1948
2. Bachelor's to less than Master's	2820
3. Master's Degree and above	318
Total	5086
Years Since Last Course	
1. Within the last year	1903
2. Less than 3 years ago	1341
3. Less than 6 years ago	967
4. Six years or more ago	888
Total	5099
System	
1. Vancouver System	2698
2. System X	2453
Total	5151
Level Taught	
1. Primary	1389
2. Intermediate	1385
3. Jr. Secondary	942
4. Sr. Secondary	1250
Total	4966
Sex	
1. Male	1864
2. Female	3259
Total	5123

TABLE XI (continued

Age	N
1. 20-29 years	2172
2. 30-39 years	1116
3. 40-49 years	840
4. 50 and over years	973
Total	5101

Experience	
1. 1 year	480
2. 2 years	386
3. 3-5 years	1153
4. 6-9 years	983
5. 10-14 years	766
6. 15-21 years	651
7. 22-34 years	532
8. 35-43 years	158
9. More than 43 years	18
Total	5127

Years in the System	
1. 1 year	798
2. 2 years	658
3. 3-5 years	1361
4. 6-9 years	852
5. 10-14 years	710
6. 15-21 years	437
7. 22-34 years	245
8. 35-43 years	62
9. More than 43 years	6
Total	5129

TABLE XI (continued)

Years in School	N
1. 1 year	1550
2. 2 years	1006
3. 3-5 years	1420
4. 6-9 years	603
5. 10-14 years	319
6. 15-21 years	155
7. 22-34 years	45
8. 35-43 years	14
9. 43 and more years	9
Total	5121
Years as a Student in System	
1. 1 year	115
2. 2-3 years	145
3. 4-5 years	120
4. 6-7 years	120
5. 8-9 years	113
6. 10-11 years	215
7. 12 years or more	1071
8. Zero years	3251
Total	5150

Method of Analysis

The data were subjected to a SPSS N-WAY Analysis of Variance, a standard analytical program in the Simon Fraser University academic computing centre. Except for Meyers' study, the previous empirical research using this scale had used only univariate one-way analysis. The former procedure was not sufficient, as it lacked the capacity to report on the extent of the explanatory effectiveness of teachers' sense-of-power, and, consequently, the importance of independent variables as predictors. For the purposes of this study, the more powerful (robust) multivariate analysis of variance was selected and applied.

The independent variables were grouped as covariates (ordinal level of measurement), made up of age, experience, years in the system, years in the school and the number of years as a student in the system; and as main effects (nominal level of measurement), made up of system, grade level, academic background, number of years since taking the last college course, and sex.

The multiple interaction effects of the independent variables were controlled in this way. The SPSS N-WAY ANOVA also yielded a Multiple Classification Analysis to determine the explanatory power of the variables in this study.

CHAPTER THREE

RESULTS OF ANALYTICAL PROCEDURE

Analysis of Covariates and Main Effects

In the analysis for this study, those variables which were a function of time -- age, experience, number of years in the system, number of years in the school, and the number of years spent in the system as a student -- were tested as though they were ordinal data points, and the analysis used analysis of covariance. The other variables -- system, grade level taught, academic background, number of years since the last college course, and sex -- were considered as categorical variables called factors (i.e. not interval but nominal data points). The program treated each of the categories of each nominal variable as a separate dichotomous variable. The analysis used for these other factors was analysis of variance.

Table XII shows, that in toto the covariates, all variables related in some way to age, are related to teachers' sense-of-power in a statistically significant way, $p \leq .001$. This finding to some degree supports previous findings that there is a statistically significant relationship between variables that are a function of time and teachers' sense-of-power (Moeller 1964, Hopson 1966, Meyer 1972, Muth 1973). However, the other factors in toto are not significantly related, because the amount of variance explained did not meet the level of significance required $p \leq .05$.

