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THE UNIVERSITY OF ALBERTA

THE PRINCIPAL'S PERSONAL LEADERSHIP STYLE,
THE SCHOOL STAFF LEADERSHIP SITUATION,
AND SCHOOL EFFECTIVENESS

by



VINCENT DAVID McNAMARA

A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "The Principal's Personal Leadership Style, the School Staff Leadership Situation, and School Effectiveness" submitted by Vincent David McNamara in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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ABSTRACT

Fiedler's theory of leadership effectiveness was applied to the analysis of the effectiveness of a wide range of types of schools. The theory relates the effectiveness of the group to the interaction between the leader's personal leadership style and the favorability of the leadership situation to the leader.

The favorability of the leadership situation in schools was operationally indexed by the principal's perceptions of his staff. In addition, for one sample, staff members' perceptions of the principal and of their coworkers provided an operational index of favorability.

The study was primarily designed to analyze the effectiveness of various types of schools in relation to the theory. In addition, data were also analyzed on the stability of principals' leadership styles, the relative favorability of the leadership situation in school staffs as compared with other types of task groups, and the relationship between the staff members' and the principal's attitudes as indices of variance in the favorability of the leadership situation among school staffs.

The perceptions indexing principals' leadership styles were found to be stable over an eighteen months period. School staffs were judged to be low on task

structure, in this respect presenting principals with an unfavorable leadership situation. On the other hand, most judges considered that the leader position power of school principals is relatively high, and to the extent that this is so the leadership situation is favorable to principals. The favorability with which individual principals perceive their staffs was found to be related to staff members' perceptions of their coworkers, but not to staff perceptions of the principal.

Neither the principal's nor the staff's perceptions of coworkers were found to act as predicted in relation to school effectiveness, as indices of the favorability of the leadership situation. The principal's perceptions of the situation were found, contrary to assumption, to be related directly to both leadership style and school effectiveness. It was concluded that this variable taken alone is not a satisfactory index of the favorability of the leadership situation in schools. However, when the principal's and the staff's perceptions of the situation were combined into a single measure of favorability, there were indications that this joint index may be valid for categorizing schools on the favorability of the staff leadership situation.

Supplemental analyses yielded consistent and significant evidence that an important moderator of

leadership style-school effectiveness relationships is the number of years the principal has been at his school. The leadership style appropriate to a principal's first two years at his school is different from that appropriate in subsequent years. This effect of time was observed among all types of unified schools, such as elementary and junior high schools, regardless of the level or size of the school and of the sex of the principal; but it was not observed among fragmented schools such as elementary-junior high schools. Further, the styles appropriate to newly-appointed and established principals in secondary schools are the reverse of those appropriate in elementary schools.

It was concluded that the leadership variable identified by Fiedler does have significance for school effectiveness; that the application to schools of the theory defining the relationship is limited by the lack of a valid and reliable index of the favorability of the school staff leadership situation; that the effects of time on group processes in school staffs constitute a significant and challenging research problem; and that the evidence in connection with this problem requires reconciliation with Fiedler's theory, possibly along a dimension which will take account of time as a factor in the leadership process.

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PART I

BACKGROUND TO AND OBJECTIVES OF THE STUDY

CHAPTER I

THE PROBLEM, AND ITS SIGNIFICANCE FOR EDUCATIONAL ADMINISTRATORS

I. PURPOSE OF THE STUDY

This dissertation is a report of an investigation into the applicability to the analysis of school leadership of a particular social psychological theory. The theory* employed integrates a number of variables considered to affect leader behavior, and the response to leader behavior, and to mediate the effects of leader behavior on the behavior of group members in a common work situation. The theory is supported by evidence that it validly relates the effectiveness of the group to the leader's style of leadership, given the situation internal to and external to the group.

The theory relates leaders' interpersonal perceptions to personal leadership styles consistently differentiated by characteristic leader behaviors under stress. The leadership styles identified have significance for group member adjustment and for group effectiveness, contingent on interacting

*At its present stage of development Fiedler's theory of leadership effectiveness embraces two distinct models (of coacting and of interacting groups--see Figure 2, p. 67 infra). Throughout this dissertation the term "theory" is used in referring to Fiedler's theory in general, the term "model" in referring to a particular model.

factors defining the favorability of the situation to the leader. These factors include the stressfulness of the environment, behavioral expectations of the leader position, and stress within the group, particularly the interpersonal attitudes developed by group members as they interact with each other and with the leader.

Application of the theory to the analysis of problems of leadership of school personnel is supported on theoretical grounds and by empirical evidence. The results of the study reported in this dissertation are believed to provide students of educational administration with evidence which will assist them to refine their understanding of factors defining the operation of the leadership process in schools.

II. NEED FOR A THEORY OF LEADERSHIP APPLICABLE TO SCHOOLS

What type of leader behavior is appropriate to the leader formally appointed to supervise workaday groups? The question embodies an enduring social issue of popular and academic concern, from the employees of the industrial workshop evaluating their new "boss" (Gouldner, 1954), through social psychologists reacting against fascism to examine the virtues of "democratic" in preference to "autocratic" leadership, to the newly-appointed school principal wondering whether he is exercising the necessary degree of control over the activities of teachers on his staff. The problem goes beyond the immediate practical consequences of the style

practised. The style of leader behavior experienced is believed to have important consequences for those led.

"Authoritarian" leadership is believed* to foster the development of dependency needs, to frustrate the development of personal goals and commitment to an identity, and to inhibit self-actualization.

White and Lippitt's (1954) study of leadership among boys' groups is often cited as indicating the superior value of "democratic" leadership as compared with "autocratic" leadership. On the other hand Backman and Secord (1966, p. 278) point out that there has been a tendency to overlook the implications of the White and Lippitt finding that autocratic leaders were more effective in terms of quantity of production. Other studies** suggest that a cultural bias expecting benefits for the group from vaguely defined "democratic" leadership is not always supported by the evidence.

The range in size and organization of schools makes it unlikely that a single uncomplicated theory of principal leadership effectiveness will apply to all schools. A comprehensive theory would need to take account of the differences between the three-teacher and the fifty-teacher school, between the elementary and the secondary school, and between

*See p. 33, infra.

**Those summarized by Kelley and Thibaut (1954), p. 777.

schools organized on the basis of the self-contained classroom and those organized on the basis of team teaching.

Canadian research into school leadership has made considerable use during the past eight years of the Leader Behavior Description Questionnaire (LBDQ*). The current form measures twelve dimensions of leader behavior clustering around two basic dimensions of initiating structure and consideration. It is contended that, while the LBDQ is a reliable measuring instrument, its use has been associated with some invalid assumptions which have unnecessarily limited the generalizability of the findings.

One assumption commonly associated with the use of the LBDQ is the expectation that, within limits, leaders can adjust their personal styles of leader behavior to meet both major sets of group needs--for task achievement and group maintenance. A related assumption is the expectation that both sets of needs are equally important with all groups. A third assumption is that the formal leader is always the functional leader of his group with respect to both sets of needs.

The leadership theory employed in the study being reported proposes alternative assumptions in support of which some research evidence is available. The theory proposes that leaders have persistent personal leadership styles

*For the latest form (XII) see Stogdill (1963).

inclining them to leader behavior that is marked by either initiating structure or consideration, but not by both; that groups' needs for task achievement and group maintenance are differentially salient; and that in many groups some or all major leadership functions are performed by persons other than the formal leader. Given these alternative assumptions, the failure to use the results of the LBDQ studies to develop a comprehensive and consistent theory of the leadership process (Greenfield, 1968, p. 69) may be due to the confusion resulting from the employment of a precise, empirically-developed measuring instrument in association with invalid assumptions.

Greenfield attributes the failure--to integrate the research results into a theory of leader behavior--to a lack of co-ordination of research using the instrument. Isolated relationships have been investigated without sufficient attention to the interdependence of sets of indirectly related factors. He calls for a co-ordinated program of research to develop a "system" theory of leader behavior which takes account of the complex relationships between inputs, social structure and process, and outputs.

III. A THEORY OF LEADERSHIP EMERGING FROM RESEARCH IN SOCIAL PSYCHOLOGY

One development which offers hope of an integrating theory of leadership is beginning to emerge from research

led by Fiedler (1967) since 1951. Approaching leader behavior and its effects through the study of interpersonal perceptions, Fiedler and his associates are exemplars of a new and more practical approach to the development of theory in social psychology.

Fiedler and his colleagues have carried through a program of research which could not be identified as belonging primarily to any one of the major schools of social psychology. They appear to have guided their research conclusions, and their proposals for further research, by selecting from existing theories concepts which the evidence has shown to be relevant to leadership. Relationships induced from available research evidence have been subjected to painstaking and thorough validation tests in laboratory and field. The continuing research program resulting from this procedure has progressively accounted, variable by variable, for major factors contributing to variance in findings concerning the effects of the leadership styles identified.

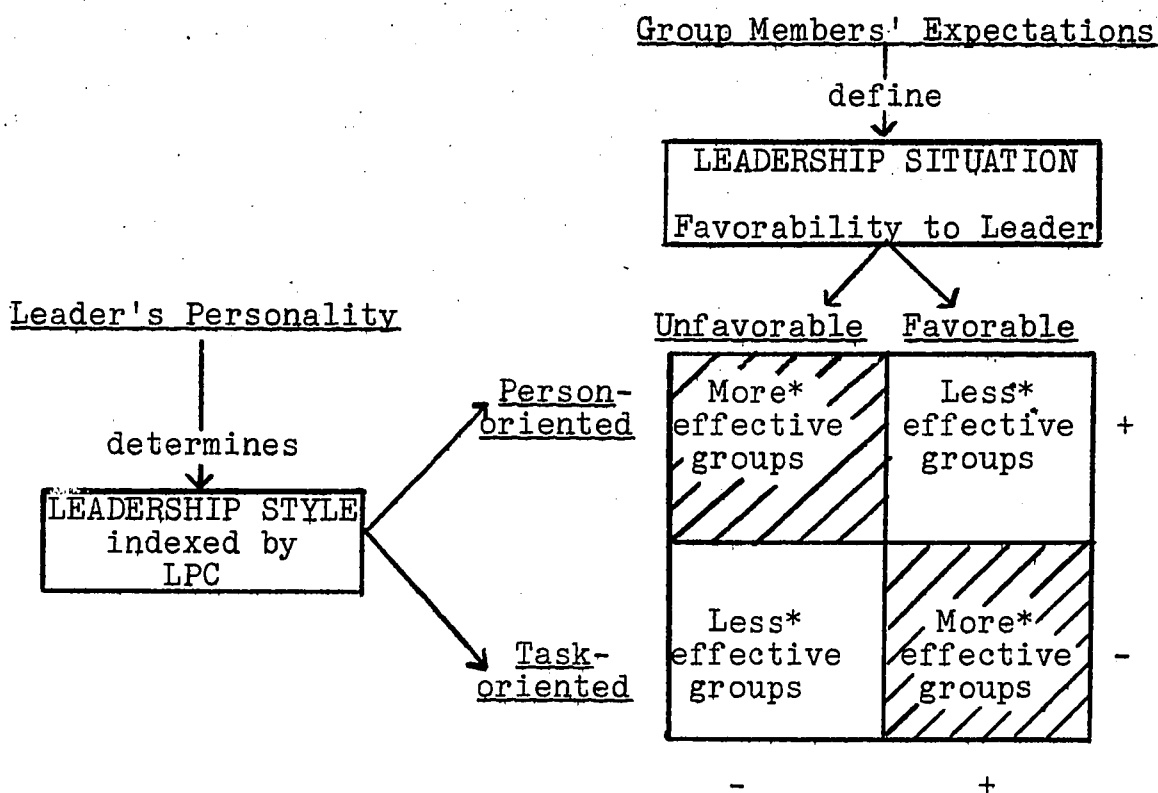
While the theory is by no means yet complete in the sense of accounting for all factors in the specialized area with which it deals, results from a wide range of situations do provide evidence indicating that the factors identified account systematically for the effects of the leader's style in spite of situational variation.

The variable basic to the theory is the disposition

of the recognized leader, under the pressure of demands for leadership acts, to behave in a way which gives priority either to concern with task achievement or to concern with human relations. The variable is measured by asking the subject to rate his least preferred coworker, and is therefore referred to as LPC. Leaders rating their LPC's favorably are likely to be person-oriented and so concerned with human relations, permissive in the exercise of control, and to have a therapeutic effect on group members experiencing stress. Leaders rating their LPC's unfavorably are likely to be task-oriented, and directive in the exercise of control. The disposition measured may be a personality trait, or it may be an interpersonal attitude arising out of the individual's cognitive structure (in turn determined by the pattern of needs underlying his personality). In either case it is regarded as a relatively enduring disposition which places limitations on the extent to which the leader can adapt his characteristic leader behaviors to fit the needs of the situation.

The problem of the effectiveness of leaders is, then, a problem of how well the recognized (generally the appointed) leader's personal leadership style happens to fit the needs of the group in the situation in which members are required to produce results. However, group needs vary (Bales and Slater, 1955), and different group needs define alternative leadership roles. Group needs are regarded as playing an

important part in defining the favorability of the situation to the leader in such a way that groups whose leaders provide an appropriate style of leadership are the more effective groups, while those whose leaders provide an inappropriate style of leadership are the less effective groups. What follows is a simplified statement of the way in which relative levels of group effectiveness are contingent on the interaction between leadership style and the favorability of the situation to the leader:



*Relative effectiveness in this instance is predicted in accordance with the model of coacting groups (p. 64 infra).

Fiedler and his associates have identified, measured, and related some interacting determinants of the leadership situation which together make the situation more or less favorable to the leader's initiatives. Chief among these is believed to be the warmth of relations between leader and led, a determinant of the leader's potential to influence his group. When relations are not warm, the group may be regarded as subject to some degree of internal stress, a condition which may also arise when lack of cohesion among group members destroys within-group harmony. Warmth of leader-member relations is considered to be a function of the interpersonal interaction among group members, and between group members and leader. It therefore varies from group to group, and may be regarded as a characteristic of particular groups. It is referred to throughout this study as an interactional determinant of favorability to the leader.

The favorability of the leadership situation is also affected by factors common to groups organized in a standard fashion in conformity to an institution. Such factors are referred to throughout this dissertation as institutional determinants of favorability to the leader. These factors are common to all leaders of groups representing a given institution, and are therefore independent of the leader as a person. One such institutional factor is the power of the leader position, defined by the kinds of decisions which the incumbent of the position is customarily expected to make,

and by the resources to influence which he therefore controls. Where the leader lacks power, his group members are subjected to the interpersonal stress of constantly making decisions as to whether or not to respond to his initiatives. A related institutional factor is the task assigned to the group, with regard to the degree of clarity/ambiguity with which the task is specified. For example, a policy-making group might be regarded as subject to considerably more stress than an anti-aircraft crew in deciding what to do and how to do it.

Another source of stress is the set of conditions under which the task is to be carried out. A community development team in a primitive jungle village is likely to be subject to considerably more external stress than a group of students discussing a problem in a laboratory.

Extensive and continually increasing evidence (Fiedler, 1967) indicates that the leadership style conducive to most effective group work is contingent on the leadership situation. When the situation is favorable to the leader, task-oriented leaders lead more effective groups than do relationship-oriented leaders. As stress increases, emergent group maintenance needs are best satisfied by relationship-oriented leaders, who, as stress increases, lead more effective groups than task-oriented leaders*.

*Model of coacting groups (see p. 64 infra).

IV. IMPLICATIONS OF THE THEORY FOR SCHOOL STAFF LEADERSHIP

Interactionist theory has influenced school leadership research through the use of the LBDQ. Underlying the interpretation of scores on this instrument has been the assumption that principals scoring low on a dimension such as initiating structure may need to adjust their leader behavior so as to approach the ideal of being high on both initiating structure and consideration, so meeting both the task achievement and the group maintenance needs of their staffs.

If, however, personal leadership styles are relatively enduring, then it may be more practical to think in terms not of adjusting the leader's style to fit assumed common group needs, but of adjusting the situation to match the leader's personal style. Fiedler (1965, p. 549) suggests that it may be psychologically more practical for administrators to give attention to planning "supervisory strategies which the organization can adopt to fit the group-task situation to the needs of the leader." One means which school systems might consider is the selection, training, and posting of principals in accordance with the stressfulness of the school and staff situation (Fiedler, 1964, pp. 184-185). In addition, principals might be trained to diagnose the favorability of the leadership situation at their schools and to adopt strategies to fit

the situation to their own leadership styles. For example, a principal might adopt a power strategy of increasing the range of outcomes he can offer his staff, perhaps by professional studies to increase his expert power. A principal might improve the favorability of his leadership situation by encouraging staff committees to prepare policy and materials to improve the clarity of the instructional situation at their school.

V. APPLYING THE THEORY TO THE ANALYSIS OF THE LEADERSHIP PROCESS IN SCHOOLS

The foregoing brief outline of some of the main features of Fiedler's theory may serve to introduce the reader to an extensive research program, employing a scientifically respected methodology and relating major factors in the leadership process. Accumulating evidence concerning LPC has definite implications for school administration. It is therefore contended that the emerging discipline of educational administration stands to gain much from investigating the validity of the findings of LPC research for analysis of the leadership process among school staffs. By utilizing the gains in knowledge of human behavior emerging from a reputable school of "pure" research, students of educational administration should be able to apply sensitive instruments to the analysis of the practical problems with which they are concerned.

The study being reported was initiated on the basis of evidence which suggests that the leadership theory developed by Fiedler is relevant to the study of the supervisory behavior of elementary school principals (McNamara, 1967). The investigator applied Fiedler's (1964) contingency model of leadership effectiveness to the study of leadership among elementary school staffs. The evidence indicated that principals' LPC scores are related to variations in control style along a directive-permissive continuum. Principals scoring low on the LPC instrument, in contrast to those scoring high, are more task-oriented and directive in that they were described by their teachers as attaching greater importance to instructional matters at staff meetings, prescribing teaching methods to a greater extent, more frequently interrupting lessons by using the public address system, making longer classroom visits, and more frequently requesting teachers to visit the office to discuss teaching methods. The warmth of the principal's feelings towards his staff appeared to be an important determinant of the style of supervision appropriate, and the evidence as a whole suggested that Fiedler's theory validly integrates situational factors to predict principal leadership style-school effectiveness correlations. There was some indication also that the principal's perceptions of his least preferred coworker and of his staff as a group may be important determinants of the relationship between staff professional

attitudes and school effectiveness.

Fiedler and his colleagues appear to have developed a simple and economical yet sensitive instrument for measuring leadership styles through related interpersonal perceptions. They have provided an integrating theory of demonstrated value in conceptualizing and analyzing leadership situations. The study reported herein was intended to test how widely the theory applies to schools, to define more clearly the nature of the manifestation in school situations of the variables related by the theory, and to investigate further some questions raised by the earlier application of the contingency model to elementary schools.

VI. THE PROBLEM AND THE SUBPROBLEMS

The Problem

Fiedler's theory of leadership effectiveness was applied to the staffs of a wide range of types of schools. The aim of the study was to determine how extensively the theory applies to schools. Data on the variables related by the theory were also analyzed in an attempt to define their correlates, as a guide to understanding more precisely the implications of the theory for schools. The subproblems, stated verbally below, are also presented graphically in Figure 1 (p. 15).

The Subproblems

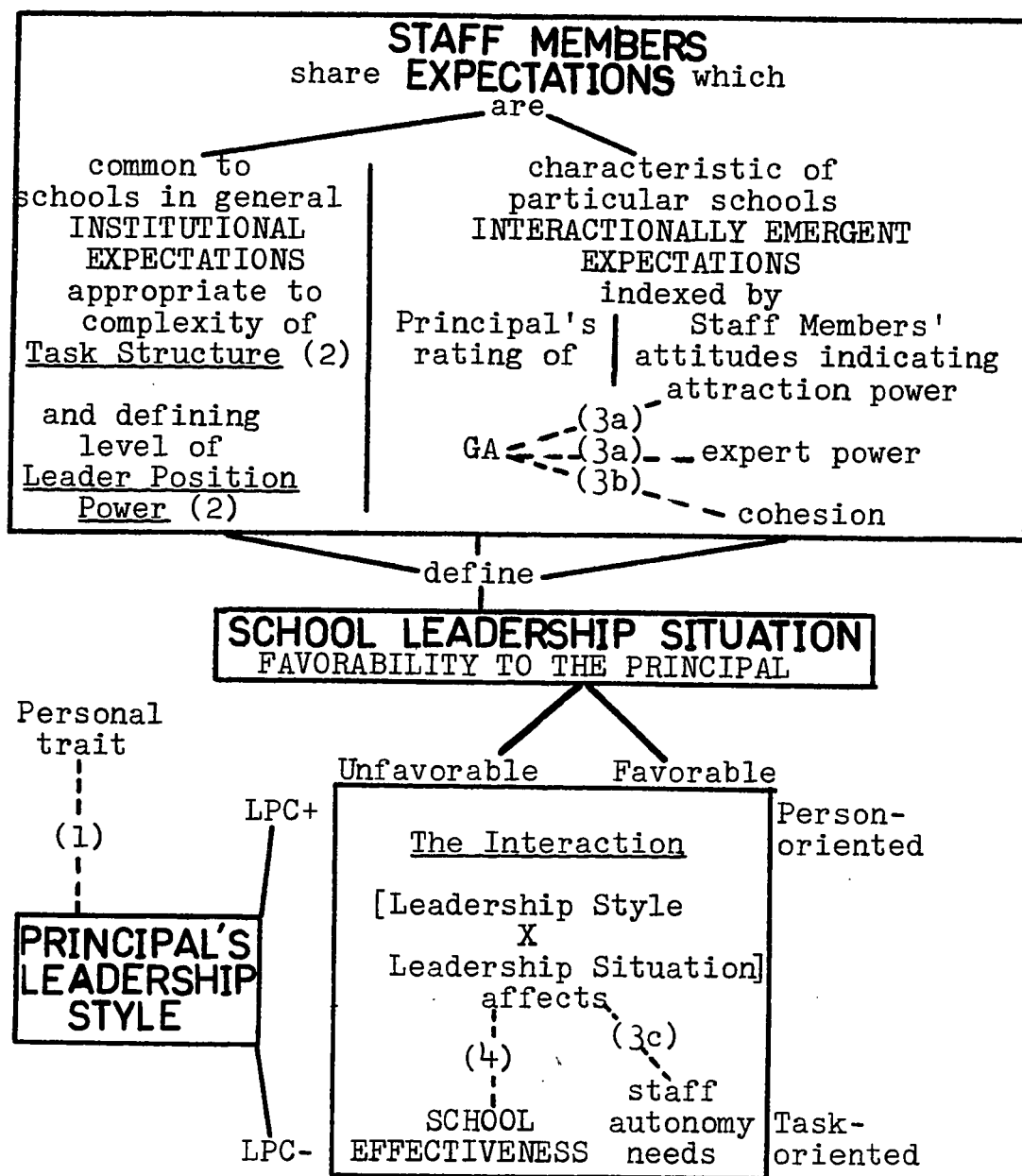


FIGURE 1

HYPOTHESIZED INTERRELATIONSHIPS AMONG LEADERSHIP VARIABLES EXPRESSED IN TERMS OF SCHOOL STAFFS. (FOR A SIMPLER STATEMENT SEE P. 8). (NUMBERS IN BRACKETS REFER TO SUBPROBLEMS, Pp. 16-18; BROKEN LINES TO RELATIONSHIPS INVESTIGATED).

1. Determining the stability of principals' leadership styles.

Do LPC scores reflect a relatively enduring attitude towards coworkers? If so, then it may be inferred that the variable measured is a personality trait, the behavioral manifestations of which are also likely to be persistent.

2. Estimating institutional expectations defining the favorability to principals' leadership of school staffs in general.

Do elementary and/or secondary school principal positions carry expectations of formal power regardless of the incumbent? Are school staffs faced by a straightforward and well-defined, or by a complex and ambiguous task?

3. Relating interpersonal attitudes indexing, for particular school staffs, interactional determinants of favorability to the principal's leadership.

For most groups of schools to which the model was applied, the principal's rating of the staff as a group (GA) was used as the operational index of favorability to leadership. However, for one sample of schools additional data were collected in an attempt to measure directly the importance of staff attitudes as factors affecting the favorability of the leadership situation. These data were collected in order to provide answers to the

following questions:

- a.) How closely is the principal's rating of group atmosphere (GA) related to staff attitudes to the principal? In particular, is it more closely related to the principal's attraction power or to his expert power?
- b.) Is the principal's rating of group atmosphere (GA) related to staff cohesion and to interpersonal conflict within the staff?
- c.) Are the attitudes to their role, of teachers at particular schools, in part a product of the interaction between the principal's leadership style and the warmth of principal-staff affective relations? Is teacher autonomy more strongly preferred among those staffs which are not favorable to the principal's leadership, but whose principals nevertheless are task-oriented by personal inclination, and directive in their leader behaviors?

4. Testing whether the effectiveness of various types of schools is a function of the interaction between the principal's personal leadership style and the favorability of the school staff leadership situation.

How is the principal's leadership style (LPC) related to school effectiveness when the favorability to the principal as leader, of particular school staffs, is indexed by the principal's rating of group atmosphere

(GA)? What is the nature of this relationship . . .

- a.) . . . among schools in general?
- b.) . . . among schools staffed by from three to fifty or more professional persons?
- c.) . . . among schools ranging in level from elementary to senior high?
- d.) . . . among staffs led by male and by female principals?
- e.) . . . among staffs of multilevel schools such as elementary-junior high schools?

How is the principal's leadership style (LPC) related to school effectiveness when the favorability of particular school staffs to the principal as leader is indexed by the staff's attitudes to the principal and to fellow teachers at their school?

VII. DEFINITION OF TERMS, ASSUMPTIONS, LIMITATION, AND DELIMITATION

Definition of Terms

A Group is defined as "a set of individuals who . . . have proximity, similarity, and share a 'common fate' on task-relevant events (Fiedler, 1964, p. 152)." No size limit is specified.

Interacting Groups are defined as groups in which the members are, and also perceive each other to be, interdependent in achieving a common goal (Fiedler, 1964, p. 152).

Coacting Groups are defined as "groups in which members work individually on a task, even if their performance might later be summed to yield a 'group score', and even though coacting group members may indirectly affect each other's performance. According to this definition, a basketball team is a good example of an interacting group, and a track team exemplifies a coacting group (Fiedler, 1964, pp. 152-153)."

Cohesion is defined as the attraction of a group for its members, a function (Festinger, Schachter, and Back, 1950) of "the total field of forces which act on members to remain in the group" which may be related to "average magnitude of this force in all parts of the group." Cohesion was operationally defined, for the purposes of the study reported, as the extent to which members of a school staff choose fellow staff members as colleagues, given a choice.

To Lead is "to engage in an act which initiates a structure-in-interaction with others (Getzels and Guba, 1957, p. 435)."

A Leader is defined as the single group member who is recognized as being chiefly responsible for the group's task-relevant activities. In the case of school staffs, this member is the principal, differentiated from other staff members by his official appointment.

Leader Initiatives are defined as the acts of the leader intended to lead the group.

Leadership is defined as an interpersonal relationship in which group members respond favorably to any member's attempts to lead.

An Emergent Leader is defined as any group member who successfully establishes a leadership relationship with his fellows in response to emergent group needs.

Leader Behavior is defined as the behavior of any leader. While the behavior of emergent leaders serves, by definition, a leadership function, the behavior of a formal leader is not necessarily functional for group needs.

Leadership Style is defined by Fiedler (1967) as "the underlying need structure of the individual which motivates his behavior in various leadership situations. Leadership style thus refers to the consistency of goals or needs over different situations. . . . The distinction between leadership style and leadership behavior is critical for understanding the theory . . . important leadership behaviors of the same individual differ from situation to situation, while the need structure which motivates these behaviors may be seen as constant (p. 36)." The study being reported was concerned with leadership styles which are differentially task- and person-oriented, typically manifesting themselves under threat in leader behavior which is correspondingly directive or permissive (but not necessarily "autocratic" or "democratic").

Effectiveness. The effectiveness criterion used in

the study refers to the effectiveness of the group with respect to its task, not necessarily the effectiveness of the leader in satisfying group functions. The theory employed relates leader personality and behavior to the effectiveness of the group. In the case of schools, this is the effectiveness of the school staff in educating the students for whom they are responsible.

Stress. The theory employed relates various social determinants of psychological stress, defined as the relative frequency of occurrence of meaningful acts to which the individual has difficulty in responding comfortably.

Favorability of the Situation to the Leader. Fiedler (1966b) defines this variable as "the ease with which the leader is able to influence the group members, that is, the degree to which the group task and group organization facilitate or hinder the leader's ability to exert influence without incurring resistance (pp. 249-250)." This is regarded as the determinant of the leader's "effective power (Fiedler, 1966a, pp. 281-282)."

Group Atmosphere is defined as the warmth of leader-member affective relations. This variable was operationally defined in the study by the group atmosphere (GA) scale, by which, it was believed, the warmth of leader-member affective relations is indexed by the perceptions of the principal.

Leader Position Power (LPP) is defined as the power customarily associated with the formal leader position (that of the head) regardless of the incumbent.

Task Structure (TS) is defined as the degree of clarity of the task faced by the group. Vague and ambiguous tasks are regarded as low on task structure.

Assumptions

1. In comparing schools on effectiveness it was assumed that the school staffs within any of the subsamples studied were relatively similar in potential for effectiveness.
2. In interpreting the results it was assumed that intelligence* of principals was randomly distributed within the subsamples with regard to the variables being related.
3. In interpreting the results it was assumed that there was only random distribution of variations in expectations concerning the position power of school principals, and of other situational factors likely to affect favorability to leadership, as between schools comprising the subsamples.

*Fiedler and Meuwese (1963) found leader I.Q. correlated with group performance among cohesive military groups.

Limitation

The validity for schools of the conclusions drawn from the results of the study is limited by the failure to obtain complete co-operation from all superintendents, principals, and staffs contacted*.

Delimitation

The analysis was limited to the interpersonal attitudes, behaviors, and responses of the staffs of the schools studied. No account was taken of the influence on school effectiveness of the relationships of school staffs with their students and with the local environment. Factors external to the school staffs (e.g. community attitudes to education), were assumed to have only random effects on the relationships being studied.

VIII. ORGANIZATION OF THIS DISSERTATION

The material presented in this dissertation is organized in four parts and fifteen chapters.

Part I is a detailed statement of the problem. Chapter I is a summary statement of the problem, its background, and its implications for educational administrators. In this chapter subproblems, definitions, assumptions, limitation and delimitation are also stated. Chapter II is

*See Table I, p. 105 infra.

a brief statement of issues in leadership theory and their implications for school staff leadership. Chapter III is an outline of a particular theory of leadership (Fiedler's) in relation to school staff leadership. In Chapter IV the reader is introduced to the hypotheses directing the study reported in this dissertation.

Part II is a description of the sample and the variables, including a preliminary analysis of relationships having a bearing on the interpretation of the results of testing the hypotheses. In Chapter V the aims and results of data collection are described. Chapter VI is a detailed statement of the techniques of measuring the variables and their relationships. Chapters VII and VIII are reports of relationships among the variables which were neither hypothesized nor assumed to be present. These chapters deal also with the implications of these unexpected relationships for the interpretation of the results of testing the hypotheses. In Chapter VII relationships are reported among all variables other than those dealt with in Chapter VIII. Chapter VIII is limited to a discussion of the relationships among school effectiveness, principals' leadership styles (LPC), and principals' ratings of their staffs (GA).

Part III is a report of the relationships observed when the hypotheses were tested. Conclusions are drawn as to the extent to which the evidence from the data offers support for the hypotheses. Inferences are drawn from the

evidence concerning the validity of the measures of favorability to leadership. Chapter IX refers to the stability of LPC scores as an index of a personality trait among principals. Chapter X describes the estimation of institutional factors defining the favorability of the leadership situation at schools in general. Chapter XI reports the results of analyses defining relationships among indices of staff attitudes within schools, considered to index the level of favorability to the leader of particular school staffs. Chapter XII reports the results of testing hypotheses concerning the basic relationship defined by the theory--that level of school effectiveness is a function of the interaction between the principal's leadership style and the favorability of the leadership situation as indexed by the principal's perceptions of his staff (GA). Chapter XIII reports the evidence concerning the same basic interaction, but when the index of the favorability of the leadership situation is a direct measure of staff attitudes.

The final section of the dissertation (Part IV) reports the reanalysis of the data and the conclusions drawn from the study. In Chapter XIV, additional information is presented concerning some of the more interesting relationships among the variables which were not hypothesized but were suggested by supplemental analyses. Being statistically significant and consistent across two or more subsamples, they are regarded as deserving the attention of students of

Fiedler's theory, and of readers concerned with problems of school leadership. The final chapter, Chapter XV, is a summary statement of the problem, the results of testing the hypotheses, the results of the supplemental analyses, and the conclusions drawn from the findings. Implications of the findings for schools are discussed, and recommendations are made for further research.

The very last page of the dissertation, following the appendices, is an index of tabulation conventions. It is intended to provide the reader with a ready and constant reference to abbreviations in following the text.

CHAPTER II

LEADERSHIP THEORY AND SCHOOL STAFFS

I. GROUP EFFECTS; GROUP SIZE AS A LIMITING FACTOR

Social psychological theory concerning leadership as an aspect of social interaction frequently refers to the meanings of the acts of individuals as stimuli for the acts of others. When several individuals are involved, shared meanings structure their interactions. When meanings are shared by all the individuals in a given set, they may be regarded as to that extent constituting a group.

Group influences can range from social facilitation (Kelley and Thibaut, 1954, pp. 748-751), through setting task attitudes and output norms on independent individual tasks (Roethlisberger and Dickson, 1939), to the effects of interdependence with respect to a shared product (Kelley and Thibaut, 1954, pp. 747-748; Gibb, 1954, p. 878; Allport, 1963, p. 25). Fouriezos, Hutt, and Guetzkow (1950) found group members varied in their commitment to group rather than personal goals, and that this had an important effect on their attitudes to group activities.

When groups are very large, it may be difficult for all members to share the same meanings, and so to interact as parts of a single whole. Greenfield (1968, p. 71) points

out that school leadership research has generally avoided the problem of group size by concentrating on relatively small schools, usually elementary.

It is not clear at what size a group ceases to be a group and becomes either a mere collectivity or an organization, but the evidence suggests that size is an important limitation on group effects. Hare (1962, pp. 273-279) found that groups of five had more influence over members than did groups of twelve. Olmsted (1959, p. 22) arbitrarily limits his study of small groups to the interaction of 20 or fewer persons. Hemphill (1950) found that as group membership increased beyond 30, members were more tolerant of directive leader behavior.

School Staff as Group

It is difficult to generalize about schools because of their great diversity with respect to size, level, and method of organizing for instruction. Size might be expected to place an upper limit on interaction, yet House (1966) was able to describe a forty-teacher high school throughout which the principal's interpersonal communication skills and consequent influence were key factors in morale.

In the conventional school, organized on the basis of autonomous teachers, each isolated in his own classroom, such group characteristics as staff members may come to share, for example in the staff room, may be largely irrelevant to the

instructional function. On the other hand, researchers such as Friedenber~~g~~ (1963) suggest that staff-shared attitudes may be significant in defining for students a compliant role which is antithetical to personality growth and genuine learning.

II. EVOLVING CONCEPTS OF LEADERSHIP

Behavior in the role of leader may be a function of a political ideology such as Nazism, or ultimately of cosmology (Benedict, 1934). The very concept of leader may be a cultural contingency. Miller (1955) describes a North American Indian tribe in which there was no leader position.

Psychological research in the first half of this century searched unsuccessfully for traits which consistently characterized persons who had risen to leader positions, regardless of their leader performance (Gibb, 1954, pp. 884-888). Social psychology in the years since World War II has emphasized the dynamic aspects of leadership as a function of leader-group interaction. Accordingly, leadership, a dynamically emergent relationship, was distinguished from headship, the leadership initiatives of the formally-appointed "head man".

Dimensions of Leader Behavior and Group Needs

The perception of the role by self and others (Mead, 1934) is a concept which entails recognition of the effects of

social determinants of leader behavior, a model succinctly summarized in the by now well-known formula:

$$B = f(R \times P) \quad (\text{Getzels and Guba, 1957})$$

The assumption embodied in this formula has had a significant effect on the direction of Canadian school leadership research and on the interpretation of the results. The assumption is made that the behavior of leaders is responsive to institutional expectations defining the role. However, personality factors impose limitations on the range of responses possible to any individual in adjusting his behavior to meet expectations defining the role.

Two dimensions of group needs and comparable dimensions of responsive leader behavior have been identified in theory and research:

<u>Dimension I</u>	<u>Dimension II</u>	<u>Identified by</u>
Effectiveness	Efficiency	Barnard (1938)
Best Ideas (and (Guidance) leaders	Affective leaders	Bales (1953)
Instrumental behavior (goal attainment)	Expressive behavior (group maintenance)	Parsons (1952)
Idea men	Best-liked men	Slater (1955)
Initiating structure	Consideration	Halpin (1957)
System-orientation	Person-orientation	Brown (1967) Punch (1967)

Interpretations of the results of school leadership research are frequently guided by these assumed relationships between group needs and leadership behavior.

It is sometimes overlooked that much of the evidence concerning these dimensions has been derived from laboratory groups in which there was no formally appointed leader. That is, the dimensions of behavior identified are those of emergent leaders responding to functional group demands, rather than to institutional expectations guiding the behavior of formal leaders. Stogdill (1959, pp. 13-14) takes account of these interactional factors defining role emergence.

The characteristic behaviors associated with role emergence may not necessarily be those possible to a formal leader. In meeting interactionally defined functional group roles, the emergent leader is that group member whose personality best fits the needs of the group at the moment. This flexibility among individuals in providing a satisfactory response to an emergent role may not be possible to a formal leader. Yet flexibility of response is often expected of formal leaders (Shartle, 1957), and assumed in interpreting the results of leader behavior-effectiveness studies*. The expectation of behavioral flexibility is reasonable in association with emergent leadership, since the required behavior is possible to at least one member. With formal leaders, such an expectation of flexibility in behavior can only refer to the interaction between the emergent

*For example, aircraft commanders (Halpin, 1957).

role and the one leader personality. Transferring this expectation to the analysis of the effectiveness of the behavior of formal leaders entails, therefore, the additional assumption that individual formal leader personalities are capable of making the necessary adjustments in leader behavior between person-oriented and task-oriented responses to leadership demands. This additional assumption, often not stated, may well be invalid.

Style of Leader Behavior as a Direct Function of Personality

If leaders are made, not born (Gouldner, 1950, p. 46), and if leaders can learn to respond to the needs of the group, then "the leader should be affectively neutral insofar as his own needs are concerned (Bennis, 1959, p. 272)." However, the leader may not, in fact, be "free to choose a style as he chooses a new pair of shoes (Zalesnik and Moment, 1964, p. 427)." The leader ideally detached from his own needs would be an interesting exception to exchange theory explanations of human social behavior in terms of maximizing personal outcomes and minimizing costs (Secord and Backman, 1964, pp. 363-366). Eysenck (1960) and Witkin (1949) have presented evidence of significant and persistent individual differences in needs to be satisfied, anxiety patterns, and customary ways of dealing with threatening stimuli. How important are individual personality differences among leaders?

Insofar as the behavior of a leader is fixed by personality, individual differences in personality have important implications for the leadership effectiveness of formal leaders. What are the consequences of leadership styles? Are some leadership styles preferable to others?

Preferred Leadership Styles

Since the early work of Lewin, Lippitt, and White, the consequences of leadership style have been the focus of numerous studies. . . . a variety of terms have been applied to what the initial investigators called democratic leadership climates, . . . Conclusions drawn from most studies favored the former type of leader as the most desirable. In part, as Gibb has noted, this may well have reflected a cultural bias in favor of democratic leadership, a bias against which even the scientific investigator was not immune. The fact that in the initial investigation the quantity of production was greater under authoritarian leadership seemed to have had relatively little effect on later discussions of the problem (Backman and Secord, 1966, p. 278).

Lewin's (1950, pp. 413-414) "autocratic" leaders rely on an authority source external to the group. Adorno's (1950, p. 419) "authoritarian" leaders derive their authority from the exploitation of a frustrated need to identify with a father-figure. The confusion surrounding the implications of such styles is further complicated by findings such as Carter's (1953, p. 279) that elected group leaders were more "authoritarian" in behavior than appointed leaders.

It is suggested that a cultural preference for a vaguely defined "democratic" leadership glosses over the differences between three distinct, though often associated, dimensions along which leader behavior can be analyzed:

	<u>Popular Label</u>	<u>Source of Authority</u>	<u>Style of Control</u>	<u>Objective</u>
<u>Row A</u>	Authoritarian leadership	Irrational	Directive	Serves the leader's purposes
<u>Row B</u>	Democratic leadership	Shared, rational, purposes of members	Permissive	Serves the group's purposes

An associated problem is the tendency to use such dimensions as dichotomies (Holdaway, 1968). When a leadership style is rejected because it is marked by any of the characteristics in Row A, it is assumed that this is at the expense of rational group purposes, and there is a tendency to reject the whole cluster of characteristics at the "authoritarian" pole of the three dimensions. Yet the indiscriminating rejection of all three characteristics is not necessarily entailed by democratic values, for directive control and the recognition of authority are both consistent with democratic values. It is suggested that the democratic value system warrants only a rejection of authoritarian leadership more precisely defined as leader-centered at the expense of group members' rational purposes.

The cultural bias against directive leadership may, therefore, be in part due to confusing leaders' styles of control with their purposes and authority sources. The adverse consequences attributed to directive leadership may in fact refer only to that class of directive leadership which is leader-purpose-centered at the expense of being

group-purpose-centered.

It may be possible to identify directive leaders who derive their authority from both within and without the group and also function to satisfy group purposes.

III. LEADER AND ORGANIZATION: THE PROBLEM OF PURPOSE

At the point of co-ordination between the organization and a constituent group, the leader faces the problem of reconciling two sets of purposes which may not necessarily be congruent. The appointed leader, his delegated authority assured, must still achieve authority of leadership with respect to group purposes. Unless the head is also assigned a leadership role by his subordinates, it is unlikely that his acts will assure congruence of the group's actual and assigned purposes. That is to say, the formal leader is less likely to fulfill his function for the organization unless his acts are also functional for the group's actual purposes.

The formal leader is therefore subject to two sets of behavioral demands or expectations defining two roles which he attempts to perform simultaneously. One, the leader role as traditionally conceived, is that of the organizational leader position, broadly defined by general cultural expectations of the behavior of leaders, and, in particular institutions, by specialized expectations. The other, the interactionally emergent role, is defined by the

reaction of his fellow group members to him as a person attempting to establish a leadership relationship. Whether the head achieves leadership depends on the utility of his acts for the group's actual purposes.

The problem is one of the co-incidence of the formal and informal roles of the appointed leader. The acceptability of the formal leader's initiatives depends on the compatibility of the two sets of expectations defining his formal and informal roles. Leadership research needs to take account of both sets of expectations as affecting the probability of the effectiveness of the formal leader's acts for his organization.

How Far Can a Leader's Influence Extend?

Dubin (1958, pp. 376-396) distinguishes between the leader's command functions, concerned with the transmission of hierarchical decisions, and his leadership functions, concerned with making decisions appropriate to the situation. While the command function is independent of personality, the leadership function depends on the person appointed as leader, both for the quality of his decisions and for his interpersonal skills (e.g. in maintaining morale). While leaders of large organizations perform impersonal command functions for thousands of subordinates, the leadership function, being more personal, depends on face-to-face contacts, and is therefore restricted in range. The range

may, however, be greater than is often suspected, as in the case of a forty-teacher high school throughout which the principal was extremely influential (House, 1966).

IV. FACTORS STRUCTURING THE RELATIONSHIP BETWEEN LEADER AND LED

Leadership is a complex social process integrating the behaviors of autonomous individuals. No analysis of leadership can afford to neglect the social psychological processes underlying interpersonal interactions.

Authority, Power, and Influence

French and Raven (1959) identify five bases of power. One is "legitimate power, . . . based on B's belief that A has a right to prescribe his behavior or opinions." The writers identify two other bases of power, reward power and coercive power, which are associated with the position rather than the person of the leader. Two additional forms of power depend, however, on the leader's personal skills and might be important factors differentiating the influence of principals occupying positions of identical formal power. These are attraction power, which in schools would refer to the staff's liking for the principal, and expert power, based on the staff's perception that the principal has superior knowledge or information.

If social behavior is determined by an exchange of

"payoffs" (Thibaut and Kelley, 1959), power is a function of an individual's relative access to resources which others will perceive as desirable outcomes. Legitimate, reward, and punishment power are resources, furnished by the organization to the formal leader position, in order that the leader may control group behavior directed towards the purposes assigned to the group by the organization. Given the appropriate personal skills, individual leaders may further strengthen their interpersonal bargaining position by the exploitation of attraction and expert power.