Further analysis of each of the covariates yielded

TABLE XII

Sources of Variation in Teachers' Sense-of-Power, Covariates and Factors

Source of Variation	Sum of Squares	DF	Mean Sq.	F
Covariates	112.58	5	22.52	5.020*
Factors	44.86	8	5.61	1.250

* significant at $p \leq .001$

TABLE XIII

Mean Sense-of-Power Scores and Standard Deviations by Variable

	Mean	S.D.
Mean Sense of Power Score of Total Population	2.9686	2.1501
Level of Training		
1) Less than Bachelors	2.964	2.115
2) Bachelors to less than Master's	2.994	2.136
3) Master's Degree and above	2.904	2.408
Years Since Last Course		
1) Within the last year	2.894	2.125
2) Less than 3 years ago	3.034	2.132
3) Less than 6 years ago	2.956	2.114
4) Six years or more ago	3.102	2.239
System		
1) Vancouver System	3.176	2.120
2) System X	2.739	2.160
Level Taught		
1) Primary	2.967	2.095
2) Intermediate	2.997	2.199
3) Jr. Secondary	3.402	2.733
4) Sr. Secondary	2.753	1.932
Sex		
1) Male	3.007	2.176
2) Female	2.955	2.129
Age		
1) 20-29 years	2.082	1.988
2) 30-39 years	3.101	2.195
3) 40-49 years	3.023	2.231
4) 50 and over years	3.169	2.340
Experience		
1) 1 year	2.935	1.974
2) 2 years	2.893	1.961
3) 3-5 years	2.696	1.998
4) 6-9 years	2.880	2.122
5) 10-14 years	3.197	2.239
6) 15-21 years	3.090	2.279

TABLE XIII (continued)

	Mean	S.D.
7) 22-34 years	3.224	2.330
8) 35-43 years	3.287	2.286
9) More than 43 years	3.472	2.271
Years in System		
1) 1 year	2.758	1.963
2) 2 years	2.830	2.031
3) 3-5 years	2.813	2.086
4) 6-9 years	3.140	2.220
5) 10-14 years	3.181	2.215
6) 15-21 years	3.198	2.317
7) 22-34 years	3.322	2.344
8) 35-43 years	3.114	2.349
9) More than 43 years	3.808	2.164
Years in School		
1) 1 year	2.778	2.068
2) 2 years	3.038	2.110
3) 3-5 years	2.918	2.176
4) 6-9 years	3.210	2.213
5) 10-14 years	3.267	2.157
6) 15-21 years	3.371	2.382
7) 22-34 years	3.209	2.209
8) 35-43 years	3.703	2.231
9) More than 43 years	3.382	1.177
Years as Student		
1) 1 year	3.116	2.251
2) 2-3 years	3.092	2.119
3) 4-5 years	2.917	2.248
4) 6-7 years	2.898	2.267
5) 8-9 years	2.841	2.284
6) 10-11 years	2.897	2.055
7) 12 years	3.116	2.091
8) Zero years	2.923	2.160

TABLE XIV

Pearson R Correlation Matrix of Independent Variables

	System	Level	Academic	Last Course	Sex	Age	Experience	Years in System	Years in School	Years as Student
System	1.000									
Level	-0.051	1.000								
Academic	-0.083	0.352	1.000							
Last Course	-0.104	0.027	0.008	1.000						
Sex	0.032	-0.300	-0.379	0.058	1.000					
Age	-0.140	0.044	0.010	0.438	0.003	1.000				
Experience	-0.167	0.032	0.051	0.499	0.003	0.771	1.000			
Years in System	-0.215	0.065	0.089	0.446	-0.057	0.688	0.837	1.000		
Years in School	-0.225	0.095	0.023	0.368	-0.040	0.509	0.571	0.658	1.000	
Years as Student	-0.246	0.045	0.072	0.012	-0.049	-0.028	-0.027	0.125	0.089	1.000

the following results shown in Table XV.

This analysis indicates that years in the system contribute significantly to the covariates in toto. This finding supports to some degree the findings of Moeller, Hopson, and Muth that experience (related to years in the system) contributes to teachers' sense-of-power.

The above analysis leads to the rejection of Hypothesis #8 dealing with the number of years in the system, and leads to the retention of Hypotheses #1, #2, #6, and #7.

Analysis of each of the other main effects factors was also performed. The result of this analysis is shown in Table XVI.

The main effects in toto were not statistically significant with respect to teachers' sense-of-power. This analysis has shown, however, that there are significant differences between teachers' sense-of-power in the two systems.

The above analysis leads to the rejection of Hypothesis #10, dealing with system, and retains Hypotheses #3, #4, #5, and #9.

Analysis of Interactive Effects

Previous research had also suggested that the interaction of a number of variables could contribute to

TABLE XV

Sources of Variation in Teachers Sense-of-Power - Covariates

Sources of Variation	Sum of Squares	DF	Mean Sq.	F
Covariates total	112.58	5	22.52	5.020**
Age	7.85	1	7.86	0.182
Experience	0.92	1	0.92	0.204
Years in System	18.52	1	18.52	4.128*
Years as Student	0.17	1	0.17	0.038
Years in School	3.61	1	3.61	0.806

* significant at $p \leq 0.1$
** signigicant at $p \leq 0.001$

TABLE XVI

Sources of Variation in Teachers' Sense-of-Power - Main Effects

Source of Variation	Sum of Squares	DF	Mean Sq.	F
Main Effects	44.86	5	5.61	1.250
System	27.19	1	27.19	6.063*
Level	2.04	1	2.04	0.454
Academic	1.60	2	0.80	0.178
Last Course	0.41	3	0.14	0.031
Sex	0.19	1	0.19	0.041

*significant at $p \leq .1$

higher teachers' sense-of-power scores (Moeller, 1964, p. 155). The effects of the interactions among the independent variables were calculated and are summarized in Table XV.

The above analysis shows that interactions among the independent variables are not statistically significant in contributing to teachers' sense-of-power scores. The lack of significant interactive effects among the independent variables suggest that sense-of-power could well be a linear phenomenon.

Final Analysis, Calculation of Multiple R^2

The final analysis of the data was the calculation of the multiple correlation statistic R and multiple R^2. The result of the final analysis is shown in Table XVIII.

This analysis indicates that even though two of the ten independent variables are statistically significant, they are relatively unimportant in explaining the sources of teachers' sense-of-power. The multiple R^2 of .007 indicates that the variables under investigation explained only 0.7% of the variance in teachers' sense-of-power. The findings that few significant relationships existed between teachers' sense-of-power and the independent variables included in the model, and that all the variables under investigation explained less than 1% of the variance in

TABLE XVII

Table of Interactive Effects Among Independent Variables

Interactions	Sum of Squares	DF	Mean Sq.	F
2-way Interactions	132.27	24	5.51	1.229
3-way Interactions	97.88	34	2.88	0.642
4-way Interactions	79.98	22	3.64	0.811
5-way Interactions	13.32	3	4.44	0.999

TABLE XVIII

Source of Variation in Teachers' Sense-of-Power - Explained, Residual, Total

Source of Variation	Sum of Squares	DF	Mean Sq.	F
Explained	750.801	96	7.821	1.744*
Residual	21147.777	4715	4.485	
Total	21891.578	4811	4.552	
Mult R	.085			
Multiple R^2	.007			
Unexplained Variance $(1-R^2)$	.993			

* significant at $p \leq .001$

teachers' sense-of-power precluded further analysis of the hypothesized model. Prediction of teacher sense-of-power using linear regression techniques based upon the independent variables included here would have been misleading. The importance of the exogenous variables (the unnamed and unmeasured variables) for the prediction of teachers' sense-of-power was shown in the exceptionally large percentage, 99.3%, of the total variance.

The above analysis also strongly rejects Hypothesis #11.