There is some research evidence to indicate that task leadership, as distinct from socio-emotional leadership, is associated more closely with expert than with attraction power. Bales (1953, p. 156) found group members did not like the person who initiated most, though they tended to vote such persons leaders on the grounds of having contributed best ideas and guidance. This was particularly noticeable after several sessions, by which time recognized leaders were receiving less than 20% of votes on liking.

A caution should also be sounded in connection with the effects, not always beneficial for the group, of the leader's power. These effects are likely to vary in relation to the nature of the task. Hoffman (1964, p. 109) points out that while power increases the leader's control, it thereby increases also the risk that he will become a barrier to the free exchange of ideas. This may be

important in, say, an unstructured problem-solving task where the leader knows no more than do his fellow members (Fiedler, 1967, p. 27).

Perceptions

The meaning attached to stimuli is likely to vary, not only objectively, in response to variation in the object perceived, but also relationally, contingent on the situation (the stimulus in relation to other stimuli), and subjectively, contingent on internal conditions in the perceiver (particularly where stimuli are ambiguous).

Illustrative of social situational determinants of perceptions are the experiments of Asch (1956) with conformity induction. Illustrative of subjective determinants are numerous experiments illustrating selective perception, discussed by Bruner (1963) in terms of concepts such as perceptual readiness, accessibility to cues, and being "tuned in" to particular kinds of stimuli. Thresholds are lowered for preferred stimuli associated with the perceiver's background (Cantril, 1963, p. 293). Variance in judgements increases when rewards are associated with the objects being judged (Tajfel, 1957).

Situational determinants of perception may well affect the way in which the leader perceives the demands of the leadership situation. For example, a principal who feels a warm bond with his staff members may be much more confident

in making leadership initiatives than a principal who feels that the staff is alienated from the school and/or from him as leader. The leadership acts of the confident principal may well appear more authentic to his staff.

A shared staff attitude towards the principal as leader may well affect the favorableness or otherwise with which his attempted leadership acts are received. Gibb (1954, p. 899) interprets data from Hemphill to suggest that "autocratic" control is perceived more favorably by persons in groups which have considerable primary significance for their members. White and Lippitt (1954) found the perception of autocratic techniques of control appeared to be affected by past experience. Autocratic techniques were less effective in cases where the groups had previously experienced democratic leadership techniques.

Person- and goal-orientation, empirically determined and theoretically recognized dimensions* of leader behavior, may also be important dimensions of leaders' attitudes, affecting or even determining the way in which they perceive the demands of their groups.

Need-Directed Styles of Interpersonal Behavior

Illustrative of enduring individual differences affecting perception is Witkin's (1949) distinction between

*See p. 30 supra.

"field-dependent" and "field-independent" individuals with contrasted characteristic ways of dealing with threat. While "field-independent" persons appear to be "inner-directed", "field-dependent" persons appear to be "other-directed". It is possible that a leader's responses to the demands of a stressful leadership situation might be in part determined by the degree to which his personality is field dependent.

Witkin, Dyk, Faterson, Goodenough, and Karp (1962) described "highly-differentiated" children who, by contrast with less differentiated children, had a clearer self-role concept and made accurate self appraisals. They were not dependent on particular friends, but chose friends for particular purposes on the basis of common interests. It was noted that there was a similarity in outlook and behavior between one particular class of highly differentiated child and that of extremely field independent Air Force captains* two of whom were described as follows: "cold and distant in relations with others, . . . manipulates people as a means of achieving personal ends* (quoted in Witkin et al., 1962, p. 261)." The limitedly differentiated children were noted for "a lack of developed views of their own and their consequent reliance on others for a definition of their attitudes and sentiments (p. 262)." Such children

*Described by Crutchfield and Starkweather (1953).

seemed to be motivated by a particular kind of person-orientation, defined by:

the greater alertness of facial expression found among the less-differentiated children, an alertness which reflects acceptance and approval, rather than a genuine response to and regard for another person (p. 266).

The interpersonal dispositions remarked by Witkin and his colleagues may be meaningful for leader behavior, since they bear some resemblance to the person-/task-orientation dimensions given so much prominence in studies of leader behavior.

V. INTEGRATING MULTIPLE DETERMINANTS OF EFFECTIVE LEADERSHIP

the emphasis upon leader behavior-outcome relationship (sic) leaves other possible relationships relatively unexplored, particularly the conditioning or mediating kinds of relationships . . . (Greenfield, 1968, p. 61).

Greenfield suggests that Canadian school leadership research has failed to yield a consistent description of the leadership process because it has concentrated on an oversimple direct relationship between leader behavior and effectiveness.

The evidence quoted in the preceding survey supports this conclusion by indicating that a number of personal and social factors have significance for the social function of leadership. It seems clear that leadership operates in a multi-variate context not amenable to a direct correlational study.

Greenfield concludes his survey of Canadian research

into leader behavior in schools with an appeal for a "system" approach to the study of leadership. He suggests that group output is an outcome of a number of variables, including leader behavior, input into the group situation. As a tentative classification of important sets of variables, he suggests inputs, social structure, social process, and outputs.

Gibb's (1954, p. 915) summary neatly brings together and specifies a number of major determinants of leadership (not headship):

leadership is always relative to the situation. This relativity may be broken down with respect to each of the major variables in the situation: (a) it is relative to the group task and goal . . . the goal determines the needs which he must appear to satisfy . . . (b) it is relevant to group structure or organization . . . (c) it is relative to . . . the attitudes and needs of the followers.

Gibb suggests that the leader and the multiply-determined situation interact, and that the effective leader adapts his behavior successfully to the situation.

What, however, if human, and therefore leader, behavior is less flexible than has been assumed by Gibb and others? Then leadership becomes a function of how well the prospective leader's personality and behavior happen to match the needs of the multiply-determined situation. Fiedler (1963) points out that the problem in identifying traits of leaders may have been the indiscriminate mixing of all persons who have risen to the position of leader:

As the term is sometimes used the trait differentiates the leader from the follower or from the non-leader.

In other cases the leadership trait purports to differentiate effective from ineffective leaders (p. 480).

Fiedler has identified such a trait and has developed a theory for integrating the complex situational determinants of the appropriateness of the leader's personal style for his group.

CHAPTER III
MATCHING PERSONAL LEADERSHIP STYLE
TO THE LEADERSHIP SITUATION

I. INTRODUCTION

This chapter is intended to introduce the reader to a partial* theory of leadership effectiveness developed by Fiedler (1967)** to predict the consequences for group achievement of the leader's need-directed interpersonal style.

The theory, induced from extensive empirical evidence, offers a systematic explanation of the joint effects of a number of situational factors defining the relationships between a personality trait, leader behavior, and group effectiveness. Individual differences in pre-disposition to perceive the significance of the acts of others in social work situations have been shown to affect the response of task-group leaders to the demands of the situation. The degree of stress experienced by the group, and the influence

*Regarded as only a partial explanation of leadership effectiveness because it does not attempt to account for the effects of other important determinants such as leader and member motivation (see Fiedler, 1965, p. 540).

**The interested reader will find the 1967 book by far the most useful single comprehensive reference to Fiedler's work. References throughout this dissertation are, however, in terms of the original reports, since these might be of particular interest to students pursuing specific problems.

exercised by the leader are important determinants of the effects on group adjustment and performance of the leader's interpersonal style.

The key interpersonal perception variable was first described 18 years ago (Fiedler, 1950) in connection with psychotherapeutic research. It was later felt that the style of a good therapist might also have some significance for leadership effectiveness. This general expectation was confirmed eventually, though in a much more complex way than anticipated. In the process of defining the relationship, there developed a long-term and still continuing program of observing, inducing, and hypothesizing, then testing and retesting the hypothesized relationships. This program has bit by bit assembled empirical evidence accounting for progressively more and more of the variance associated with the leader perception variable studied. As contributing factors have been identified and accounted for, they have been integrated into a complex theory. While this theory is still only a tentative and rough approximation to a systematic organization of the relationships observed, it appears to stand up remarkably well to testing in a wide range of situations. Reversing the traditional procedure of theory before research, the empirically derived theory has now achieved the status of a partial theory with respect to the particular area with which it deals. Quoting Fiedler's research as one of a number of examples, Deutsch and Krauss

comment:

Contemporary theoretical formulations, in general, arise out of and are tested in laboratory experiments . . . in the garb of the lab. coat, social psychology is becoming more and more "scientifically respectable" and less and less viewed as the domain for soft-headed "do-gooders" (Deutsch and Krauss, 1965. p. 215).

Fiedler's theory and instruments appear to provide a powerful framework and tools for analyzing the interacting interpersonal perceptions and behaviors of elementary school principals and staffs in relation to the effectiveness of their schools (McNamara, 1967). It is therefore considered that a comprehensive outline of the emerging theory and relevant research will be of interest to students of educational administration.

II. THE VARIABLES AND THEIR RELATIONSHIPS

The key instrument measures an interpersonal perception variable which appears to be an enduring personality characteristic affecting responses in social interaction with respect to a task. In the case of leaders, this variable is found to manifest itself consistently in a preferred leadership style. The variable is measured by the least preferred coworker (LPC) instrument*. Scores on the instrument are commonly known as LPC scores, and the variable is commonly referred to as LPC. Individuals with

*See Appendix B⁴, p. 37⁴ infra.

high LPC scores, placed in positions of leadership, appear to be relationship-oriented in outlook, permissive in the exercise of control, and quasi-therapeutic in effect on their groups. Low LPC leaders, on the other hand, are observed to be task-oriented in outlook and directive in the exercise of control. Only in a very limited way, however, might the contrast between individuals with high and low LPC scores be associated with the vague authoritarian-democratic leadership dichotomy*.

The appropriateness of a leader to his group depends on how well his personal leadership style matches the needs of the group. Where the situation is favorable to the leader, then low LPC leaders are likely to lead groups which are more effective than those of high LPC leaders, and their groups are likely to be better adjusted. However, where a certain amount of stress, internal to and/or external to the group, creates a situation unfavorable to the exercise of control, high LPC leaders are likely to have a beneficial therapeutic effect on group members, so that groups under high LPC leaders are likely to be better adjusted and more effective than those under low LPC leaders**.

A number of factors*** have been found to affect the

*See p. 34 supra.

**Model of coacting groups (see Figure 2, p. 67 infra).

***Similar to those summarized by Gibb; see p. 43 supra.

favorability of the situation to the leader, and therefore "the degree of effective power the leader has at his disposal (Fiedler, 1966a, p. 279)." The most important of these factors is believed to be the social power the leader as a person possesses over his fellow group members. A leader who is sociometrically identified as the coworker preferred by most members of his group is deemed to be more influential than a leader chosen by relatively few or no coworkers. A factor which may be related to sociometric preference for the leader, and operates similarly as an index of the favorability of the situation, is the leader's own rating of the group atmosphere (GA). Leaders who rate their groups favorably exercise their personal styles of leadership on groups which may well be more receptive than those of leaders who rate their groups unfavorably. Leaders who rate their groups unfavorably are not likely to have been assigned by their coworkers a role appropriate to the satisfaction of the dominant group need. Lacking a role appropriate to the the legitimation of a functional leadership performance, the most effective of such leaders appear to be those who are inclined to practise the alternative style of leadership. Perhaps by doing so they leave the way free for the practice of the situationally required role by an emergent leader who, by offering the leadership acts the group demands, thereby complements the formal leader.

Another important determinant of the stressfulness of

the situation, and therefore of the appropriate style of leadership, appears to be the cohesion of the group. Clearly the leader of a group troubled by internal stress faces a problem of communication and co-ordination more difficult than when the group is unified in outlook and purpose. External stress may also affect the favorability of the leadership situation, as was found by Fiedler, O'Brien, and Ilgen (1967) when they analyzed factors affecting the effectiveness of leaders of groups of volunteers promoting community development in a stressful foreign village environment in Central America.

Finally*, the power customarily associated with the leader position (as distinct from the incumbent's personal influence) appears to have an effect on what style of leadership will be acceptable to the group. It seems reasonable to expect that group members will be less hesitant about accepting directions normally associated with a leader position than they would be where such directions lacked the sanction of precedent and institutional support.

Another possible determinant of favorability, group member motivation, has not so far been integrated into the model for classifying leadership situations in terms of

*A time factor, familiarity with the task, has also been found to affect the stressfulness of the situation (Fiedler, 1966b). This could be important with schools, where teachers with a lifetime career interest work together at the same task for lengthy periods.

favorableness.

As already suggested*, an implied consequence of the theory is the possibility that efforts to change school principals' leadership styles may have been misdirected, and it may be more profitable for educational organizations to think in terms of first identifying leaders' personal styles, then matching leaders to the requirements of the particular group, task, and situation. For example, they might post leaders to the appropriate situation, or train them to improve the favorability of the situation, perhaps by increasing their personal influence.

For readers interested in a more thorough description of the variables and the theory, a detailed summary of research findings and conceptual distinctions follows.

III. LEAST PREFERRED COWORKER RATINGS

A socially significant difference in interpersonal perceptions appears to be reflected in the favorableness with which individuals rate their least preferred coworkers. Individuals differ in the harshness of their ratings, a difference which also manifests itself in interpersonal attitudes which become particularly important for behavior under the pressures of a stressful leadership situation.

*See p. 11 supra.

The Instrument*

In an early form of the instrument (Fiedler, 1954) subjects rated themselves on a number of traits and also predicted how their least preferred coworkers would rate themselves on the same traits. A relatively complex formula yielded D, a perceived difference score. An alternative form of the instrument compared subjects' predicted self-ratings of their most (MPC) and least preferred coworkers (LPC). ASo (Assumed Similarity between Opposites) scores are based on differences in ratings of work companions. The component scores indicate the degree of assumed similarity between self and most preferred coworker, some degree of difference between self and least preferred coworker. Low ASo (and LPC) scores indicate that the assumed difference is considerable, that is, that the subjects perceive little self similarity to, do not like, and reject their least preferred coworkers.

Scores on the instrument have been found to relate consistently, through complex mediating factors (e.g. leader position power, task structure, and group atmosphere) to group performance. Throughout an extensive program of studies scores on the instrument have consistently related to leader behavior and group effectiveness, in

*For examples, see Appendices B4, p. 374, E2, p. 403, and E6, p. 409.

terms of the theory, in spite of considerable change in the content and form of the instrument (Fiedler, 1967, pp. 39-44). Progressive simplifications have reduced the instrument to a set of approximately twenty semantic differentials on which the subject now rates only his least preferred coworker. The score is the simple sum of the ratings. Choice of subject and number of semantic differentials appear to be relatively unimportant. Choice of ratee can, however, be important. Subjects tend to rate current LPC's more favorably than when the choice is not restricted to the rater's present work group*. LPC scores derived from ratings of freely selected (not necessarily current) LPC's have been found to be more valid (Fiedler, 1958, p. 14).

The stability of LPC scores is supported by evidence presented by Fiedler (1967, pp. 48-49). He quotes test-retest correlations over an eight-week training period ranging from 0.31 (N: 32) up to 0.68 (N: 562). There does not appear to be any evidence available concerning the stability of the scores over a longer time interval. Fiedler (1967) interprets the evidence that is available as indicating that the stability of LPC scores is affected by experience:

It is important to note that the stability of ASo and

*Hence the difference in ratee between the 1966 form (Appendix E2, p. 403) and the 1967 form (Appendix B4, p. 374).

LPC scores depends to a considerable degree on the intervening experience of the raters. . . . The least consistent scores came from men . . . whose role relations changed (p. 48).

LPC scores have been found to reflect differences in orientation and interpersonal behavior which are important for leadership effectiveness. Fiedler (1963) considers them to index a leadership effectiveness trait which he defines as "a consistent, reliably measurable personality attribute which differentiates effective from ineffective leaders (p. 481)." Low LPC persons "in effect reject people with whom they cannot work well (Fiedler, 1966c, p. 2)." LPC scores differentiate persons on the degree to which they appear to be emotionally involved with or emotionally independent of others (Fiedler, 1960).

LPC Scores and Orientation

LPC scores are believed to reflect contrasting personal need states differentially motivating responses in a situation of interpersonal interaction with respect to a common task. LPC scores "indicate the degree to which the leader seeks satisfaction from successful interpersonal relations or from successful task performance (Fiedler, 1966b, p. 250)." Fiedler (1966b, p. 240) summarizes research results which indicate that the satisfaction of low LPC persons is related to successful task achievement but not to success in interpersonal relations, while the reverse applies to high LPC persons, whose satisfaction

relates to success in interpersonal relations but not to success in task achievement.

Fishbien, Landy, and Hatch (1965) report an analysis which suggests LPC scores measure different attitudes to different kinds of least preferred coworkers (and are therefore a reflection of cognitive structure, so being a second order product of a number of personality traits). They asked subjects to describe their least preferred coworkers, and found important differences:

high LPC subjects, who are seen as considerate, compliant, and interpersonally oriented, describe their least preferred coworkers as individuals who are dogmatic, bull-headed, and inconsiderate of others . . . the task-oriented low LPC subjects describe their least preferred coworkers as individuals who have neither the ability nor the motivation to get a job done, who are more concerned with self-satisfaction than achieving group goals, and who are generally unpleasant and unco-operative(p. 23).

The investigators cite evidence which suggests that low LPC persons rate lower because they have a more negative attitude to the type of person they select as least preferred coworker than do high LPC persons to the type of person they select as least preferred coworker.

LPC Scores and Behavior

LPC scores were long associated with leader behavior ranging from that which is psychologically close to coworkers to that which is psychologically distant (Fiedler, 1960). Low LPC leaders were regarded as psychologically distant. Later analyses of interactions led to more

precise descriptions:

the more person-oriented, procedural comments and irrelevant remarks were relatively more common in the groups of high LPC leaders while the task-relevant elaboration of ideas was more common in groups of low LPC leaders (Fiedler, 1962, p. 315).

The tape-recorded behaviors of high and low LPC leaders were analyzed on a simple five-category system (Meuwese and Onk, 1960) and on the Bales system (Fiedler, London, and Nemo, 1961). Taken together the analyses indicated that:

High LPC (or ASo) leaders behave in a manner which promotes member satisfaction and lowers member anxiety; they are more compliant, more non-directive, and generally more relaxed, especially under pleasant and non-threatening conditions. They are described by their groups as being higher on the Ohio State "Consideration" dimension.

Low LPC leaders, on the other hand, give and ask for more suggestions, are less inclined to tolerate or to make irrelevant comments, demand and get more participation from members, and are more controlling and managing in their conduct of the group interaction. Low LPC leaders also interrupt group members more often, contribute more statements to the discussion, and make and receive more negatively toned statements, again indicating less concern with having pleasant relations with others in their group (Fiedler, 1964, p. 165).

McNamara (1967) asked elementary teachers under high and low LPC principals to report the frequency with which each principal practised certain typical supervisory behaviors.

The results were interpreted as indicating that:

Low LPC principals, by contrast with high LPC principals, are more task-oriented in that they attach greater importance to instructional matters at staff meetings. They are more directive in that they prescribe teaching methods to a greater extent, more frequently interrupt lessons by using the public address system, make longer classroom visits (but play a less active part in classroom activities during the visits), and are more likely to request teachers to

visit the office to discuss teaching methods. The directive control style of low LPC principals, is however, not marked by downward communication only. Low LPC principals appear to make a deliberate effort to involve staff members in discussing school problems and in making decisions concerning the school. They permit, may even insist that, their teachers initiate a greater proportion of matters at staff meetings, and they give their teachers a greater share in making decisions regarding the operation of the school.

. . .The extent to which a principal participates in class activities during supervisory visits is positively correlated with LPC scores. This may imply that the less directive, less task-oriented principals are more concerned with establishing cordial relations with teacher and class. This positively distinguishing feature apart, high LPC principals are permissive in that they supervise less actively than low LPC principals, as regards both direct control and involvement of staff in decision-making (pp. 124-125).

In brief, then, the evidence indicates that both in general leadership situations and among school principals, low LPC scores are related to task-orientation and directive leader behavior, while high LPC scores are related to permissive leader behavior. In addition, though little evidence to this effect has yet been found among school principals, the evidence from studies of leader LPC in other fields indicates that high LPC scores are related to person- rather than to task-orientation.

What are the implications of these contrasted leadership styles for group functions?

LPC Scores, Leader Behavior, and Group Functions

The implications for leadership of the behaviors associated with LPC scores may be inferred from a suggested classification of LPC levels, leader behavior dimensions,

and the group functions which they are commonly assumed to serve*:

<u>LPC Scores</u>	<u>Set of Comparable Leader Behavior Dimensions</u>	<u>Comparable Group Functions</u>
<u>High</u>	Consideration Person-oriented Best-liked	Group maintenance Expressive needs Efficiency
<u>Low</u>	Initiating structure System-oriented Best ideas and guidance	Task achievement Instrumental needs Effectiveness

The nature of the relationships between LPC scores and group functions is still further defined by evidence concerning the effects on group members, under different conditions, of alternative leadership styles.

LPC and Within-Group Adjustment

Bovard (1963), in a discussion of the physiological response to psychological stress, suggested that Fiedler's (1950) psychotherapeutic relationship (psychologically close clinical behavior; an early recognized form of high LPC) might "help free the patient . . . from the stress reactions his own ideas and impulses would ordinarily trigger (p. 78)." With his stress reactions dampened, the patient might be free to attend to more practical matters. Bovard was proposing, in effect, the use of social stimuli to minimize physiological reactions to social stress.

*The suggested relationships are conceptually linked with the typology set out in p. 30, supra.

Results of recent research add to knowledge concerning the nature of the effects of the relationship-oriented behavior of high LPC personalities:

(Military) squads with high LPC members made more frequent within-squad sociometric choices and had greater esteem for the squad leader than did low member-LPC squads (while) squads with low LPC leaders and members tended to have poor interpersonal relations and low squad cohesiveness (Wearing and Bishop, 1967, p. 22).

As might be expected, these contrasting styles of interpersonal behavior are differentially appropriate to group needs, depending on the favorableness of the situation:

Squads with high LPC squad leaders (1) had better self-satisfaction and interpersonal adjustment, (2) evaluated the general Army environment less favorably*, and (3) performed better on the engineering tasks than squads with low LPC leaders in the non-competition condition. The reverse was true in the competition condition . . . (Wearing and Bishop, 1967, p. 13)

Fiedler, O'Brien, and Ilgen (1967) studied volunteer teams operating in a stressful foreign environment, performing public health and community development work in small isolated villages in Central America. They found that "in situations of low environmental stress, the low LPC leaders appeared to contribute more to the adjustment of group members (pp. 14-15)." However, as the environment became more stressful (rated from low, through medium, to high village stressfulness) the high LPC leaders (so long

*by contrast with their own group. Interpreted as out-group rejection and assumed to be a complement of in-group preference.

as they rated the group atmosphere favorably) had increasingly more effect on the adjustment of group members (p. 21).