Summary of Results

Research Hypotheses #8 and #10 were rejected, showing some support for the findings of the previous studies. Yet when the importance of these two variables (number of years in the system and system) were tested, they were found to be unimportant in terms of the level of explanatory power established for Hypothesis #11 (that all the independent variables would account for at least 10% of the variance). The fact that all ten of the independent variables included in this study accounted for less than 1% of the variance in the teachers' sense-of-power scores was unexpected.

Meyers' study, using a multiple regression analysis and the school system as the unit of analysis, reported a much higher Multiple R^2 (equal to 58.6% of the explained

variance). Meyers used variables of bureaucratic structure, not used in this analysis. In his study the demographic variables of teacher training and age of the teacher apparently accounted for over 20% of the variance. Because the unit of analysis in Meyers' study was the school system and in this study the individual teacher, the variance due to systematic differences in teacher characteristics in these systems might account for the lack of explanatory power in the present model.

Limitations of the Study

This study has several important limitations. First, the scale procedure (based on factor analysis) is not the same as that used by Moeller and Hopson, who used a procedure based on Guttman scaling of the items included. (The Guttman procedure used by Moeller has already been described on pages 16 and 67 of this study and the factor score weighting used in this study is described on page 65) Due to use of a different procedure in this study, the findings are not precisely comparable.

A second important limitation is that the Flexibility data for sense-of-power scores are cross-sectional data. Any findings that suggest changes in the sense-of-power scores of teachers relative to the age or experience of the teacher cannot be interpreted as changes in sense-of-power over time, because the data are not longitudinal.

A third limitation of this study is that data for repressive authority, social class origin, positions of authority, particularism, and corporate groups (variables which Moeller has examined) were not available in the Flexibility Study. Data on independent variables of level of superintendent training, and prior tenure of the superintendent, examined by Meyers, were also unavailable.

A fourth limitation is that only 83.6% of the questionnaires on the sense-of-power of teachers were usable in this study. The possibility remains that the 16.4% of questionnaires not returned could have affected the findings of this study. There was no possibility of establishing the non-response bias.

A fifth limitation is that the categories of variables used in this study were not identical to those groupings used in previous research. For example, the variables of age, experience, level of training, and number of years in a school were not grouped in a manner identical to that used by Moeller in establishing and identifying sub-populations.

CHAPTER FOUR

CONCLUSIONS AND IMPLICATIONS

Conclusions if the Scale is Valid

The major finding of this study is that there is little explanatory power in the model of teachers' sense-of-power for teachers in the two Western Canadian urban school systems. The Analysis of Covariance did substantiate experience-related variables and further was able to show that statistically significant differences in teachers' sense-of-power existed among teachers in the two systems.

The findings of statistical significance for only two demographic variables combined with the lack of explanatory power of the model, illustrate the very real dangers of simplistic univariate analysis in complex social settings. Findings which show a lack of explanatory power in linear regression models must be scrutinized with care. There are at least five possible explanations for the lack of explanatory power of the model.

One possibility is that an insufficient number of independent variables were included in this study, and hence in the model. The original model incorporated six variables which were found statistically significant in previous studies. Two were added, which were statistically insignificant in prior research, and two more which were derived not from theory but from Flexibility Study data and which were thought to be important in the population

under consideration. There is a distinct possibility that the inclusion of more variables would confuse the statistical analysis. Inclusion of variables just to obtain a large number seems illogical as most of the variables chosen had been shown to be significant variables. The possibility that an insufficient number of variables were included should be rejected.

A second possibility, is that the independent variables included in this study are largely irrelevant. This becomes a more acceptable possibility in view of the large statistic, $1 - R^2$ (unexplained variance) which is equal to 99.3% of the total variance. Some of the variables found to be relevant in the previous studies, such as; high and low levels of bureaucracy, positions of authority, administrative repressive authority, corporate power, social origin, level of superintendent training, and prior tenure of the superintendent, were variables for which data measures were not available for this study. Inclusion of these other variables may have reduced the unexplained variance, although Meyers' study suggested that bureaucracy, positions of authority, corporate power, and social origin were unimportant. Nevertheless, the large unexplained variance makes it probable that irrelevant variables were included in this study.