IV. AFFECTIVE LEADER-MEMBER RELATIONS

This is considered by Fiedler to be the most important single determinant of the favorability of the situation to the leader. The warmth of the leader-member bond is likely to be critical for the amount of influence the leader can exercise. It reflects the leader's personal status, as distinct from that associated with his position. It may be the most important element of internal stress determining the way in which group members are likely to respond to the leader's initiatives. Secord and Backman (1964, pp. 396-397) point out that it has important implications for communication in co-ordinating group member activities. Affective leader-member relations are also likely to be related to within-group cohesion. The leader of a divided group may have difficulty in establishing ties of influence with all group members. Fiedler and Meuwese (1963) found the intelligence of the leader correlated with group effectiveness in cohesive, but not in uncohesive groups. Leader-member affective relations are also likely to reflect the interaction between leader and group member goal orientations. Conflict of purpose is hardly likely to result in warm leader-member relations.

Affective leader-member relations appear to moderate

the leader's effective power in the way Simon's (1950) "zone of acceptance" was assumed to operate. Poor leader-group relations may be expected to reduce considerably the range of the zone of acceptance.

Leader-member relations have been measured in a number of different ways, separately and in combination, as well as by having observers assess the warmth of group climate. The two most common ways have been from the opposite ends of the interpersonal perception transaction. One measure of acceptance of the leader has been obtained by asking group members a sociometric choice question aimed at measuring preference for the leader as coworker. Alternatively, leaders have been asked to rate the group atmosphere (GA), the level of favorability of the leader's ratings of the group as a whole being taken as an index of the warmth of his attitudes towards his group. While both measures have proved to be important determinants of the style of leadership appropriate to the group, there is a lack of correspondence between the two which may be due to perceptual distortion. Thus McNamara (1967) found that among principals who rated GA favorably, LPC scores were negatively correlated with staff rating of the principal on effectiveness, a response which may be regarded as a form of sociometric choice of the principal as coworker. This suggests that among leaders who rate GA favorably, those who are also task-oriented tend to have their

favorable perceptions reciprocated by their groups, but that those whose leadership is relationship-oriented may be perceiving their groups through rosier glasses than is consistent with their coworkers' attitudes to them. One means of isolating for independent study groups with incongruent leader-member mutual expectations was employed by Fiedler et al. (1967) when they divided teams high on sociometric choice of the leader into those in which the leaders did/did not perceive their teams favorably. That is, cases of perceptual distortion were identified and studied separately by using in conjunction both measures of leader-member affective relations, one from each end of the perceptual transaction.

Relationship between LPC and Group Climate

Research into behavior is complicated by the difficulty of isolating interdependent variables. Although GA and the group's sociometric choice of the leader are both factors mediating the relationship between LPC and group adjustment, they may themselves not be independent of LPC. Wearing and Bishop (1967) constructed military squads composed of members and leaders selected as high and low LPC personalities. Low LPC squads led by low LPC leaders made ratings on items reflecting self-satisfaction and adjustment that were considerably lower than ratings of the same items made by the members of squads composed of the

other three combinations of leader LPC with member LPC. Likewise, their evaluations of their squad leaders were by far the lowest, and the proportion of intra-squad sociometric choices was similarly exceptionally low. It would seem that the interaction between leader and member LPC can also be an important determinant of group morale and of leader-member affective relations.

Relationships between the Leader's LPC and GA Ratings

Although the same individual prepares LPC and GA ratings, and despite the demonstrated stability of LPC scores*, evidence from a number of sources would indicate that the leader's LPC and GA scores are not correlated. Fiedler (1962, p. 313) reported a non-significant median (N:4) correlation of -0.18 (N: 21) between leader LPC and GA scores, and concluded "The three variables, leader LPC, leader GA, and (the effectiveness criterion) are statistically independent measures." McNamara (1967, p. 123) reported a non-significant correlation (r_{pb} ; N: 23) of 0.28 between principals' LPC scores and their GA categories (top and bottom thirds on ranked GA scores). While leaders' LPC scores are stable over time, Fiedler (1962) reported that "the leader's GA scores are uncorrelated over different tasks and groups (p. 317)."

*See p. 53 supra.

V. INTERACTING AND COACTING GROUPS COMPARED

Fiedler (1966c) distinguishes between interacting and coacting groups with regards to the effects of leadership style. He presents evidence which suggests that for coacting groups whose leaders have relatively high position power, leader LPC-group effectiveness correlations, as situations increase in stressfulness, undergo a transformation from negative to positive. But for interacting groups, there are three, rather than two, stages of LPC-effectiveness correlations, and the model is therefore more complex. He suggests (in a personal communication) that school staffs are coacting groups as distinct from the interacting groups with which the model was developed. The model of coacting groups predicts the pattern of correlations for school staffs which was observed by McNamara (1967).

Interacting groups are characterized by member interdependence in the performance of a common task, while the members of coacting groups perform their task in relative independence from one another. Fiedler and Meuwese (1963) define interacting groups as those "where the task precludes individuals from independent action (p. 83)." There is considerable evidence to indicate that group members who interact with respect to a task establish special psychological ties. Kelley and Thibaut (1954, pp.

753-754) summarize research evidence indicating the substitutability of the Zeigarnik effect among the members of such groups. That is, such a group may as a whole develop a motive system to complete a shared task, but if the share of any given member is completed by some other member of the group, then the tension driving him to complete the task is reduced, just as if he himself had been able to complete his share.

While the leaders of interacting groups must give priority to co-ordinating the interdependent activities of members, the leaders of coacting groups can concentrate on dyadic interpersonal relations with each of their group members, and presumably on developing common and favorable attitudes towards themselves and the task. For while the performance of one member of a coacting group may be relatively unaffected by the performance of another, laboratory research* and studies of work-group morale** indicate that the attitudes of members of coacting groups are still interdependent.

Finally, while the effectiveness of interacting groups can only be measured with reference to a shared product, the contribution of each member being impossible

*See Kelley and Thibaut (1954, pp. 751-752) on discouragement, "contagion", and "group atmospheres" in such groups.

**Roethlisberger and Dickson (1939).

to isolate, the effectiveness of coacting groups may be measured by summing the products of individual members.

Characteristics differentiating Fiedler's models of coacting and interacting groups are presented graphically in Figure 2, p. 67.

Fiedler (1966c) cites basketball teams and bowling teams as contrasting examples of interacting and coacting groups. Other examples given are:

the typical sales organization in which each salesman is given his own sales territory, or his own department within the store, and in which he is paid on a commission basis. Another example is the industrial workshop which operates on a piece rate basis. Aside from possible group norms governing output, the performance of one worker is only minimally affected by the performance of others. In addition, practically all classrooms fall into the coacting category; the performance of one student is only minimally affected by the performance of others (p. 1).

Fiedler argues that the leaders of coacting groups can rely less on the power of the group as a whole to motivate individual members than can the leaders of interacting groups. In coacting groups it is insufficient to rely on motivating only key members. This is presumably due to a lack of emergent group task needs such as those measured by Bales and Strodtbeck (1951). Consequently, while leaders of coacting groups with high leader position power possess some resources to influence their groups, leaders with low leader position power are unlikely to be able to develop alternative emergent leadership powers, since there is no basis of shared group needs with respect to goals.

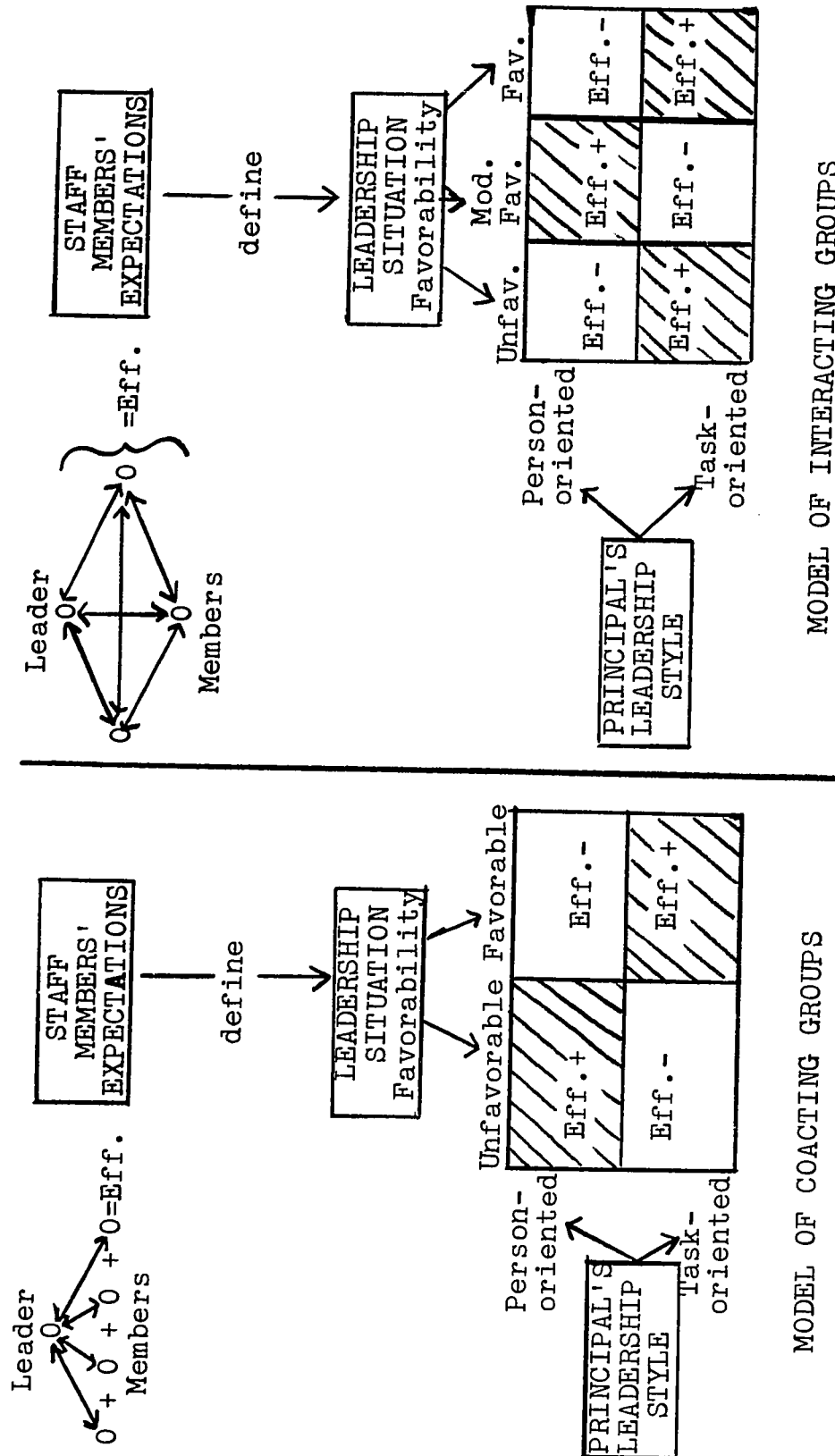


FIGURE 2

MODELS OF INTERACTING AND COACTING GROUPS COMPARED IN TERMS OF SCHOOLS
 (TWO SPECIAL CASES OF THE MODEL PRESENTED IN FIGURE 1, p. 15 *supra*)

The leaders of coacting groups can restrict their training activities to the training of each member separately--they do not need to train their members to interact with respect to the task. Since coacting groups lack the common bonds which in interacting groups provide psychological support for group members, the group-maintenance, quasi-therapeutic behavior of the leaders of such groups becomes correspondingly more important in situations of stress.

Fiedler (1967, p. 229) summarizes leader LPC-group performance correlations observed in studies of leadership among such coacting groups as Naval cadet groups pooling individual suggestions on a creative task, classroom groups, industrial workshops, supermarkets' grocery departments, and Naval flight training groups. This last situation is one of extreme stress. Correlations are consistently negative in the unstressful, positive in the stressful situations. Further, the positive correlations are generally higher than the negative correlations, suggesting the particular importance of relationship-oriented leader behavior in coacting groups in stressful situations.

School Staffs as Coacting Groups

The investigator believes that a strong case could be made for regarding teachers at any given school as interdependent with respect to the educational product. Learning is a cumulative irregular experience difficult to

program precisely (and therefore difficult to parcel out in discrete units to independent operatives). Teachers need to co-operate across grade boundaries on a basis more flexible than that of the self-contained classroom, both for the sake of co-ordinated student learning experiences and to make use of the complementary abilities of staff members. An instructional program along these lines postulates a role for the school administrator as co-ordinator of interdependent teacher instructional activities. These assumptions appear to be supported by contemporary writers on education*. Certainly team teaching might be regarded as a case of school staffs performing as interacting groups.

There seems little doubt, however, that few teachers are aware of the need for co-ordination and that the reality of educational practice conforms to the model of coacting groups for school staffs. Of eight Edmonton elementary schools visited by the investigator in June 1967, and a further eight visited in March 1968, the staff of only one gave indications of some degree of instructional co-ordination across grade boundaries. At all others the teachers interviewed felt that staff members worked "pretty much on their own." The basis of education appeared to be

*Downey (1965), pp. 167-169; Goodlad (1964), pp. 120-124; Taba (1962), pp. 300-301.

the "egg-crate" school in which each cell is a self-contained classroom. The principals appeared to operate largely in terms of sets of dyadic relations with teacher units who worked independently in their "own" classes.

Fiedler's distinction between coacting and interacting groups may help educational administrators in analyzing some of the difficulties experienced by school systems in implementing genuine team teaching programs. If team teaching means transforming school staffs from coacting to interacting groups, then principals in such new situations will need to learn how to recognize and satisfy functional instructional-team task-achievement needs, to identify key team members and utilize them in motivating the teams, and to train team members to interact with respect to instruction.

VI. THE MODEL OF INTERACTING GROUPS

Fiedler's Contingency Model of Leadership Effectiveness

For readers interested in assessing the potential of school staffs as interacting groups, a brief outline of the appropriate model (the contingency model*) follows.

Fiedler's contingency model of leadership effectiveness (Fiedler, 1964) was an attempt to integrate a number

*A fuller summary may be found in McNamara (1967), pp. 47-60. For a full and up-to-date statement, see Fiedler (1967), Part III.

of factors affecting the favorability of the situation to the leader, and therefore the relationship between leadership style and group effectiveness. While later testing (Fiedler, 1966b) indicates some further refinement may be necessary in measuring the favorability of the situation to leadership, the general hypothesis seems supported in this and other studies (Wearing and Bishop, 1967; Fiedler et al., 1967). That is, low LPC leaders seem most effective in those situations which are favorable or unfavorable to leadership, but in situations only moderately favorable to leadership it is high LPC leaders who seem to lead more effective groups.

The contingency model attempts to systematize the way in which the interaction of three major contingent variables may be used to predict the favorableness of leadership situations, and therefore the direction of leader LPC-group effectiveness correlations. Group-task situations are ordered on favorableness to the leader, first on a dimension of leader-member affective relations, secondly on task structure (TS), and finally on leader position power (LPP). While the first and third dimensions are also important for coacting groups, task structure is significant only for interacting groups. While the succession of choices by leader and led between alternative courses of action is never entirely free from stress, the stressfulness of decision-making is considerably increased

when the ambiguity of the task creates uncertainty as to what are the correct choices of ends and means.

While the general hypothesis underlying the contingency model has received support from a series of later studies, evidence collected since 1964 suggests that one of the three contingent variables then used to define the favorability of the situation is subject to cultural variation in significance. Fiedler (1966b), applying the curve to a study using Belgian Navy units, obtained results forming a curve of the same general shape but considerably less regular than was expected. Retrospective analysis of the situation suggested that the LPP of Belgian Navy petty officers over recruits is considerably greater than is the case in the United States forces.

Later studies have measured other factors which act as contingent variables, and have therefore had to build on Fiedler's (1964) method of ordering situations on favorableness. For example, Fiedler et al. (1967, p. 14) combined measures of internal stress (GA and sociometric choice of the leader) with a measure of external stress (rated stressfulness of the village environment in which the teams were working) in ordering situations on favorability to team leaders. GA was given priority in ordering situations (all leaders were emergent leaders--sociometrically chosen), and the curve of LPC-performance correlations conformed to the general hypothesis through situations of

high, medium, and low favorability.

Leader Position Power and Task Structure

The favorability of the leadership situation is deemed to deteriorate as the task faced by the group becomes more ambiguous, and as the power customarily associated with the position of leader decreases. These two elements of the situation are highly correlated (Fiedler, 1964).

Leader Position Power (LPP) is the power customarily associated with the leader position regardless of the incumbent. It stands in relation to leader-member affective relations in the same way as Barnard's (1938) authority of position to authority of leadership. LPP may be distinguished from leader-member affective relations in conjunction with Getzels and Guba's (1957, p. 424) model distinguishing between the nomothetic, institutional, or normative dimension of behavior, and the idiographic or personal dimension. The strength of expectations of the leader position is likely to affect the style of leadership acceptable--"It seems not unlikely that supervisory relations may require different attitudes than do participatory leadership roles (Fiedler, 1962, p. 317)."

Task Structure (TS) refers to the extent to which the group's task ranges from clear-cut and well-defined to vague and ambiguous. Like leader position power, it is a determinant of the degree of effective power the leader has,

and therefore of the favorability of the situation to the leader:

Thus, the leader who has a structured task can depend on the backing of his superior organization, but if he has an unstructured task the leader must rely on his own resources to inspire and motivate his men. The unstructured task thus provides the leader with much less effective power than does the highly structured task (Fiedler, 1966a, p. 281).

Levels of Leader Position Power and Task Structure in Schools

Determining the position power of leaders of school staffs is the more important problem in terms of priority of research needs. LPP is regarded as a significant factor whether or not schools are interacting groups. TS only becomes meaningful if schools are interacting groups.

Formal institutional leader positions are almost always rated high on LPP (Fiedler, 1964, pp. 166-173). When cadet officers were appointed chairmen of discussion groups, they were judged high on leader position power by virtue of their rank. The only formal position rated low on LPP was that of chairman of board of directors, evidently because the chairman's fellow directors are not his subordinates. In this context, it is difficult to escape the conclusion that the position of school principal, with long-established traditions of authority and status viz-a-viz that of teacher, is one of high rather than low LPP.

On the other hand it would be difficult to categorize the tasks of school staffs as well-structured in view of the

confusion at the highest theoretical levels about the nature of the learning process. Of course, if the task achievement of school staffs is measured in terms of restricted and well-defined objectives, for example performance on testing the results of rote learning, then school staffs working primarily towards such goals might be categorized as having a task high on TS.

VII. PREDICTING CORRELATIONS BETWEEN PRINCIPALS' LPC SCORES AND SCHOOL EFFECTIVENESS

Predictions are made in terms of Fiedler's two models.

If typical school staffs are coacting groups, and if the LPP of school principals is low, then the principal's leadership style is not likely to have important consequences for school effectiveness. However, if, as seems likely, the LPP of principals is high, then the model of coacting groups predicts that principals' LPC scores correlate negatively with school effectiveness in favorable, unstressful school staff situations, and positively in unfavorable, stressful staff situations. That is, in favorable situations task-oriented leadership by principals is functional for school effectiveness, while in unfavorable situations principals who are person-oriented are therapeutic for the staff, and therefore functional for school effectiveness.

Since the Alberta provincial government endeavours to standardize opportunity throughout Alberta, the schools

of the province are relatively homogeneous in terms of social environment and working conditions. It is therefore likely that the major sources of differences in levels of stress among the staffs of Alberta schools are to be found within, rather than external to, school staffs. The most common forms of stress differentiating among Alberta school staffs probably include lack of staff cohesion, interpersonal conflict, and poor principal-staff affective relations. That is, the measures of interactionally-defined leadership expectations are believed to provide the critical operational index of variance in the favorability of the leadership situation in Alberta schools.

Among such school staffs as work interdependently with respect to instructional goals, the contingency model for interacting groups is the appropriate model. That is, schools which are categorized high on LPP and low on TS are considered as classified in Octants III and VII of the model*. Where leader-group affective relations are warm (Octant III), negative leader LPC-group effectiveness correlations are predicted. Where relations are relatively cool (Octant VII), positive correlations are predicted.

That is, given high LPP and low TS, whichever model (coacting or interacting) is deemed relevant to schools, the same pair of complementary correlations is predicted.

*As applied in McNamara (1967) pp. 145-152.

CHAPTER IV

HYPOTHESES

The study reported in this dissertation investigated the persistence of principals' leadership styles as a personality trait, factors defining the leadership expectations of school staffs, and school effectiveness as the product of the interaction between the principal's leadership style and the school staff leadership situation. The hypotheses are presented in that order. Underlying the hypotheses are a number of theoretical assumptions. These assumptions are stated in terms of schools.

It is believed that principals' leadership styles define a relatively enduring personality trait, and that the index of this trait, the LPC score, is therefore stable from one school year to another.

It is believed that the response of teachers to the principal's personal leadership style is moderated by a number of factors which define the favorability of the leadership situation to the principal. These factors may be divided into both institutional factors and interpersonal interaction factors. The institutional factors are considered to be at the same level of favorability at all schools. The interactional factors, on the other hand, depend on the interaction between the personal characteristics of the

principal and the teachers at any given school, and therefore define levels of favorability to leadership which vary from one school to another.

One institutional factor, leader position power (LPP), is indexed by the authority of position available to all individuals who occupy the office of principal. A related factor, which also differentiates expectations of leader behavior between institutions, is task structure (TS), the degree of clarity-vagueness characterizing the task faced by (in this case) teachers.

Interactional factors emerge from the interpersonal interaction between principal and staff at a particular school. At the time of proposing the hypotheses, they were believed to be indexed by the attitudes to their staffs of particular principals (GA). It is believed they may also be indexed by sociometric measures of the attitudes to their principals of particular staffs, and of the attitudes of teachers towards each other at particular schools. Another possible index of the favorability to the leader at particular schools may be the expressed need for autonomy of the staff. One of the aims of the study was to measure the relationships among interactional indices of the favorability of the leadership situation as indexed by both the principal's and the staff's attitudes.

The fundamental hypothesis of Fiedler's leadership effectiveness theory is that group effectiveness is

contingent on the interaction between leadership style and the favorability of the leadership situation. It was believed that principals' GA ratings might be used as a general index of the favorability of the staff leadership situation to the principal. Hypotheses expressed in terms of this index were therefore proposed with respect to schools in general, and with respect to types of schools varying as regards the characteristics of size, level, fragmentation, and sex of principal.

It is believed that measures of staff attitudes might be used to index the favorability of the leadership situation at particular schools. Complementary principal LPC-school effectiveness correlations were therefore hypothesized, contingent on staff attitudes to the principal, on staff cohesion, and on degree of within-staff interpersonal conflict.

The reader may find it helpful to refer to Figure 3, p. 80, in studying the hypotheses. Figure 3 is designed to indicate which variables are being related by each hypothesis, and the functions attributed to these variables by the integrating theory.

I. PRINCIPALS' LEADERSHIP STYLES AS A FUNCTION OF PERSONALITY

The leader behavior of principals is related to LPC scores (McNamara, 1967). If leader behavior is a function

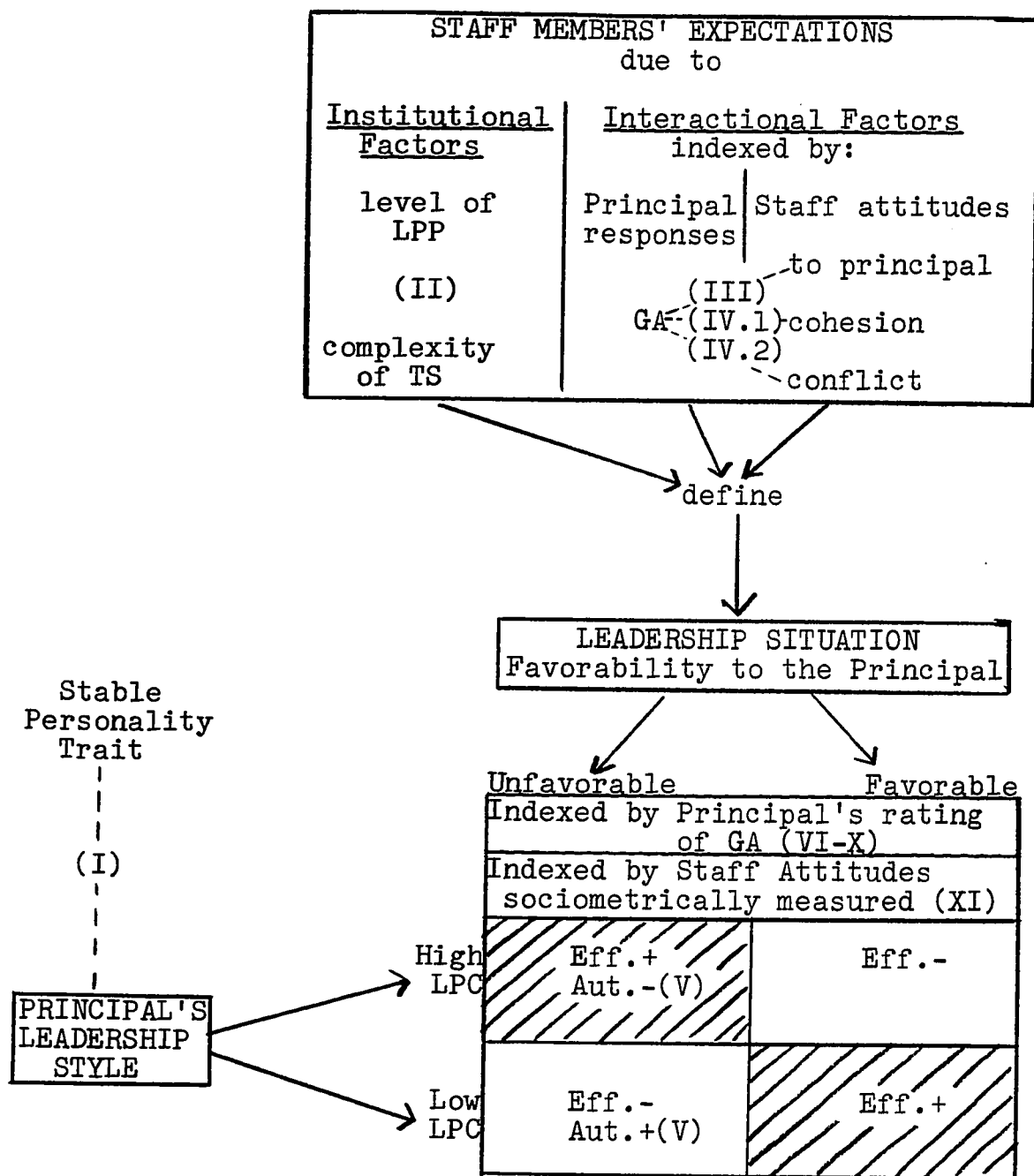


FIGURE 3

VARIABLES RELATED BY THE HYPOTHESES, AND THEIR SIGNIFICANCE FOR THE THEORY. (ROMAN FIGURES IN BRACKETS REFER TO SPECIFIC HYPOTHESES)

of an enduring personality trait, the persistence of personal leadership styles could be a significant factor both in theoretical analysis and in planning the administration of school systems. The problem was to test whether principals' LPC scores are consistent over a time interval. In order to provide a rigorous test of the robustness of the scores, the retest was made at a different stage of the school year and with different scales.

Determining the stability of principals' LPC scores

Hypothesis I

Principals' LPC scores are consistent from one school year to another.

II. FACTORS DETERMINING THE LEADERSHIP EXPECTATIONS OF SCHOOL STAFFS

Factors defining the favorability of the situation to the leader might be divided into two sets, institutional and interactional.

By institutional factors are meant those associated with schools in general as units of a social institution, regardless of the particular personnel. In terms of Fiedler's theory, these factors are the leader position power of school principals as appointed leaders, and (if, and where school staffs are interacting groups) the task structure of teaching.

By interactional factors are meant those factors specific to the interpersonal interaction of the principal and the staff members at particular schools.

Hypotheses were proposed about both sets of factors considered significant in defining the expectations of school staffs and thereby determining the favorableness of their responses to their principals' attempted leadership acts.

Indexing institutional expectations defining the favorability to principals' leadership of school staffs generally

Task structure (TS) is high when the task facing the group is clear-cut, low when the goals, the choices of means, and the consequences are not clearly and unequivocally specified. Leader position power (LPP) is high when the position of group leader, regardless of the person occupying the position, customarily carries formal powers; LPP is low when the occupant of the position can rely only on his own ability to influence the group.

It seems likely that the model of coacting groups applies to schools*. If this is the appropriate model, then the level of leader position power of the principal is important, for without high LPP his leadership style is not likely to have any consequences for school effectiveness. If all or any school staffs are regarded as interacting

*See pp. 68-70 supra.

groups, then both LPP and TS are important dimensions of the relevant contingency model. If LPP and/or TS differentiate between elementary and secondary schools, then different leadership styles may be appropriate, depending on the level of school being considered.

Hypothesis II

- 1a.) Elementary school staffs are faced with a task which is relatively unstructured.
- 1b.) Secondary school staffs are faced with a task which is relatively unstructured.
- 2a.) The position of elementary school principal is a relatively powerful leader position.
- 2b.) The position of secondary school principal is a relatively powerful leader position.

Relating interpersonal attitudes defining the favorability to the principal's leadership of particular staffs

McNamara (1967) reported that GA level significantly moderates staff perceptions of the principal and the school. The evidence was interpreted as indicating that the GA variable is a leader perception of the group situation which interacts with the leader's task and interpersonal attitudes (LPC) to determine the effectiveness for the group of his leader behavior. Accordingly, the study herein reported was designed with the intention of using the principal's group atmosphere (GA) ratings as the

chief operational index of the interactionally generated climate defining favorability to the leader at particular schools. Nevertheless, it was deemed of theoretical interest and of considerable practical concern to define more precisely the characteristics of leader-group affective relations in schools and their precise relationship to GA. It was not clear whether GA reflects the counterpart in the principal's perceptions of a single factor in attitudes to the principal shared by staff members.

Hypothesis III

Principals' GA ratings are correlated positively with staff preference for the principal as professional colleague.

Hypothesis IV

1. There is a positive correlation between principals' GA ratings and the proportion of fellow staff members whom teachers at the school choose as preferred companions.
2. There is a negative correlation between principals' GA ratings and the degree of within-staff interpersonal conflict reported by staff members.

Hypothesis V

Principal LPC correlates negatively with the expressed need for autonomy of school staffs, in those schools where there is a relatively low level of principal-staff affective relations, as indexed by . . .

1. . . . the principal's rating of the staff on GA.
2. . . . the extent to which staff members choose the principal as professional colleague.

III. THE PRINCIPAL'S LEADERSHIP STYLE, THE SCHOOL STAFF LEADERSHIP SITUATION, AND SCHOOL EFFECTIVENESS

Fiedler's (1964) basic hypothesis is that:

The type of leader attitude required for effective group performance depends upon the degree to which the group situation is favorable or unfavorable to the leader (p. 164).

Specifically, given high LPP (and low TS in the case of interacting groups), and given the relatively low degree of stress experienced by school staffs, the theory predicts negative principal LPC-school effectiveness correlations when the leadership situation is relatively favorable to the principal, positive correlations when the situation is relatively unfavorable.

Using GA as an Index of the Favorability of the Situation

When GA was used to categorize elementary school staffs on favorability to the principal as leader, the pattern of correlations observed conformed to Fiedler's theory (McNamara, 1967).

In planning the study reported in this dissertation, GA ratings were collected from all principals and these were intended to serve as the general index of the favorability of the school staff leadership situation to the

principal. The following hypothesis was accordingly proposed:

Hypothesis VI

Principal LPC-school effectiveness correlations are contrasting in sign, contingent on the favorability of the leadership situation as indexed by the principal's rating of group atmosphere (GA). The two variables are correlated negatively among schools at which the principal rates the staff relatively favorably, positively among schools at which the principal rates the staff relatively unfavorably.

As well as being used as the operational index of favorability for the sample as a whole, GA was intended to be used as the index of favorability in testing to what extent school characteristics are factors limiting the validity of the theory to certain types of schools only. McNamara (1967) had found indications that the theory might be valid for predicting the effectiveness of small (average 12 teachers) elementary schools with male principals and largely female staffs. There was a need to test not only whether the theory is valid for schools in general, but also how widely (in terms of size, level, and fragmentation of school, and sex of principal) such findings might be generalized to all types of schools. Data collection was accordingly extensive, with a view to

testing a number of hypotheses in relation to schools of certain types.

Testing the theory among increasingly larger schools

Hypothesis VII

Principal LPC-school effectiveness correlations are contrasting in sign, contingent on the favorability of the leadership situation as indexed by the principal's rating of group atmosphere (GA). The two variables are correlated negatively among schools at which the principal rates the staff relatively favorably, positively among schools at which the principal rates the staff relatively unfavorably, among schools staffed by . . .

1. . . . between three and six professional persons.
2. . . . between 7 and 12 professional persons.
3. . . . between 13 and 24 professional persons.
4. . . . between 25 and 49 professional persons.
5. . . . by 50 or more professional persons.

Testing the theory among schools of progressively higher level

Elementary school teachers are popularly regarded as facing a less complex task than secondary teachers. Conventional elementary schools organized on the basis of the self-contained classroom are obviously less complex in

organization than secondary schools at which subject teachers move from class to class. In some cases practical considerations might be expected to interfere with the operation of the variables as related by the theory. For example, if schools are complex, organizational barriers might inhibit the interactional emergence of shared staff frames of reference, or make physically impracticable the maintenance by the principal of the dyadic relations with each staff member basic to the model of coacting groups.

Evidence was needed to test whether the theory applies in the same way to secondary schools as to elementary schools (McNamara, 1967, p. 200). It was therefore proposed to test the applicability of the theory to schools at various levels.

Hypothesis VIII

Principal LPC-school effectiveness correlations are contrasting in sign, contingent on the favorability of the leadership situation as indexed by the principal's rating of group atmosphere (GA). The two variables are correlated negatively among schools at which the principal rates the staff relatively favorably, positively among schools at which the principal rates the staff relatively unfavorably, among . . .

1. . . . elementary schools.
2. . . . junior high schools.

3. . . . senior high schools.

Testing the theory among multilevel schools

Multilevel schools, such as elementary-junior high (grade I-IX) schools, and all-level (grade I-XII) schools, are so constituted as to embody a tendency for the staffs to become fragmented into virtually separate groups. In these schools, subgroups of the staff might develop such unco-ordinated or even conflicting purposes that the principal's leadership style could have little impact on school effectiveness. In order to study the implications of the theory for such schools, the following hypothesis was proposed:

Hypothesis IX

Principal LPC-school effectiveness correlations are contrasting in sign, contingent on the favorability of the leadership situation as indexed by the principal's rating of group atmosphere (GA). These two variables are correlated negatively among schools at which the principal rates the staff relatively favorably, positively among schools at which the principal rates the staff relatively unfavorably, among . . .

1. . . . elementary-junior high schools (grades I-IX).
2. . . . high schools (grades VII, VIII, or IX-XII).
3. . . . all-level schools (grades I-XII).

Testing the theory among schools led by female principals

In some school systems (e.g. Calgary Public) a good proportion of the principals of elementary schools are female. Do culturally defined expectations concerning sex role behavior place limitations on the behavioral manifestations of the leadership styles measured by the LPC scores of female principals? (and therefore on their LPC-effectiveness correlations).

Hypothesis X

Principal LPC-school effectiveness correlations are contrasting in sign, contingent on the favorability of the leadership situation as indexed by the principal's rating of group atmosphere (GA). The two variables are correlated negatively among schools at which the principal rates the staff relatively favorably, positively among schools at which the principal rates the staff relatively unfavorably, among schools led by female principals.

Using Staff Attitudes to Index the Favorability of the Situation

There was a need to investigate whether for school staffs, as already demonstrated for other typical task groups, group attitudes moderate leader LPC-group effectiveness correlations in the same way as GA. The socio-metric data collected from Calgary Public elementary

schools were therefore used to test the following hypothesis:

Hypothesis XI

Principal LPC-school effectiveness correlations are contrasting in sign, contingent on the favorability of the leadership situation as indexed by certain indices of staff attitudes:

1. The two variables are correlated negatively among schools at which relatively many staff members choose the principal as professional colleague, positively among schools at which relatively few staff members choose the principal as professional colleague.
2. The two variables are correlated negatively among schools at which the staffs are relatively cohesive, positively among schools at which the staffs are relatively uncohesive.
3. The two variables are correlated negatively among schools at which staff members report relatively few instances of interpersonal conflict, positively among schools at which staff members report relatively many instances of interpersonal conflict.

PART II

THE SAMPLE AND THE VARIABLES

CHAPTER V

DATA COLLECTION

I. DATA COLLECTION PROCEDURES

Date of Data Collection

In planning the study it was felt that the end of the school year would be the most appropriate time to collect data. It was believed that the development of meaningful structure in interpersonal interaction among school staff members is likely to be at an optimum level towards the end of the school year. Certainly the level of effectiveness of a staff is likely to be most evident towards the end of a year's work. Public examination results were used as the criterion of effectiveness for some schools, and these examinations are taken in late June of each year.

All data from principals and staffs to test Hypotheses III-XI were therefore collected during May-June of 1967. Superintendents' ratings of effectiveness were prepared during July and supplied during the period from July to October. Students' examination results were collected from the Department of Education during October.

Retest LPC ratings, to test Hypothesis I, were from a different sample of principals*. As the intention was to

*Those who assisted in 1966. See McNamara (1967).

collect the scores at a less stressful part of the school year*, this set of LPC scores was collected during November 1967.

Scope of Data Collection

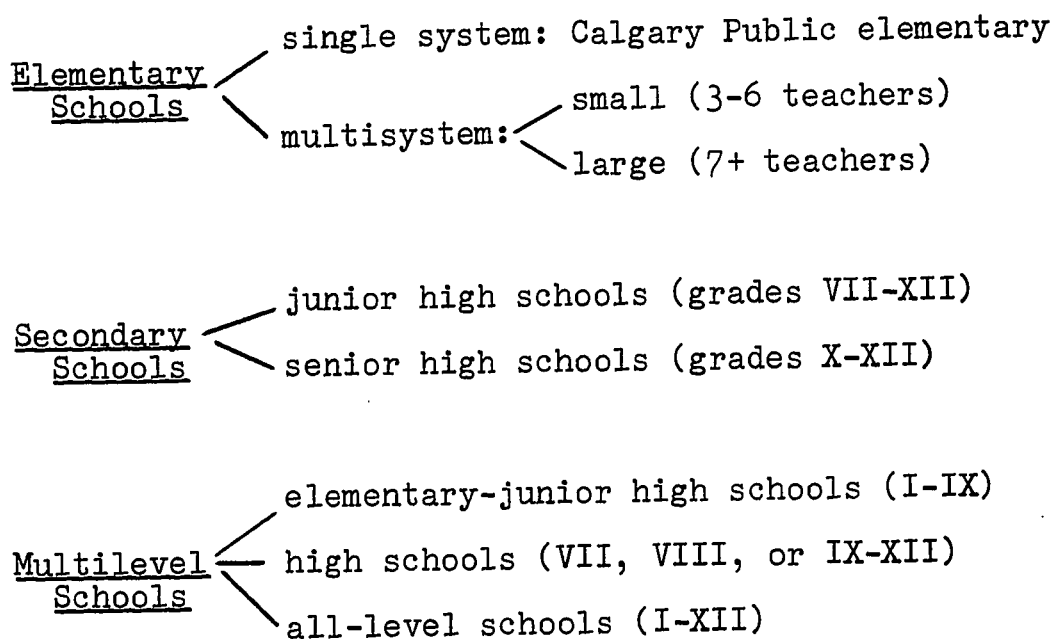
Data collection was extensive, with a view to providing as wide as possible a range of schools for testing the applicability of the model. Co-operation was sought from personnel of elementary, multilevel, and secondary schools, both rural and urban, and from schools with male and female principals.

A second factor affecting the size of the sample was the need for large numbers of schools of each type. The partitioning of the sample required for adequate testing quickly reduces an apparently large sample to subsamples inadequate in size for the necessary statistical tests. In general, a subsample was considered sufficiently large when data could be obtained from enough schools such that, after partitioning on an index of favorability, each part would include at least sixteen schools.

The Subsamples

As superintendents contacted indicated their willingness to co-operate, data were collected to constitute the subsamples indicated in Figure 4, p. 94. Calgary Public

*See p. 81 supra.



CLASSES OF SCHOOLS:	EL	ML	SEC
<u>Single system:</u>	CPEL		
<u>Multisystem:</u>	MSEL	EL-JHS	JHS
		HS	SHS
		AL	

FIGURE 4

SUBSAMPLES AND IDENTIFICATION CONVENTIONS

EL: refers to elementary schools from all systems.
 CPEL: refers to Calgary Public elementary schools only.
 MSEL: refers to Multisystem elementary schools only.

elementary schools comprised the only subsample in which all schools belonged to the one school system. All others were multisystem subsamples--i.e. the schools in each subsample were drawn from several school systems because no single system was able to provide a sufficiently large subsample. Conventions used throughout the text in referring to the subsamples are also set out in Figure 4.

Availability, Source, and Form of Data

School Characteristics were available from the Department of Education's "List of Operating Schools," used in selecting the schools to be contacted. As schools were contacted and requested to co-operate, the following* information about each school was coded and recorded:

Grade range

Size (number of professional personnel, including the principal)

Size and type of community (e.g. rural/large city)

Sex of principal

Effectiveness Measures. Ratings on effectiveness were of two kinds. For 74 CPEL schools, four raters were asked to rate individually each of the schools on a six-point scale (Appendix D1, p. 389). It was considered possible to integrate their ratings with some degree

*Plus items of possible use to future analyses: administrative pattern (e.g. county/district); public/separate; status of principal (lay/religious).

of reliability, both because the raters were all supervisory officials of the same system, and because they had opportunities to make comparisons across a wide range of schools.

These conditions did not apply to the raters of schools in the remaining subsamples (MS), where the superintendents, generally of small systems, were usually the sole raters, often of a few and sometimes of only one school. It was not deemed possible to obtain the same combination of comparability and discrimination from these raters, who were therefore asked to rate their schools on a three-point scale (Appendix D2a, p. 392). It was intended to use these ratings to dichotomize the schools on effectiveness, by discarding the one-third of the schools rated at the central level*. To give raters confidence in the security of the ratings they were to supply, all school identities were coded and only the coded ratings were supplied through the mails (Appendix D1c, 2b, pp. 391 and 397).

Public examination results were available from the Provincial Department of Education. These were student scores, both subject and aggregate (grade IX), and subject only (grade XII). Ability scores on each student were also

*One by-product of this aspect of the study design was the collection of data from a large number of those schools on which ratings would be the only effectiveness criterion, so allowing for the intended discards.

available. Grade IX student scores were available on punched cards, but grade XII scores were available only on printed sheets, from which pupil cards had to be punched. Student achievement scores had then to be combined into school effectiveness scores (the attainment index*).

Sociometric Data. It was decided to collect the sociometric data (Appendix C4,5, pp. 385-388) in such a way that the purpose of measuring staff attitudes to the principal would not be made obvious. That is, it was desired to obtain the spontaneous reaction of each teacher to the principal as one of a group of colleagues (i.e. personal, rather than institutional, attitudes to the principal). The questionnaire had therefore to be duplicated independently for each school, using personal names rather than position titles. With this limitation on the extent of collection, it was decided to confine this phase of data collection to one subsample. CPEL, on which it was expected the most discriminating effectiveness ratings would be available, was selected for this phase of data collection.

Teacher Role Attitudes (TRA).** Data on this instrument were desired from both a set of elementary and a set of secondary schools. CPEL was the most convenient subsample of elementary schools for this purpose. TRA

*See pp. 119 ff. infra.

**See Appendix C2, p. 378 infra.

responses were collected from the staffs of all SEC schools of twenty-four or fewer teachers willing to co-operate. In the case of EL-JHS, it was decided to collect TRA responses only in relation to the function of the attitudes measured for effectiveness as a secondary school taking the grade IX exam. This decision was reinforced as it became evident that effectiveness ratings would not be available on all of these schools, though examination results would be. TRA responses were therefore collected only from the teachers of grades VII-IX in schools of the EL-JHS subsample. In interpreting the relationships observed with Autonomy* scores of the staffs of EL-JHS, it is important, then, to bear in mind that the Autonomy scores of schools in this subsample represent the attitudes of only one portion of the staffs of such schools.