A third possibility is that considerable multi-

collinearity exists among the ten variables tested. In this study, multiple correlation analysis was applied. An N-WAY ANOVA procedure was chosen which would, in part, control multi-collinearity. For example, when the effects of any or all time related variables (age, experience, years in the system, and years in the school) were analyzed, their overall effect was found to be unimportant in explanatory power. Secondly, none of the variables were shown to be important, therefore, it is highly unlikely that any of the variables would act strongly to suppress the effects of other variables included in the model. The use of multiple correlation analysis reduced the effects of multi-collinearity, and the chance of spurious results; therefore, the possibility that considerable multi-collinearity exists should be discounted.

A fourth possiblity for the lack of explanatory power in the model is that there were substantial errors in the measurement of the independent and or dependent variables. Because standard error of measurement is a function of sample size, we can minimize the likelihood of this possibility due to the large size of the populations analyzed in this study (N = 5153).

A fifth possibility for the lack of explanatory power is that of the variables having little variability.

The dependent variable, teachers' sense of power, was checked for frequency distribution. (See Histogram, Figure 4, p. 70 and Table IX, p. 71). The dependent variable showed considerable variance, but abnormal distribution. The large number of subjects however helped to offset the need for normal distribution which is one of the assumptions of linear regression. (Cohen & Cohen, 1975, p. 51) Teacher responses to each item of the sense of power scale were also analyzed. Again analysis showed considerable variance. (See Table X, p. 72) All the independent variables were checked similarly and showed sufficient variance. (See Table XI, p. 74). Such evidence would lead to the rejection of this possibility.

Having considered the most common reasons for the lack of explanatory power it is apparent that four of the possibilities would have to be minimized or rejected. The strongest possibility, or most promising explanation for the lack of explanatory power is that irrelevant variables were included in this study and in the model. One can therefore conclude that if these are irrelevant variables, we know very little about the determinants of powerlessness felt by teachers in their work environments.

Conclusions if the Scale is Invalid

The major finding, that there was very little explanatory power in the model in terms of teachers' sense-of-power raises questions about the adequacy of Moeller's Teacher Sense-of-Power Scale to measure the construct of teachers' sense-of-power or powerlessness. To judge the adequacy of the instrument, two points have to be considered: the reliability and the validity of the instrument. Rigorous tests of validity and reliability are not reported in prior research. The data from the present study was subjected to item analysis and an adequate level of internal consistency was found. The instrument was therefore considered to have some reliability. However, the instrument's reliability over time (test - retest - reliability) has not been determined in this study or in any of the prior studies.

A common belief is that the more reliable a scale -- the more valid it is. This belief is questioned by Guildford:

> When we seek to make a single test both highly reliable (internally) and also highly valid, we are often working at cross purposes. The two goals are incompatible in some respects. In aiming for one goal, we may defeat efforts towards the other. (Guildford, 1973, p. 434)

With respect then to the question of validity, three aspects have to be considered: one, the face validity,

two, the construct validity, and three, the predictive validity. Face validity raises the question of whether or not the scale measures what it purports to measure. In terms of this study, the face validity of the instrument in Western Canada has to be questioned. The first item in Moeller's scale, "Believes he has some control over what textbooks will be used in the classroom" would likely have to be answered in the negative by all respondents within the Vancouver school system. During the time period in question (1969) all school textbooks to be used in the schools of British Columbia were issued centrally by the Department of Education. There was very little opportunity for schools or individual teachers to choose texts. For example, in intermediate grades the basal readers to be used were prescribed and it was (with few exceptions) mandatory that every reading teacher of intermediate students use prescribed texts. Similarly, provincially approved and selected texts were issued in all subjects. The fourth item, "Considers that he has little say about what teachers will work with him on his job," would also likely be answered in the negative by all teachers in Vancouver. Teachers were hired by the central office and then placed in a school. These two items in the scale would appear to invalidate the data gathered by the instrument.