The Effect of Assumptions Concerning GA Categories

As completed GA scales were returned by principals, those for each subsample were divided into thirds in accordance with the usual procedure of categorizing the upper third high and the lower third low on GA (group atmosphere). As it was intended to use GA as the most general operative index of the favorability of the leadership situation, it was decided to minimize the labour of

*See pp. 225, 230, and 319 infra.

data collection, and the burden thereby placed on school superintendents and staffs, by collecting effectiveness measures and teacher responses only from those schools categorized high or low on GA.

Two exceptions were made to this rule. In the case of CPEL, since an alternative index of favorability was also to be used, full data were collected from all schools whose principals had returned LPC and GA ratings. In the case of large SHS staffed by 25 or more teachers, public examination results were collected for all schools, including those in the moderate GA category*. As data analysis proceeded, this additional information concerning moderate GA schools provided useful but unexpected information concerning the nature of GA responses in schools**.

As schools were categorized on GA, it became evident that there was a systematic variation among subsamples in GA ratings. The final distribution of GA ratings over the full sample and within subsamples is summarized in Figure 5, p. 100.

In rating GA, the principal is asked to rate his staff as a group. While the rating is used as a personal rater index of the favorability of the leadership situation

*It was felt that these data would provide a useful criterion for possible later research into the effects of leadership style among subject department heads.

**See Chapter VIII, infra.

		Low GA	Moderate GA	High GA	
GA score intervals		57.5	61.5	65.5	69.5
		59.5	63.5	67.5	
FULL SAMPLE		N:121	N:159	N:139	
<u>Elementary</u>					
CPEL		N:22	N:24	N:26	
MSEL	3-6 trs.	N:20	N:24	N:21	
	7+ trs.	N:29	N:22	N:29	
<u>Secondary</u>					
JHS		N:18	N:10	N:17	
SHS	24- trs.	N: 3	N: 5	N: 4	
	25+ trs.	N: 7	N: 8	N: 7	
<u>Multilevel</u>					
HS	24- trs.	N: 7	N: 7	N: 8	
	25+ trs.	N: 3	N: 3	N: 1	
EL-JHS		N:17	N:16	N:15	
AL		N:19	N:12	N:17	

FIGURE 5

GA CATEGORIES BY SAMPLE AND SUBSAMPLES
 (DOTTED LINES INDICATE COMPLETE GA(M)
 EFFECTIVENESS DATA, GAPS INDICATE
 INCOMPLETE GA(M) DATA)

at particular schools, it might also be expected to show some variance as a response to differences in the expectations of the principal's position shared by staff members of schools varying in level and size, that is to say, in response to institutional variance in favorability by type of school. There appeared to be systematic variation of this kind among GA ratings, particularly among SEC and ML. Since the GA ratings were to be used as an index of favorability to particular principals, rather than to principals in general, it was decided to categorize schools on GA within samples rather than across samples. It was assumed that this procedure would act to partial out the variance due to institutional differences in the power of the position of principal as between various types and sizes of schools. By minimizing the effects of a hypothesized sub-institutional variance among GA ratings, this procedure was intended to maximize the power of GA as an index of the favorability to their principal as leader of particular school staffs.

On this basis, effectiveness ratings and teacher data were not collected from schools in the moderate GA category within some subsamples*. This decision had unfortunate consequences for the availability of data on

*However, due to a certain ambiguity on GA category boundaries as data flowed in, extra data were collected on some schools in the borderline GA areas.

some subsamples, a fact that became evident as data analysis proceeded*.

Collecting Data on Length of Association with Group

Although no hypotheses had been proposed about the effects of time on relationships among the variables, it was decided to collect from principals and teachers information concerning the number of years each had been present at his school (Appendices B5 and C2, pp. 374 and 378). The reason for collecting this information was an expectation that time might be a factor limiting the development of a structure of interpersonal relationships significant for school effectiveness. That is, it was felt that it might take more than a year for any principal and staff to develop the degree of structure in interpersonal relationships that would have significant outcomes for school effectiveness**.

As data analysis proceeded it became evident that time did have a very important bearing on the relationships defined by the theory, though more complex than, and different from, that expected***.

*See p. 179 infra.

**It was believed that this factor might be particularly important for SEC and ML, among which exam results index the product of a cumulative curriculum.

***See Chapter XIV infra.

Additional Data

The occasion of data collection was utilized to collect such additional available information as it was felt might be useful in follow-up studies. An example would be the LPC scores of secondary school subject department heads. Some of these additional data are available on punched cards, the rest are available on the original questionnaires.

Stages in Data Collection

1. Co-operation was sought from the superintendents of all school districts in Alberta (Appendix A, p. 366). Where those contacted did not reply, or were not prepared to supply effectiveness ratings, data were collected only for those schools on which an external (exam) criterion was available.
2. Co-operation was sought from the principals of schools on which effectiveness criteria of one or more kinds were available (Appendix B, p. 369).
3. Co-operating SEC of 24 or fewer teachers whose principals rated GA high or low were contacted, and their staffs asked to complete the TRA instrument (Appendix C1,2, pp. 376 and 378).
4. The staffs of CPEL whose principals had agreed to co-operate were asked to complete the TRA instrument and also the sociometric preference questionnaire (Appendix

C3,4,5, pp. 383-388).

5. Superintendents were asked to supply effectiveness ratings of two kinds, depending on the system:

CPEL: six-point ratings on all 74 schools (Appendix D1, p. 389).

MS*: three-point ratings only on those schools (EL, SEC, and ML) categorized within subsamples as high or low on GA (Appendix D2, p. 392).

7. The Department of Education was asked to supply student examination results (grades IX and XII) for all SEC and ML schools categorized high or low on GA within subsamples, and for all large HS and SHS staffed by 25 or more professional persons.
8. Principals assisting in 1966 (McNamara, 1967) were asked to complete a modified retest version of the LPC and GA scales (Appendix E4,5,6, pp. 406-410).

II. DATA RETURNS

Rates of Return by Stages

Data returns are summarized in Table I. As factors related to the rates of return at each stage governed the scope of data collection at the following stage, features

*See Table III, p. 117 infra.

TABLE I
STAGES OF DATA COLLECTION AND RATES OF RETURN

<u>STAGE I</u> SUPERIN- TENDENTS	76 superintendents contacted 56 superintendents provided eff. ratings 73% of superintendents co-operated.							
Full sample	Row 1	592 principals contacted						
	Row 2	463 principals provided LPC & GA ratings						
	Row 3	78% of principals co-operated						
	Row 4	423 LPC/GA instruments usable						
	Row 5	71% of principals returned usable data						
	Row 6	328 schools were measured on eff.*						
<u>STAGE II</u> PRINCIPALS	Class	EL		ML		SEC		
	Sub- sample	CPEL	MSEL	EL- JHS	AL	HS	JHS	SHS
	Row 1	89	209	74	61	44	64	51
	Row 2	74	157	50	54	37	49	42
by sub- sample	Row 3	83%	75%	68%	89%	84%	77%	82%
	Row 4	72	145	48	49	29	46	32
	Row 5	81%	69%	65%	80%	66%	72%	63%
Test N's->	Row 6	72	105	32	37	23	35	31
	Contact- ed**	74		27		14	24	8
<u>STAGE III</u> STAFFS	70%+ TRA	N 36 % 49%		24 89%		11 79%	19 79%	5 63%
		CPT		MLT		SECT		
	70%+ SOCIO- METRIC ITEMS	N 26 % 35%						
		CPS						
<u>STAGE IV</u> EFFECT. MEASURES	Ratings 6 point	74						
	3 point	105	17	36	11	20	6	
	Exam***		31	35	21	34	30	

*See pp. 113 ff. infra.

**See pp. 107-108 infra.

***Ability (SCAT) scores were not available on some schools which had co-operated.

of the returns are discussed by stages.

Stage I. Seventy-three percent of superintendents contacted agreed to provide effectiveness ratings of schools. From the districts administered by the remaining 27% it was still possible to collect principal data (LPC, GA, years) and public examination data as a criterion of effectiveness, but not data from the staffs of the schools. This meant, in effect, that EL data were collected only from those districts in which the superintendent was willing to co-operate.

Stage II. In general there was a good rate of return from principals. However 9% of the returns were at least in part unusable because one or both of the LPC or GA scales was incomplete or ambiguously completed. In a few cases, where only one semantic differential was incomplete, it was possible to categorize the school on LPC or GA, but the score could not be used. After discarding some schools impossible to categorize on GA, returns from 328 schools were available to test the hypotheses.

There was considerable variation among subsamples in the degree of co-operation granted. It may be noted from Table I that although there was a good rate of return from all subsamples, the returns from principals in some subsamples, particularly from principals of schools of higher level, included a large proportion (up

to 23% of a subsample) of unusable LPC/GA ratings. This fact, together with the comments returned with their scales, indicates that some of these principals felt uncomfortable about having to make ratings of the kind requested, and had considerable doubt as to their validity (in terms of apparent purpose). Their comments suggest that they had missed the point made in the first paragraph of the introduction to the LPC scale (Appendix B4, p.374). It may be wise in future studies with secondary principals to make this point more definitely.

It should be noted that the operational sample size is considerably less than returns among MSEL, all ML, and JHS, but not among CPEL nor among large HS and SHS. This fact is related to GA categorization within subsamples (see Figure 5, p. 100), and to the decision* not to collect effectiveness measures on moderate GA schools in certain subsamples**.

Stage III. Only schools from which 70% or more of teachers completed questionnaires were regarded as having provided an adequate return for a reliable indication of staff attitudes. CPEL sociometric returns

*See pp. 101-103 supra.

**However, examination results on the secondary schools among them are available from the Education Department, and could be of interest in view of the correlates of moderate GA ratings among principals (see Chapter VIII infra).

(CPS) were poor, and the sample on these data cannot be regarded as adequate. The questionnaire (Appendix C4, p. 385) was designed so as not directly to implicate the principal as such, since it was feared this might trigger an aversive reaction to "snooping". The questionnaire was quite successfully designed from this point of view, so much so that many teachers rejected the questionnaire because they felt that it was threatening to themselves or to their fellow staff members! This teacher reaction is quite clearly indicated in the comments written across many of the questionnaires returned. The most common reason given for not completing this questionnaire was that it was against the code of ethics. Presumably, if the investigator had taken the precaution of getting approval and a covering letter from the Alberta Teachers' Association, the invalidity of this objection might have been authoritatively indicated, and the rate of return on sociometric items may have been more satisfactory.

The returns of completed TRA instruments from ML and SEC were satisfactory, and are identified as the MLT and SECT subsamples. Returns on this instrument from CPEL (CPT) were unsatisfactory, no doubt because in this subsample it was linked with the unpopular sociometric questionnaire.

Stage IV. Examination results were available for

almost all SEC and ML, the only exceptions being a few schools on which the Education Department was unable to provide student ability (SCAT*) scores. Three-point effectiveness ratings were available for those small SEC and ML schools which were in districts whose superintendents had agreed to provide effectiveness ratings. As size and level of school rose, it became progressively more difficult to obtain ratings on schools from superintendents, who apparently felt diffident about rating large senior secondary schools. Such ratings as were received on these schools were markedly skewed in distribution**.

Calgary Public School System was able to provide ratings (six-point) by four raters on all 74 schools co-operating.

Interpretation of Results by Subsamples

In general the rates of return by principals are adequate to support a case for reliability in generalizing relationships observed from the subsamples to the populations they were selected to represent. Where returns are relatively low, for example from only 65% of EL-JHS principals, it is possible to compare relationships

*School and College Ability Tests.

**See p. 118 infra.

which appear to be consistent within the appropriate class (in this case ML). A good case could be made for sampling reliability on the basis of within-class stability. In reporting the reanalysis of the data (Chapter XIV infra), relationships are presented more concisely by classes of schools, the mutually supporting relationships within the constituent subsamples being reported only in appendices.

In the cases of SECT and MLT, the rates of return are adequate to support a case for regarding the relationships observed as representative. Relationships observed among the CPT schools, however, cannot be treated with the same degree of confidence. The operational subsample for the sociometric variables (CPS) has even less claim to being representative. In general, the conclusions based on staff returns from CPEL may be regarded as tentative only, to be tested in further research designed to ensure a more reliable sampling of teacher attitudes.

Data Available in Relation to the Hypotheses

Table II is a summary statement of the operational subsample sizes in relation to the hypotheses. The N's are the actual numbers of schools in relation to each hypothesis on which data were available. In cases where the subsamples were to be partitioned on GA or a sociometric variable, correlations were computed with even smaller N's, as may be observed in Chapters XII and XIII.

TABLE II
SUMMARY OF DATA AVAILABLE TO TEST THE HYPOTHESES

No.	HYPOTHESES				Operational subsample	N's (where applic.)		
	Variable I	Relationship proposed	Variable II	Index of FAV		Ratings 3p	Exam Results	Other
I	LPC 1966	Pos. correl.	LPC 1967		1966 sample			
II.1a	EL sch.	Judged low	Task Str					
II.1b	SEC sch.	Judged low	Task Str					
II.2a	EL pr.	Judged high	LPP					
II.2b	SEC pr.	Judged high	LPP					
III	GA	Pos. correl.	CHprof					
IV.1	GA	Pos. correl.	COH		CPS			26
IV.2	GA	Neg. correl.	CONFL		CPS			26
V.1	LPC	Neg. correl.	AUT		CPS			26
V.2	LPC	Neg. correl.	AUT	Low GA	CPT/SECT/MLT			25
				Low	CPS			8
VI.1	LPC	Neg. correl.	Effect.	CHprof				
VI.2	LPC	Pos. correl.	Effect.	High GA	Full sample	87	32	52
VII.1	LPC		Effect.	Low GA	Full sample	71	18	61
VII.2	LPC		Effect.	GA	Staffs 3-6	47	7	
VII.3	LPC		Effect.	GA	Staffs 7-12	35	28	9
VII.4	LPC		Effect.	GA	Staffs 13-24	92	33	92
VII.5	LPC		Effect.	GA	Staffs 25-49	16	5	31
VIII.1	LPC		Effect.	GA	Staffs 50+	105	72	17
VIII.2	LPC		Effect.	GA	EL	20		
VIII.3	LPC		Effect.	GA	JHS	6		
IX.1	LPC		Effect.	GA	SHS	17		34
IX.2	LPC		Effect.	GA	EL-JHS	11		30
IX.3	LPC		Effect.	GA	HS	36		31
X	LPC		Effect.	GA	AL	27		21
XI.1	LPC		Effect.	GA	EL(female)	28		35
XI.2	LPC		Effect.	CHprof	CPS	26		
XI.3	LPC		Effect.	COH	CPS	26		
			Effect.	CONFL	CPS	26		
		Joint complementary correlations FAV: negative UNFAV: positive						

CHAPTER VI

OPERATIONAL MEASURES OF THE VARIABLES

I. DIRECT USE OF RAW DATA

Nominal Variables

Schools were classified into categories on a number of principal/school characteristics. These were class and level* of school (e.g. ML, JHS), size of community (e.g. large city, rural district), and characteristics of the principal (e.g. sex).

Ordinal Variables

LPC and GA scores were treated as ordinal variables. These scores are obtained by summing the ratings on the component scales. There is some doubt as to whether LPC scores constitute interval scales (Cronbach and Gleser, 1953), in view of the possibility that variations in a rater's preference for the qualities defining the semantic differentials may result in the summing of ratings of different unit value. Relationships with LPC and GA scores were therefore computed using non-parametric statistical tests.

*Used as a nominal variable only for the purposes of the study.

Interval Variables

Size of school (from 3-6 teachers up to 50+ teachers) was primarily recorded as a means of classifying schools to test the various parts of Hypothesis VII. However, it is felt that the categories selected may be treated as intervals, and they were so used in the correlational matrices obtained to test the independence of the variables across the sample and within subsamples.

Ratio Variable

The number of years the principal had been at his school (Y_p) was regarded as a ratio variable that could be used directly in raw form*.

The operational measures of all other variables discussed in the remainder of this chapter are transformations of raw data by various statistical techniques used for summarizing and integrating information.

II. EFFECTIVENESS MEASURES

Two alternate effectiveness measures were used. It may be noted (Appendix D1b, D2b, pp. 390-398) that in

*For card punching purposes, principals established at their schools for nine or more years were all recorded as $Y_p=9$. This has the effect of diminishing the means, and, for correlation purposes, of invalidly skewing the distribution on the index of this variable. In view of the emergent significance of this variable, further studies with the data should use a corrected Y_p index.

requesting ratings of school effectiveness, an endeavour was made to obtain from raters a judgement of the overall educational product of the school staff, rather than of the narrow range of cognitive learning objectives on which public examinations measure attainment. It might therefore be expected that ratings of the broader educational product would have little if any correlation with attainment scores based on examination results.

Ratings of Effectiveness

Effectiveness ratings were called for on a six-point and on a three-point rating scale (Appendix D1c, 2b, pp. 391 and 395).

Six-Point Ratings--EFF(6). Calgary Public School System appointed four raters in constant contact with the city's elementary schools to rate 74 co-operating schools on effectiveness. Each rater was supplied with a 74-card sort carrying school names, and a code key from which the names of the schools were removed after the ratings were entered. The ratings of coded schools were then returned to the investigator.

The raters agreed on a common distribution (3,12, 22,22,12,3) of the six rating points. This distribution had the effect of forcing a choice around the median point. In view of the fact that the ratings of the four judges were to be integrated, the forced choice situation

is regarded as having been likely to increase the discriminatory value of the ratings. Three of the raters complied exactly with the agreed distribution; one rater varied slightly (3,13,21,23,11,3).

The average of correlations among all pairs of the four judges was 0.61*, and this is regarded as the index of inter-rater agreement. Reliability of the ratings is not high, a fact which is not surprising in view of the complexity of the educational task, the ambiguity of educational goals, and the consequent lack of agreement among educators concerning their objectives.

The variance among correlations between pairs of ratings is so small that no particular rater could be isolated as deviant from the group of judges, and his ratings therefore excluded from the composite effectiveness rating. Such variance among the raters as does occur appears to be random rater variation, presumably fostered by the difficulty of the task. It is not considered likely that a markedly higher level of inter-rater agreement could be achieved without a lengthy program to develop common criteria shared by all judges. The ratings were therefore used, with their limitations,

*Correlations between the ratings of pairs of raters were 0.60 (Raters I and II), 0.65 (I and III), 0.51 (II and IV), 0.64 (III and IV), 0.58 (I and IV), and 0.65 (II and III).

as the best available index of elementary school effectiveness. In interpreting results based on the ratings, their low reliability should always be borne in mind,

Taken together, the mean ratings of the four judges on each of the schools constituted the effectiveness criterion for CPEL. As data on the principals of two of the schools proved to be unusable, the ratings on only 72 schools were used. These (mean: 3.4618, s:0.9891) were standardized and transformed to normalized scores with a mean of 30 and a standard deviation of 10.

Three-Point Effectiveness Ratings--EFF(3). The three-point ratings were designed as a multi-system effectiveness measure* which could be used to compare schools across levels, specifically to compare EL with SEC with respect to the theory. It was intended to obtain dichotomized ratings, which, by taking schools at the extremes of effectiveness, would be relatively free from the overlap in ratings likely to arise in comparing ratings from a large number of judges each of whom rates only a small number of schools.

As can be seen from Table III, the distribution of these ratings varies with the type and level of school.

*See p. 96 supra.

TABLE III
DISTRIBUTION OF THREE-POINT EFFECTIVENESS RATINGS--EFF(3)

RATING LEVELS	CLASSES OF SCHOOLS						OVERALL
	EL	ML			SEC		
	MSEL	EL-JHS	AL	HS	JHS	SHS	
I	32*	5	6	6	7	4	60
Relatively	.29**	.37	.16	.55	.37	.67	.31
Effective	(.30)***	(.29)	(.16)	(.55)	(.35)	(.67)	(.31)
II	55	9	19	5	9	2	99
Intermediate	.51	.50	.54	.45	.42	.33	.49
Effectiveness	(.52)	(.53)	(.54)	(.45)	(.45)	(.33)	(.51)
III	18	3	11	0	4	0	36
Relatively	.20	.13	.30		.20		.18
Ineffective	(.17)	(.18)	(.30)		(.20)		(.18)
MEAN RATINGS:	1.87	1.88	2.14	1.45	1.85	1.33	1.88

*Integers indicate the number of ratings (I, II, or III) assigned to schools in that subsample.

**Decimals are the proportions of a rating (I, II, or III) out of all ratings of that subsample. These proportions were used to calculate EFF(03)--see pp. 130 and 131 infra.

***Are the proportions corrected when all ratings were in. To the extent that the decimal in brackets differs from that not in brackets, there is a slight degree of unreliability in EFF(03).

For example, no senior secondary schools (grades VII, VIII, IX, or X-XII) were rated III (low), so that if the original plan to dichotomize had been retained, the ratings could not have been used to compare these schools with others.

It may be noted that in general the distribution of ratings is negatively skewed, a trend which is typical of all subsamples with the exception of AL, where the distribution is positively skewed. This suggests a possible preference among superintendents for schools less fragmented in function, and in any case reduces further the reliability of the ratings.

In view of the failure to secure a satisfactory distribution of ratings for dichotomization, the original plan was not followed through. It was decided instead that, for a comparison of schools both within and across subsamples, the best use of the ratings received would be to treat them as three-point interval ratings. This must be regarded as the least reliable of the three primary effectiveness measures obtained, a feature which was in any case largely unavoidable due to the multiplicity of raters. Nevertheless, the results of the analysis indicate that EFF(3) does bear some systematic relationship to the other variables being considered.

Integrated Effectiveness Ratings

EFF(3) and EFF(6) are both regarded as measures of similar values, the chief difference between the two being one of precision arising out of differences between the two sets of raters used. It was therefore considered acceptable to integrate the two ratings to make comparisons across the subsamples to which each refers. This was done, at the expense of some loss of information concerning CPEL, by reducing EFF(6) to EFF(3) on the basis of the distribution of EFF(3) among elementary schools*. Where, in the report of data analysis, EFF(3) is used as the criterion for subsamples including CPEL, then it is the integrated EFF(3) measure that is being referred to.

School Attainment Scores (Examination Results)

The attainment index used was an extension of procedures developed by Mackay (1964) and by earlier students of correlates of school effectiveness. Two indices were developed directly from the examination results, and these were also used together as a composite index for HS and AL.

Grade IX Attainment Scores--ATT(IX). The grade IX public examination was taken by JHS and all ML. ATT(IX) was computed on the basis of the examination results of

*See Table III, p. 117 supra. The uncorrected proportions (.29/.51/.20) were used.

8903 students at 120 schools with an average enrolment of 74.2 grade IX candidates.

In the grade IX public examinations all students take all five subjects. Raw scores on the subjects are transformed to transmuted scores, which permit comparison of a student's scores in different subjects, and evaluation of his scores relative to score norms used for guidance and selection purposes. The transmuted scores on each subject are summed to yield a student aggregate score. Mean student aggregate scores for each school were used as the school achievement measure in computing ATT(IX).

For each student, an ability score was available in the form of SCAT* raw scores on verbal and quantitative ability tests. The mean for each school of its students' total SCAT raw scores was treated as the school's ability index.

ATT(IX) was then obtained for each school by computing a standard difference score (between mean school potential and mean school achievement) which was then transformed to a mean of 30 and a standard deviation of 10. School effectiveness scores on this index ranged from 2.29 to 54.33.

*School and College Ability Tests

Grade XII Attainment Scores--ATT(XII). Scores comprising the ATT(XII) index were computed for 89 schools with an average enrolment of 107.8 students, totalling 9592 grade XII students. Basically the same procedure was used for computing ATT(XII) as for computing ATT(IX). However, because grade XII courses are electives, so that distribution of ability among candidates offering for any course varies with the prestige of the course, the computational unit had to be the individual student's achievement in terms of ability (by subject) rather than the school mean on aggregate achievement in terms of mean school ability.

The Department of Education was able to supply complete sets of basic ability scores and achievement scores by subjects for all students in each of 89 schools taking the grade XII public examinations* in June 1967. The achievement scores were transmuted scores, but, unlike the grade IX scores, transmuted by subjects to take account of the variance between subjects in student ability (as a result of the right to electives). Ability scores used were each student's total SCAT raw score. Steps were then taken to compute ATT(XII) indices which

*SCAT (ability) scores were not available on a large proportion of the students at several large secondary schools, which had therefore to be struck from the sample for lack of an effectiveness criterion.

would take account not only of student ability but also of variance in student enrolment in each subject at each school.

On the basis of the relationship for each of 19 subjects, over the full sample, between individual student ability and achievement scores, a standard difference score was computed for each student in each subject he had taken. Student standard scores in each subject were reduced to subject indices* for each school, which were in turn weighted by the enrolment in each subject at each school, then combined to yield an effectiveness score over all subjects for each school**. This two-step reduction was subject to regression effects at both steps, so that though the school scores were derived from individual student standard scores by subjects, the obtained school scores were all considerably less than 1.0, having a mean of 0.04 and a standard deviation of 0.28. They were therefore standardized, then transformed to a mean of 30 and a standard deviation of 10, yielding an attainment index--ATT(XII)--which was regarded as

*Not used as such in the study, but available for students interested in investigating the significance of the theory for secondary school subject department heads (whose LPC/GA scores are also available).

**All computations in this series were to six decimal places to minimize the loss of information through a multi-stage process.

comparable with ATT(IX) both statistically and in terms of the educational goals on which effectiveness was being measured.

Composite Attainment Scores. Two subsamples of ML participated in both the grade IX and the grade XII public examinations. These were AL (I-XII) and HS* (VII, VIII, or IX-XII). Evidently the validity of the effectiveness measure for schools in these subsamples is increased if it is designed to take account of attainment at both levels.

The composite attainment index was computed as a weighted mean of ATT(IX) and ATT(XII) for each school in the two subsamples. ATT(XII) was simply weighted by the total number of students taking the grade XII exam at each school. It was judged that the small gains in precision that would result from weighting grade XII scores by student subject units would hardly be worth the effort required.

The Relationship between Attainment Scores and Effectiveness Ratings

ATT and EFF were intended to measure different

*Unfortunately, due to an oversight in data collection, no grade IX scores were collected for the 7 large (25+ teachers) HS. For this portion of the HS subsample, the validity of the ATT index is to some extent reduced.

aspects of educational achievement*. The ratings were intended to measure effectiveness in terms of more general educational objectives than are measured by examinations. Another difference between the two measures arises out of the extent to which each measure samples the output of a school. For example, among EL-JHS, ATT(IX) measured the output only of the top class (of nine classes). On the other hand, the rating of such schools was intended to be an evaluation of output over all classes (Appendix D2b, p. 399).

It may be that the two measures used differentiate between schools on the same criteria, despite the different purposes intended. Where they do overlap on the same sets of schools (those taking public exams and rated by superintendents), the two measures are correlated and appear to relate to the theory in the same way.

Among the 84 SEC and ML rated on EFF(3) by superintendents, EFF(3) correlates .28 with ATT [$p < .01$, two tailed test]. Though significant, the correlation is low. Differences in variance could be accounted for by errors of measurement, particularly those associated with the way in which the three-point ratings were obtained, and/or by differences in the factors measured.

*See pp. 113-114 supra.

There is some evidence to support a case for the validity of the latter explanation. When the correlation between EFF(3) and ATT was broken down by subsamples, it was seen that most of the common variance was confined to three of the five subsamples:

JHS:	$r = 0.53$ (19) [p<.02, two tail]
SHS:	$r = 0.81$ (5) [p<.05, two tail]
HS:	$r = 0.82$ (10) [p<.01, two tail]
EL-JHS:	$r = 0.23$ (16) [N.S.]
AL:	$r = 0.17$ (34) [N.S.]

The two measures of effectiveness are correlated among JHS, SHS, and HS, but not among EL-JHS and AL. The correlation is not surprising among JHS and SHS, in view of the fact that schools in both these subsamples are unified in level, and both measures refer to effectiveness at substantially the same level. Nor is the correlation among HS surprising, since, although these schools are fragmented, the ATT criterion used takes account of both grade IX and grade XII results, and is therefore comparable in scope*, if not in goals, with EFF(3). The lack of a relationship among EL-JHS and AL therefore appears to be due to the fact that in each of these two subsamples the ATT criterion takes no account of the work of the elementary classes at these schools, although

*See p. 123 supra. Only small HS (24- teachers) were rated on EFF(3).

elementary classes generally constitute at least half the enrolment at these types of schools.

In brief, the evidence of correlation between ATT and EFF(3) among schools where both measures refer to the output of the whole school, and the lack of evidence of a correlation between the measures among schools where one measure (ATT) refers to the output of only a segment of the school, suggest that incongruence between the measures is not entirely due to errors of measurement, but may be attributed in part to differences in the objects being measured.

In order to assess the effects of variance differences on the value of the two measures as effectiveness criteria for the theory, their relationships with LPC were compared in a number of subsamples. Several sets of schools were identified as displaying a marked or significant correlation between LPC and EFF(3). For these exact sets of schools, the correlations between LPC and ATT were also computed. The two sets of ratings are compared in Table IV. The direction of the correlations is the same among JHS, regardless of the effectiveness criterion used. However there are some differences among AL and EL-JHS, that is, the schools that overlap elementary and secondary levels. The greatest difference, among EL-JHS, may be related to differences in the levels of

TABLE IV

EFFECTIVENESS RATINGS--EFF(3)--AND ATTAINMENT SCORES
RELATED TO LPC FOR SOME IDENTICAL SETS OF SCHOOLS

SETS OF SCHOOLS	LPC(3) r EFF(3)	LPC rho ATT
<u>JHS</u>		
Newly-appointed principals	-18 (10)	-50 (10)
Established principals	45 (9)	68 (9) [p<.05.one tail]
<u>AL</u>		
Newly-app. pr.	-35 (12)	-36 (12)
Establ. pr.	-20 (22)	21 (22)
Est. pr., GA+	-44 (7)	-32 (7)
GA(M)	-20 (9)	22 (9)
GA+	-40 (9)	-07 (9)
<u>EL-JHS</u>		
Establ. pr.	45 (7)	-43 (7)

Note.--Tabulation conventions are specified on
p. 151 infra.

work sampled by the two measures, especially in view of the fact that the contrasting correlations with the two measures appear to differentiate between elementary and secondary work. However the directions of the two correlations are the the reverse of those observed among the correlations found to differentially characterize the leadership styles of established elementary and secondary principals*. In view of this fact, and of the small N's, it is concluded that such differences as are observed in Table IV may well be due to chance rather than to any systematic difference in the criteria measured by EFF and ATT.

Integrating Ratings with Attainment Scores

In view of the comparability of ratings and attainment scores, two techniques, the first more precise than the second, the second more widely applicable than the first, were used to provide across-subsample measures of effectiveness. Figure 6 presents a summary of the relationships between types of schools on the one hand, and, on the other, the various primary and integrated effectiveness measures.

Normalized Scores (NS). EFF(6) was indexed by normalized (30/10) scores which were statistically

*See Chapter XIV infra.

CLASSES OF SCHOOLS PRIMARY MEASURES INTEGRATED MEASURES

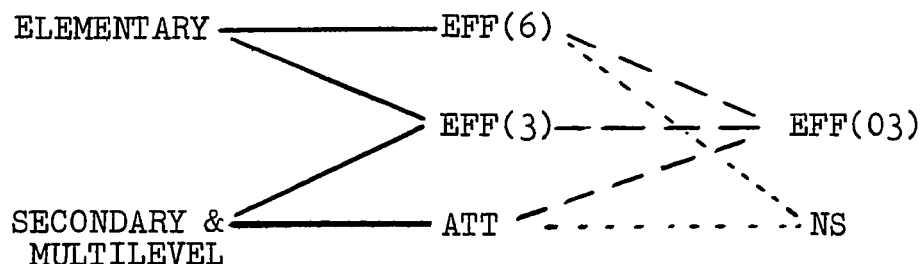


FIGURE 6

PRIMARY AND INTEGRATED EFFECTIVENESS MEASURES
AND THE CLASSES OF SCHOOLS TO WHICH THEY REFER

KEY

- EFF(6) is based on the six-point ratings by school system officials of single system elementary schools. Used only for comparisons among elementary schools (CPEL only).
- EFF(3) is based on the three-point ratings by superintendents of multisystem elementary, multilevel, and secondary schools.
- ATT is based on grade IX and XII examination results. It therefore applies only to secondary and multilevel schools, not to elementary schools.
- EFF(03) is a three-point rating based on secondary and multilevel ATT, CPEL EFF(6), and multisystem elementary EFF(3).
- NS is a normalized (30/10) transformation of EFF(6) permitting comparisons between elementary (CPEL only), secondary, and multilevel schools.

comparable with ATT. Given comparability of ratings and attainment scores, these two measures could be used together.

In interpreting the relationships observed with NS as the effectiveness criterion, it should be borne in mind that where raters of secondary schools may have been heavily influenced by the schools' public examination results, raters of CPEL had no such guide, and may therefore have made a more general rating which cannot validly be compared with ATT.

Overall Effectiveness Rating--EFF(03). By reducing ATT and EFF(6) to EFF(3), using the distributions appropriate to each subsample as indicated in Table III*, it was possible to obtain for the full sample an effectiveness measure based on the most extensive measure used for each subsample. In effect, this was ATT for SEC and ML, EFF(6) for CPEL, and EFF(3) for MSEL. Thus since the ratings I, II, and III were distributed .16, .54, and .30 respectively among AL, those schools scoring above 40.00 on ATT were rated I on EFF(03), those scoring below 24.70 on ATT were rated III on EFF(03), and those in the remaining central group were rated II on EFF(03)*.

*See Table III, p. 117 supra. It should be noted that the uncorrected proportions (those not in brackets) were used in calculating EFF(03).

While EFF(03) provided a broad general measure of effectiveness for the full sample, results obtained with this criterion must be interpreted with reservations concerning the validity of integrating exam results with effectiveness ratings.

III. SOCIOMETRIC MEASURES

Sociometric data were obtained on four items (Appendix C4, p. 385) representing two hypothesized dimensions of group behavior to which it was believed the principal's GA ratings might be related. The first dimension was that of staff attitudes to the principal, measured indirectly by means of sociometric choice questions as to which of her fellow staff members (including the principal) a teacher would prefer as social companion and professional colleague. It was expected that GA would be related to professional but not to social choice of the principal. The second dimension was the degree of warmth of interpersonal relations among staff members, measured by questions on cohesion and interpersonal conflict.

Scaling the Variables

In scaling the variables, account had to be taken of the variance among schools in rate of return on the sociometric items (i.e. between the minimum acceptable

70% and the maximum possible 100% of staff). Each index therefore includes a factor weighting it for rate of return.

The Cohesion Index (COH) was based on teachers' responses to the first item on the sociometric questionnaire (Appendix C4, p. 385). It was obtained by counting the number of choices of colleagues made by each rater* (N_1), summing the choices over all staff members responding, then dividing this total by the number of staff members responding to this item (N_2), and by the total number of choices available less the respondent (N_3 --i.e. by the total professional staff of the school, including the principal, minus one).

$$COH = \frac{\sum N_{1i}}{N_2 \times N_3}$$

The Conflict Index (CONFL) was based on item four of the sociometric questionnaire. It was obtained in a similar fashion as COH except that in this case the individual rater N_1 's were the numbers of destructively critical persons indicated by each rater. N_2 and N_3 were the appropriate N's for this item for each school.

*Although principals completed the sociometric choice questionnaire, their choices were not taken into account in computing indices of staff attitudes.

$$\text{CONFL} = \frac{\sum N_{li}}{N_2 \times N_3}$$

Choice of Principal (CHsoc/CHprof) as a preferred staff member was based on items two and three of the sociometric questionnaire. These two attitudes were indexed by a computation which embodied an additional correction designed to weight the index to take account of the number of possible choices of the principal. This latter term was an arbitrary proportion of the staff which yielded a figure which varied with the size of the school (and slightly also with the divisibility of the number of staff members, for which no correction was made).

It may be noted (Appendix C⁴, p. 385) that each staff member was asked to circle the names of (N_4) colleagues she would choose as social companions (item two) and professional companions (item four). N_4 is a figure, approximately one-third of the staff (not including the principal) so chosen as to force the rater to discriminate among staff members, but high enough for a reasonable probability that the principal's name would be included. The computation of the index was based on the assumption that if all staff members completed the item on a random basis, then it was likely that the chance

occurrence of the principal's name among the choices (N_{pi}) would equal the total number of choices possible to any individual teacher. That is, if preferences have no effect, then:

$$\frac{N_{pi}}{N_t} = 1.0$$

Where a principal was preferred choice, the index could rise as high as 3.0; where he was rejected, the index could fall as low as zero.

There is a degree of unreliability in the index which increases towards the favorable end of the scale. Since persons are indivisible, and school staffs do not necessarily come in multiples of three, there were schools for which N_t was one-third of a figure one more or less than the total staff at the school. The maximum favorable index could therefore range from 2.7 to 3.3 depending on this random factor. This unreliable feature of the indices has little significance for cases where schools were categorized on either index to test the hypotheses. However its randomizing effects were increased in cases where the two choice indices were integrated by correlational procedures*. Nevertheless, this small degree of unreliability was not considered sufficient to nullify the value of the sociometric preference indices for

*See p. 276 infra.

purposes of analysis.

The choice indices had also to incorporate a correction of the preference ratio to take account of variance in rate of return among schools. While N_4 was a satisfactory denominator for the ratio for all schools where all teachers completed the sociometric choice item, it had to be reduced to the extent that a proportion of the staff failed to complete either or both items. The two choice indices were therefore computed as follows:

$$\begin{aligned} \text{CHsoc/CHprof} &= N_{pi} \text{ divided by } (N_4 \times \frac{N_2}{N_3}) \\ &= \frac{(\sum N_{pi}) \times N_3}{N_4 \times N_2} \end{aligned}$$

Satisfaction (SAT) scores (Appendix C2, p. 379) were also obtained and proved to be an additional index of preference for the principal. School satisfaction scores were simply the mean staff response on a six-point rating scale for schools at which 70% or more of staff members completed the TRA questionnaire (which carried the satisfaction scale).

IV. OTHER STAFF DATA

The Teacher Role Attitudes (TRA) instrument (Appendix C2, p. 378), sent to secondary, elementary, and multilevel schools, provided also information both on

teacher attitudes to autonomy and on teacher characteristics defining differences among school staffs. Scores were computed for all staffs from which 70% or more of members had completed the questionnaires.

Staff Needs for Autonomy (AUT)

McNamara (1967, pp. 193-194) related schools' TRA scores to LPC and noted that the relationships observed suggested that staff needs for autonomy might be related to the acceptability of directive leadership. In the follow-up study teachers' TRA responses were utilized to derive a score which would be a more direct index of variance among schools in teacher expression of a need for autonomy.

Teacher responses to 16 TRA items (Appendix C2, p. 380) were factor analyzed independently for two samples, one being the responses of 307 elementary teachers in 1966, the other being the responses of 690 SEC and ML teachers in 1967. The computer program employed yielded a direct principal factor solution, then rotated for a derived solution (Harman, 1964). The varimax solutions were used in selecting TRA items to yield an AUT score. The factor profiles for both samples were similar (Appendix G1, p. 426 infra), indicating that the factors identified were stable across samples, across a time interval, and across level of school. Only

some of the factors appeared to be related to teacher need for autonomy, so the number of items analyzed was reduced to 10 (Appendix G2, p. 427), and then to eight* (Table V). At this stage of analysis there remained three factors with eigenvalues greater than one, identified as teacher expression of autonomy re:

TABLE V
LOADINGS OF AUT ITEMS ON THREE VARIMAX ROTATED FACTORS

Item	Communalities	FACTORS		
		I	II	III
1	0.290	0.451	0.103	0.276
2	0.682	0.824	-0.017	0.052
3	0.675	0.798	0.198	0.006
4	0.599	0.025	0.762	-0.132
6	0.649	0.062	0.786	0.167
10	0.560	0.237	0.668	0.240
15	0.643	0.075	0.023	0.798
16	0.577	0.103	0.117	0.744
	4.676	1.595	1.709	1.372

- I. decisions regarding clients (items 1, 2, 3).
- II. behaving in conformity with professional standards (items 4, 6, 10).
- III. decisions concerning instructional problems (items 15 and 16).

*Only principal factors with eigenvalues greater than one were considered, and the number of these became smaller as the number of TRA items analyzed was reduced.

The responses of all teachers co-operating in 1967 were then scored to yield a total score representing the eight items, scored from 5 (SA) to 1 (SD). Variance in teachers' total AUT scores was regarded as an index of the salience of their needs for autonomy at the particular schools and with the particular principals at the time of responding. Teachers scoring high on AUT were regarded as feeling a need for greater autonomy, those scoring low as feeling relatively free from conflict over goals, and therefore not particularly concerned with controlling means. The mean autonomy score for each staff was used as the operational index of that school staff's need for autonomy (AUT).

Teacher Characteristics

Apart from the satisfaction index already described*, two other items of information were collected from teachers completing the TRA instrument.

Years (Ys). The number of years a principal and teacher had worked together was expected to have some significance for interpersonal working relationships**. Staff responses on this item were combined into an index of the mean duration of teachers' service at each school.

*See p. 135 supra.

**See p. 102 supra.

Training (TRG). Years of teacher preparation were also averaged for each school.

V. CATEGORIZING AND SCALING PRINCIPALS' ATTITUDES

In a study embracing several large subsamples expected to differ in relation to the theory, some difficulty was experienced in setting satisfactory levels on the variables so as to maximize, across different subsamples, the characteristic relationships among the variables. The investigator was faced with such questions as the following: Is variance in GA among subsamples of any significance for the theory? Is the LPC scale so sensitive that the principal can be categorized high or low at the median? Or should the sample be dichotomized by discarding the middle third? How important is variance among subsamples in level of LPC? Is it possible to find levels on the variables that can remain constant within and across subsamples, yet relate in a systematic manner to other variables both within subsamples and across the full sample?

The solutions finally arrived at were to divide both LPC and GA scores into thirds across the full sample, to treat the upper and lower thirds on each variable as dichotomized categories, and to treat the three thirds on each variable as three-point interval scales. The reader

planning to use LPC and GA scores may be interested in the empirical grounds underlying the decisions to categorize and scale these two leader perception variables on the basis of thirds.

Group Atmosphere Categories (GA)

Figure 5* illustrates variance among subsamples in levels of GA, leading to the decision to categorize GA within subsamples.

As analysis proceeded it became evident that within-subsample categorization of GA was not providing a favorability index of much value to the analysis. LPC-effectiveness relationships within the subsamples were then reanalyzed on the basis of overall GA categories. These relationships are compared (Table VI) with those observed under within-subsample GA categorization.

None of the correlations are significant, nor is there any evidence of trends suggesting that GA categorized within subsamples is any more powerful a moderator than GA simply categorized across the full sample. This is not to deny the case already made** that systematic variance among subsamples in GA ratings may be due to institutional variation in favorability to the leader as

*See p. 100 supra.

**See pp. 98-102 supra.

TABLE VI

LPC-EFFECTIVENESS RELATIONSHIPS COMPARED UNDER TWO
METHODS OF DICHOTOMIZING ON GA

CLASS & SUB- SAMPLE	<u>GA-</u>		<u>GA(M)</u>		<u>GA+</u>	
	over full sample	within sub- samples	over full sample	within sub- samples	over full sample	within sub- samples
<u>EL</u>						
CPEL	06(18)	07(22)	28(22)	04(24)	-09(32)	02(26)
MSEL	-01(40)	-05(49)	-15(15)		-17(50)	-17(50)
<u>SEC</u>						
JHS	26(9)	22(18)	36(9)		-10(16)	-10(16)
SHS	55(10)	03(9)	18(9)	09(10)	17(9)	33(11)
<u>ML</u>						
EL-JHS	-24(14)	-13(17)			-37(14)	-37(14)
AL	-16(15)	06(18)	26(20)		-07(9)	29(14)
HS	-30(12)	-31(10)	-20(5)		40(4)	09(8)

Note.--Tabulation conventions are specified on
p. 151 infra.

between types of schools and school systems*. However, the attempt to partial out this effect (by using GA categories within subsamples) does not appear to have yielded a more powerful GA index than was obtained from categorization over the full sample.

As there appeared to be no advantage in proceeding with the cumbersome system of categorizing on GA within subsamples, the full analysis was carried through on the basis of overall GA categories. As a result, some schools formerly categorized only moderate on GA became reclassified as high or low, but because effectiveness measures had not been collected on these schools, the size of the operational subsamples was in some cases reduced.

The three levels of GA were treated as a three-point interval scale for purposes of correlating GA with LPC.