Meyers in his study, also questions the validity of Moeller's scale. He questions, "Does Moeller's Sense-of-Power Scale actually measure the teachers' belief in their ability to influence these significant courses of events in the school system?" (Meyers, 1971, p. 158) He surmised that the six items in the scale might well reflect an attitude of teachers to administrators. He went on to say, "Little in the data analysis results can be brought to bear on the question of the scale's validity as a measure of sense-of-power. However, the possibility that the scale is not an adequate measure of that concept cannot be overlooked." (Meyers, 1971, p. 158-159)

The second aspect of validity, that of construct validity must also be questioned. At the time of this study there is no evidence that other scales have been developed to measure teachers' sense-of-power. According to Guildford :

> Over the years there has been an increasing call for evidence that an instrument purported to measure trait X really measures it. The most common approach has been to see that different instruments that are supposed to measure the same trait intercorrelate highly with one another. But even after demonstrating high correlations, there are remaining doubts as to the nature of the variable that instruments measure in common. And the high intercorrelations may well indicate that there is not just one trait variable in common but several. (Guildford, 1973, p. 425)

Similarly, predictive validity has not been determined in either prior research or the present study. For instance, teachers who exhibited traits representative of high or low teacher sense-of-power have not yet been subjected to tests in respect to scores on Moeller's Scale. Lacking these basic tests of reliability and validity the adequacy of the instrument to measure powerlessness has not been established.

Implications if Scale is Valid

If Moeller's Teacher Sense-of-Power Scale is accepted as a valid scale then a number of implications can be drawn from the findings of this study.

The first conclusion is that this study used ten independent variables which are irrelevant to teachers' sense-of-power. The study by Meyers suggested that bureaucratic variables did not contribute to teachers' sense-of-power. The variables used in this study could be classified as personal characteristics. If neither bureaucratic or personal variables are important then the sources of sense-of-power must lie in other areas. The studies completed in a non-educational setting tend to suggest that personality variables might be the source of sense-of-power. Pearlin's study, for example, found that a strong relationship existed between powerlessness and personality variables

like obeisance, achievement, and work rewards (pay, promotion, and chances of getting ahead). Pearlin's study, however, was not designed to determine the explanatory power of those variables. Studies by Frederick Herzberg in the field of job satisfaction and motivation, found that factors such as achievement, recognition, work itself, responsibility and advancement lead to job satisfaction and motivation (Sergiovani, 1973, p. 69). The study by Dean found that alienation was related to satisfaction with an organization and supported the notion suggested by Herzberg. Meyers' study also suggested that personality variables of intelligence, aggressiveness, and motivation might lead to higher sense-of-power scores in teachers (Meyers, 1972, p. 170). Other personality variables contributing to sense-of-power may well be self-esteem, and pride. Furthermore, variables related to decision-making collegialiality have been identified by Fris (Fris, 1975) to be related to sense-of-power. He found that teachers reported being deficient in the professional's right to decision-making in self-government and control over working conditions. The model that would help to explain teachers' sense-of-power could, therefore, be a very complex model.

This model attempted to explain teachers' sense-of-power using independent variables from previous research found to be statistically significant and yet these vari-

ables *in toto* explained less than 1% of the variance. The exogenous unidentified variables could be clusters of factors each of which contribute in a small way toward teachers' sense-of-power. The implication for future research is that factors which adequately explain teachers' sense-of-power have not yet been identified.

A current movement in Western Canada teacher organizations, such as the British Columbia Teachers' Federation, has been towards more professionalization. The Director of Professional Development for the B. C. T. F. recently stated

> The essence of professionalism is control over one's working destiny. Teachers become more professional by exercising greater control over teaching; over the goals of the school system, the conditions under which the job is done; the curriculum and methodology, and the social, political, economic milieu that shapes students. (Zlotnik, 1976, p. 7)

In view of the above statement, it appears that the concept of powerlessness (Seeman's definition, p. 5) or teachers' sense-of-power and degree of professionalization are related. Factors which could have explanatory power over professionalization also could have explanatory power over teachers' sense-of-power. Therefore, it is of great importance that the factors which enhance or detract from a teachers' sense-of-power be determined.

If Moeller's scale is valid, and if teacher sense-of-

power is analogous to the concept of professionalization. then the findings of this study imply that the independent variables examined in this study do not contribute towards the professionalization of Western Canadian teachers. The implication is that teaching experience, academic background, age, sex, grade level taught, system, the number of years taught in the system, the number of years in a school, years as a student in the system, and the number of years since taking a last college course are not of primary importance in the developing professionalization of teachers in Western Canadian school systems. All or most of these factors have always been believed in the past to contribute to a teacher's professionalization.

Implications if Scale is Invalid

The second conclusion of this study is the distinct possibility that Moeller's scale is invalid. The implication for future research is the need to test the validity of Moeller's scale. The instrument requires validation to substantially reduce ignorance of teachers' sense-of-power.

As mentioned previously, teachers' sense-of-power and professionalization appear to be related. It can be inferred from the statement by the B. C. T. F. Director of Professional Development that Moeller's scale should have

included more items: items relating to control over teaching, control over goals of the system, control over learning and working conditions, control over curriculum, control over methods, and control over the social, political, and economic milieu. If the Sense-of-Power Scale had included these items a more comprehensive and more accurate measurement might have been exacted. The independent variables included in the model might have accounted for a greater proportion of explanatory power with a more comprehensive teachers' sense of power scale. Moeller's scale reflects a narrow range of what appear to be areas which teachers are seeking to control through increased professionalization. The implication is that a new scale appears warranted, a Teachers' Professional Scale. Identification of independent variables which would help to explain or predict with reasonable accuracy the professional aspirations of an individual should then be possible. This knowledge should be of value to universities involved in teacher development programs, to school boards hiring staff, and to organizations such as teacher federations in the advancement of the teaching profession.

Summary Implications of the Study

The findings of this study point out the real dangers of research using analytical methods which report only significance of relations. Complex social settings such as the field of education require the use of multi-variate techniques which will explain the importance of findings in terms of total variance explained. If the importance of the findings is not tested the results can be rather misleading, and as a result myths may arise.

Arthur W. Combs in an article entitled "The Myth of Competition" states:

> Unfortunately, there is nothing more dangerous than a half-right idea. A half truth is worse than a falsehood. False-hood is easy to reject, but half truths have just enough of the genuine to give us a feeling of contentment. They encourage us to go on in the ways we have started in the vain hope that, if we can but do it a little better or try a little harder, surely sooner or later we shall achieve perfection. (Combs, 1957, p. 264-265)

Combs statement seems to be applicable to research completed in the area of powerlessness, especially empirical studies completed in teachers' sense-of-power. It appears that many myths have been created to explain teachers' sense-of-power. These myths have been published and merely because they are published, believed.

If the researcher after finding statistically significant relationships had attempted to determine the explanatory power of the variables he might have discovered

that statistical significant cannot be translated into importance. Multi-variate techniques can help to explain the importance of these relationships in the complex social system. Moreover, some studies have been completed using different units of analysis -- school system analysis as opposed to an individual analysis -- resulting in contradictory findings. Variations in the units of analysis may sometimes be ignored in the interpretation of findings.

Undoubtedly other myths have been developed or substantiated because of inadequate attention to instrumentation. Inadequate instrumentation may be a major factor in producing conflicting findings, such as in the studies reported here. There is a danger created when new instruments are developed and used in research without going through the minimal checks of validity (face, construct, and predictive validity) and reliability (internal consistency and test-retest reliability).

Perhaps, it is time that the field of Educational Administration, through a group such as, The University Council of Educational Administration, establish a set of minimum criteria for validation, standardization, and reliability of instruments produced for research in educational administration. The minimum criteria could perhaps be modelled after those published by the American

Psychological Association, "The Standards of Educational and Psychological Tests and Manuals (1966)".

CHAPTER FIVE

BIBLIOGRAPHY

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