Least Preferred Coworker (LPC) Categories

Where it appears to have been a common practice of Fiedler and his colleagues to dichotomize on the leader's GA ratings by discarding the central third, with LPC the

*It may be noted (Figure 5, p. 100) that some of the highest GA ratings were made amongst CPEL, a single school system in a large city where a teacher is most likely to make a career working for the one school system, whose principals accordingly control more powerful sanctions than is the case with smaller systems in less attractive areas.

normal practice has been to split the sample on LPC at the median point. This has proved a satisfactory discriminating point for school principals (McNamara, 1967) and has the advantage of conserving sample size. However, a special problem was encountered in the present study where it was found that LPC scores varied among subsamples.

Table VII presents three subsamples in which the medians

TABLE VII

A COMPARISON OF ANALYSIS OF VARIANCE INTERACTION EFFECTS (LPC x Y_p) USING TWO METHODS OF DICHOTOMIZING ON LPC

SUB-SAMPLE	USING SUBSAMPLE LPC MDN.			USING SAMPLE LPC MDN.		
	Median	F ratio	p	Median	F ratio	p
CPEL	79.5	3.719 (N:72)	0.058	84.5	1.647 (N:72)	0.204
EL-JHS	89.0	0.799 (N:31)	0.379	84.5	0.000 (N:31)	0.993
JHS	82.0	7.996 (N:32)	0.009	84.5	9.073 (N:34)	0.005

are in turn below, above, and at about the same level as the sample median. Two-way analysis of variance interaction effects are compared for the three subsamples using the subsample and sample medians alternately to set levels on LPC.

It may be noted that the F ratios using subsample medians are in two cases higher than those obtained using sample median, and in one case is slightly lower. On the

whole, when sample median is used there is some serious loss of information concerning LPC-school effectiveness relationships as moderated by Yp. This loss is particularly notable for CPEL, where principals scoring 80-84 on LPC are misclassified low because their scores are below the sample median. Least difference occurs amongst JHS, where there is little difference between sample and subsample median.

While subsample median is evidently the optimum point for differentiating on LPC within subsamples, there are doubts as to the validity of using variable subsample medians to make comparisons across the full sample. On the other hand, setting levels on LPC by using the sample median is not satisfactory for all subsamples. As misclassification appeared to be minimizing the evidence of a relationship, it was decided to set LPC levels for both sample and subsamples by dividing LPC scores across the sample into thirds and discarding the central third. Although this procedure reduces the N, it does allow scope for subsample variance in medians, and yet yields a fair indication, across subsamples, of such relationships as exist. Thus when the top and bottom thirds on LPC across the sample were identified as high and low LPC, the F ratios within the three subsamples of Table VII were:

CPEL: 3.412 (N:58) [p: 0.070]
EL-JHS: 0.502 (N:20) [p: 0.489]
JHS: 4.067 (N:26) [p: 0.005]

That is, the evidence indicated the presence of characteristic patterns of relationship among the elementary and the secondary subsamples, and the characteristic lack of relationship among the multilevel EL-JHS. That these relationships are reliably indicated by the procedure adopted is supported by other evidence, including the use of a correlational technique, in Chapter XIV of this dissertation. The advantage of common and efficient levels of LPC for all subsamples lies in the fact that it is then possible to make ready, reliable, and valid comparisons not only within subsamples but also across the sample and between subsamples.

The availability of three levels of LPC, together with the decision to use EFF(3) as a three-level measure*, led to a decision to treat three-level LPC categories as a three-point interval scale, which was then used as the chief operational measure of LPC in computing relationships with EFF(3). This was done primarily where EFF(3) was the only available effectiveness criterion, that is, among MSEL.

*See p. 118 supra.

VI. MEASURING RELATIONSHIPS BETWEEN VARIABLES

Spearman Rank Order Correlation (ρ)

This measure, identified throughout the dissertation by the tabulation convention " ρ ", was used in computing all relationships between LPC/GA scores and other variables.

Pearson Product-Moment Correlation Co-Efficient (r)

This measure of relationship was used whenever two interval scales, or variables treated as interval measures (e.g. three-level LPC categories) were being correlated.

Two-Way Analysis of Variance--AN2

The statistical measure of relationship used was a two-way analysis of variance design for unequal cell frequencies, least squares solution (Winer, 1962, pp. 224 and 292). AN2 seems particularly appropriate to testing the effects of interaction between leadership style and the conditions determining the favorability of the leadership situation. For this reason it was used as a test of interaction between LPC and GA, and between LPC and Yp. In the latter case its power was amply demonstrated, as for example in Table VII. That it did not indicate an interaction between LPC and GA seems primarily due to the failure to establish in any way the existence of the relationships hypothesized, as may be

noted from Chapter XII (infra). However, in the process of applying this test to the interaction between LPC and GA, and to the interaction between LPC and staff attitudes, something was learned about the nature of at least one kind of relationship between LPC and favorability. What was learned both defines the nature of the relationship and indicates why AN2 is not appropriate in this particular case.

Table VIII is a summary of the results in two samples where both rank-order correlations and AN2 were used as measures of relationship. In sample I the schools were divided on favorability to the leader by sociometric choice, in sample II they were divided on favorability by GA. In both cases the correlations between LPC and effectiveness are in the directions predicted by the theory, but the interaction effects as measured by AN2 are negligible. When the cell means are compared, the reason for this apparent lack of consistency between the evidence from the two measures can readily be understood. While LPC interacts in complementary ways with levels of favorability, the levels of favorability themselves have an important relationship to effectiveness. That is, the groups that in Table VIII are more favorable to the leader are also the more effective groups. Consequently, in spite of the contrasting correlations predicted and

TABLE VIII

A COMPARISON OF LPC-FAVORABILITY INTERACTION
WITH STATISTICAL INTERACTION

SAMPLE I (CPS)				SAMPLE II*			
Sociometric index of FAV				GA** as index of FAV			
UNFAV		FAV		UNFAV		FAV	
41 (8)***		-48 (8)		40 (14)		-25 (7)	

Analysis of Variance (AN2)							
UNFAV		FAV		GA-		GA+	
LPC +	N:4 NS:28.28 Third most eff. cell	N:4 NS:30.20 Second most eff. cell		LPC +	N:4 NS:28.98 Third most eff. cell	N:4 NS:32.14 Two most eff. cells	
LPC -	N:4 NS:25.05 Least eff. cell	N:4 NS:36.36 Most eff. cell		LPC -	N:10 NS:26.57 Least eff. cell	N:3 NS:32.14	

<u>Main Effect LPC</u>				<u>Main Effect LPC</u>			
F: 0.229 p: 0.641				F: 0.159 p: 0.695			
<u>Main Effect Socio</u>				<u>Main Effect GA****</u>			
F: 2.476 p: 0.142				F: 1.303 p: 0.269			
<u>Interaction Effect</u>				<u>Interaction Effect</u>			
F: 0.791 p: 0.391				F: 0.095 p: 0.761			

Note.--NS have a mean of 30 and a standard deviation of 10.

*Newly-appointed CPEL principals.

**Categorized on GA within the CPEL subsample.

***The four correlations are LPC rho NS.

****Specific only to the CPEL subsample. See p. 172 infra.

observed, the statistical model of interaction is not met.
The order of effectiveness of the quadrants is:

Most Effective

1. GA+/Socio+ LPC-
2. GA+/Socio+ LPC+
3. GA-/Socio- LPC+
4. GA-/Socio- LPC-

Least Effective

This order conforms to the model of complementary correlations (i.e. LPC has different effects contingent on favorability) but not to the statistical interaction model of diagonally opposite high and diagonally opposite low quadrants.

It is concluded from these observations that care must be taken in applying the statistical model of interaction to the interaction between LPC and the favorability of the situation. Of theoretical interest is the implication that the differential effects of LPC may be due to differences in the potential for effectiveness of the group on which the leader's style operates*. That is to say, for at least certain situations, the model of coacting groups might be elaborated as follows:

1. Groups which are more favorable to task-oriented leadership (Type A) are likely to be more effective

*Possibly only in certain cases. This does not seem to have been the case of differences between the staffs of newly-appointed and established principals--see Tables XXXVIII, p. 295, and XXXIX, p. 298 infra.

groups than those which are less favorable (Type B). That is, being ready for task-oriented leadership, they are in any case, regardless of the leadership style offered, more effective groups than those which are not ready for task-oriented leadership.

2. Among Type A groups, task-oriented leadership is related to more effective group performance.
3. Among Type B groups, task-oriented leadership is related to less effective group performance.

The Fixed Model of two-way analysis of variance was used as the basis for deriving the F ratios reported. That is, levels of LPC and GA were regarded as conceptually fixed at high, moderate, and low. Levels of Yp were regarded as meaningfully fixed for the study of interaction with leadership style at the two levels of newly-appointed (2- yrs.) and well-established (3+ yrs.).

One-Way Analysis of Variance--AN1

This test was used as a means of partitioning the interaction effects observed under AN2, in order to demonstrate the contrast in degree of effects of high and low LPC principals*. The computer program employed was based on a standard one-way analysis of variance design for unequal n's (Winer, 1962, p. 48).

*See p. 300 infra.

VII. TABULATION CONVENTIONS

Correlations are reported correct to the second decimal place, except where specific circumstances require a more refined index. Correlation co-efficients are recorded without decimal point or preceding zero. Positive correlations are recorded without sign, negative correlations are preceded by a sign. Significance levels of analysis of variance F ratios are always indicated as an estimate of exact probability. Significance levels of correlations are only indicated where the correlations are statistically significant. In such cases the level of significance is specified within square brackets.

On the very last page of this dissertation, after the appendices, is an index of conventions used in tabulating and reporting the relationships observed. The index is so located as to facilitate ready reference for readers studying the report of data analysis.

CHAPTER VII

IN(TER)DEPENDENCE OF THE VARIABLES

In proposing the study reported in this dissertation, it was assumed that the major variables (LPC, GA, and effectiveness) are not related in any other way than that defined by the theory; that they are independent of the school characteristics used in selecting subsamples; and that the rates of return would not affect the representativeness of the subsamples with respect to their populations.

When the data had been collected, the precaution was taken of computing correlation matrices among the major variables and the school characteristics, both for the full sample and for the various subsamples. Cases of interdependence were noted, and it is believed these have some bearing on the interpretation of the results of data analysis.

Chapter VII is a report of cases of dependence of the major variables on school characteristics, including a description of the unintended characteristics of the sociometric subsample. Chapter VIII is a report of a complex inter-relationship observed among the three major variables.

I. RELATIONSHIPS AMONG THE VARIABLES OVER THE FULL SAMPLE

The intercorrelations across the full operational sample are summarized in Table IX.

The following relationships are evident, and should be borne in mind in interpreting the results of data analysis:

TABLE IX
INTERCORRELATIONS--FULL OPERATIONAL SAMPLE

Variables	Correlations (r; N:335)			
	Yp	LPC(3)	GA(3)	EFF(03)--N:328
SIZE	23 [p<.02, two tail]	06	00	24 [p<.01, two tail]
Yp		07	21 [p<.05, two tail]	11
LPC(3)			12	-01
GA(3)				06

1. The larger the school, the longer the principal is likely to have been there.
2. The longer the principal has been at his school, the more favorably he tends to rate his staff.
3. The larger the school, the more effective it appears to be. This relationship is, however, an artifact of two different effectiveness measures. As may be seen

from Table X, the significant positive correlation is exclusive to effectiveness ratings. When size was correlated with ATT, there was a consistent low and non-significant negative correlation in all the relevant subsamples. A more valid interpretation of the relationship indicated in Table IX would be, then, that raters tend to rate larger schools as more effective schools.

II. CHARACTERISTICS OF THE SUBSAMPLES

The intercorrelations among the variables for each of the subsamples are reported in Table X.

Correlations between GA and Other Variables

GA and Size are positively correlated among CPEL, but negatively correlated among SHS. It should be noted that the two levels of school constitute also two levels of size. Mean sizes were:

EL: 2.51 (between 7 and 24 teachers)

SHS: 4.2 (over 24 teachers)

It may be that the two contrasting correlations observed are the two slopes of a curvilinear relationship, from which it might be inferred that in the eyes of principals the ideal-sized school is somewhere between 12 and 40 teachers. This suggests some limits on the optimum level of size as an institutional determinant of FAV.

TABLE X
INTERCORRELATIONS AMONG THE VARIABLES BY SUBSAMPLES

SUB-SAMPLE	MEANS				CORRELATIONS						
	N	\bar{Y}_p	Size	EFF	Yp Size	Yp EFF	Size EFF	Size LPC	Yp LPC	Size GA*	Yp GA*
CPEL	72	3.74	2.51 ****	30.00	13	15	56 [p<.001, 2 tail]	00	07	20 [p<.05, 1 tail]	34 [p<.01, 2 tail]
MSEL	105	4.04	1.90	1.87 ***	35 [p<.001, 2 tail]	15	25 [p<.001, 2 tail]	-17	01		
EL-JHS	31	3.81	3.23	26.42	22	-07	-06	17	13		
AL	35	5.11	3.00	32.60	**	15	**	**	25		
HS	21	4.43	3.30	28.92	18	11	-29	31	09		
JHS	34	4.44	3.12	30.68	24	-20	-12	02	32 [p<.05, 1 tail]		
SHS	30	6.10	4.20	28.08	-37 [p<.05, 2 tail]	26	-06	-01	-20	-35 [p<.05, 2 tail]	48 [p<.01, 2 tail]

*Data on all GA(M) schools were only collected for CPEL and SHS.

**AL schools were all of the one size category.

***EFF(3). No standardized ATT or NS scores available on this subsample

****Size categories were: 1= 3-6 teachers 3= 13-24 teachers 5= 50+ trs.
2= 7-12 teachers 4= 25-49 teachers

GA and Yp are correlated consistently among both CPEL and SHS. Presumably, the longer a principal remains at his school the more stable become the interpersonal relationships defining his position, and the more confidently he can predict the responses of his staff members. Feeling more secure, he may rate his staff more favorably. This development is probably facilitated by the fact that the mobility of school staffs appears to operate as a sociometric choice device*, so that after the principal becomes established at his school, he is likely to be surrounded by a staff which is content to work with him.

Relationships among Other Variables

Yp and Size. In general, the larger the school, the longer the principal has been established at the school in the formal position of leader. This relationship is significant among MSEL, probably reflecting the fact that the larger schools are found in the bigger towns and cities, where the inducements for settling down in the community are likely to be more attractive than in small towns and rural areas.

On the other hand, among the large SHS, the larger the school the briefer the principal's stay in the

*See Table XLVI, p. 314 infra.

position. Most of the very large high schools are in large city systems, where the principalship of one of the few senior high schools is the pinnacle of an administrative career in education. Under conditions of intense competition for such positions, with seniority an important criterion for succession, it is possible that such schools have appointed to them as principals administrators who have only a few years left before retirement.

Size and Effectiveness. Relationships observed in this connection illustrate a weakness of ratings as compared with a more objective criterion of effectiveness. As already pointed out*, effectiveness ratings are to some extent a rating of school size and level. There is a consistent and significant correlation between school size and effectiveness in the two subsamples for which ratings are used as the sole measure of effectiveness (CPEL and MSEL). However, given an independent measure of effectiveness (all SEC and ML subsamples), there is a consistent negative, though low and non-significant, correlation between size and ATT. Of relevance in this connection is the fact that the two effectiveness criteria are associated with subsamples of schools of different sizes, so that the EFF-size correlation may be valid for

*See p. 116 supra.

elementary schools which range in size from small to medium, but not for secondary and multilevel schools, which range in size from medium to large.

III. THE SOCIOMETRIC SUBSAMPLE

Factors Related to Rate of Return

The rate of return of the sociometric data was far from satisfactory*. There is a strong probability that characteristics of the school staff leadership situation operated selectively on the rate of return. To the extent that this is so, sampling error imposes strict limits on the degree to which it is safe to generalize from the results of analysis with this subsample.

As far as could be done with the data available, sociometric returns were examined for evidence of selective return. Correlations were computed between proportions of returns per school and 13 other variables, for the 54 CPEL schools from which at least some staff had returned completed sociometric questionnaires**. These correlations and supplementary information are presented in Table XI.

*See Table I, p. 105, and pp. 107-108 supra.

**The 18 schools from which no returns had been received were left out of the computation, as they would have skewed seriously the distributions of the proportions of rates of returns.

TABLE XI

CORRELATIONS BETWEEN THIRTEEN VARIABLES AND RATES OF
RETURN OF SOCIOMETRIC QUESTIONNAIRE

VARIABLE	CORRELATIONS (r. N:54) with proportion of staff completing questionnaire	MEANS		
		(B) N:26	(C) N:72	(D) N:54
Size	-.39 [p<.001, 2 tail]	2.38	2.51	2.59
Yp	-.30 [p<.05, 2 tail]	2.85	3.74	3.67
Ys	-.29 [p<.05, 2 tail]	2.08		2.36
TRG	.02	2.67		2.65
LPC(3)	-.14	2.27	2.17	2.15
GA(3)	.09	1.70	1.81	1.74
EFF(6)	-.02	3.31	3.46	3.41
AUT	.18	29.84		29.65
SAT	.01	2.60		2.58
COH	.26	0.72		0.70
CONFL	-.22	0.05		0.05
CHsoc	.10	1.08		1.03
CHprof	.29 [p<.05, 2 tail]	1.87		1.61

Note.-- (A) Correlations for the 54 schools
returning at least some questionnaires
(B) Means for CPS--i.e. for those schools
returning 70%+ sociometric questionnaires.
(C) Means for the full CPEL subsample.
(D) Means for the 54 schools returning
at least some questionnaires.

The statistically significant correlations in column (A) of Table XI indicate that rates of return were negatively correlated with size of school, number of years the principal had been at the school, and mean number of years staff members had been at the school. The size of the correlations indicates, however, only a very slight relationship. A comparison of the means for CPS (column B) with those for the full CPEL subsample (column D) indicates that though the schools in the CPS subsample are smaller, there is only a mean difference of three teachers. Similarly the differences in principal and staff years are only minor. Perhaps more important for the study is the fact that CPS is significantly biased with respect to one of the variables it was selected to study (CHprof). Adequate returns were more likely to have come from schools at which the principal was preferred professional colleague. Further, although the correlations are not significant, the sociometric subsample tends to include more schools at which lower LPC principals rate more favorably staffs which express a higher need for autonomy. In view of these indications, and of the characteristics of the subsample as defined by the sociometric variables, it is not surprising that the LPC-effectiveness correlation (ρ) for CPS is $-.19(26)$ as compared with a correlation for the full CPEL subsample

of 05(72). This trend alone, though not significant, is of interest in connection with the theory, and has implications for the interpretation of the correlations observed when the sociometric subsample was divided on various indices of FAV*.

It is therefore evident that the sociometric subsample is not representative with respect to a number of characteristics including one of the variables being studied. Extreme care should be taken in extrapolating relationships from this subsample to elementary schools generally.

Relating Variables within the Subsample

When a correlation matrix was applied to the 26 schools constituting CPS, the following significant correlations (r) were found to characterize the sociometric subsample:

AUT/size	43[p<.05,2 tail]	CHsoc/Yp	33[p<.05,1t.]
GA(3)/TRG	-46[p<.02,2 tail]	CHprof	
COH/EFF	37[p<.05,1 tail]	/LPC(3)	-41[p<.05,2t.]

In sum, the evidence suggests that among the principals and staffs of the sociometric subsample, teachers tended to select the low LPC principal as preferred professional companion and the principal who was well-established as preferred social companion. Presumably the former

*See Chapter XIII, infra.

possessed some manifest potential for problem-solving, and the latter was deemed desirable by virtue of his emergent social (not necessarily official) status. Principals tended to rate the better-trained staffs less favorably. Teachers tended to feel greater need for autonomy in the larger schools. Staff cohesion was directly related to school effectiveness.

IV. SUMMARY

Analysis of the data, by full sample and by subsamples, indicated what might be viewed as a dependence of the "soft" perceptual variable GA (as well as of effectiveness ratings, possibly also influenced by perceptual variance), upon the "hard" objectively countable variables, size of school and number of years the principal has been at his school. There are statistically significant, positive linear correlations between size of school and the number of years the principal has been formal leader at the school, between size of school and effectiveness rating (but not examination results), and between the number of years the principal has been at his school and the favorability with which he rates his staff.

When independence of the variables was tested by subsamples, some relationships were found to characterize all subsamples, other relationships were found to differentiate among subsamples. Principals' ratings of GA are

positively correlated with the number of years the principal has been at his school. This relationship was significant for the two subsamples on which the necessary data were available--Calgary Public elementary schools and the senior high schools. Among the elementary schools, which tended to be the smaller schools, GA ratings were positively correlated with size of school. Among the senior high schools, which tended to be the largest schools, the larger the school, the less favorably the principal rated his staff on GA. Size was correlated positively with effectiveness among those subsamples where ratings were the sole criterion of effectiveness. This relationship was not observed, however, among those subsamples for which exam results constituted the criterion of effectiveness.

Due to selective return of sociometric questionnaires, the sociometric subsample was biased with respect to a number of characteristics, including one variable for which it was intended to provide the test data. The results of analysis with this subsample can therefore be regarded as suggestive only, and cannot with any confidence be regarded as representative of relationships within the population of elementary schools.

CHAPTER VIII

SCHOOL EFFECTIVENESS, THE PRINCIPAL'S LEADERSHIP STYLE, AND THE PRINCIPAL'S RATING OF HIS STAFF

Associated with Hypotheses VI-X, which specify GA as the operational index of favorability moderating principal LPC-school effectiveness correlations, was an assumption that these three variables are independent except in the fashion defined by Fiedler's theory. When tests of linear correlation were applied to relationships among these three variables they appeared to be independent. However, further analysis indicated the presence of non-linear relationships which are believed to interfere with the function of GA as an index of favorability for schools.

I. RELATIONSHIPS ACROSS THE FULL SAMPLE

Correlating LPC and GA across the Sample

By two tests of a direct linear correlation, LPC and GA scores across the full sample appear to be unrelated:

LPC scores rho GA scores:	12(419)
LPC(3) r GA(3):	10(421)

This finding accords with evidence from other studies concerning independence of LPC and GA when a test of

linear correlation is applied*. Despite this, it became evident, as analysis proceeded, that there is a systematic relationship between the two perceptual variables indexed by the responses of the one subject. This relationship tends to be curvilinear. The lowest LPC scores occur in conjunction with low GA ratings, as might be expected with a positive linear correlation, but the highest LPC scores tend to be found at least as frequently in conjunction with moderate GA ratings as in conjunction with high GA ratings. Median LPC scores for the three categories of GA were:

<u>GA-</u>	<u>GA(M)</u>	<u>GA+</u>
81.00 (121)	85.68 (159)	85.33 (139)

It may be noted that the median under moderate GA is considerably higher than the median under low GA, and even slightly higher than the median under high GA. The numbers of principals in each GA category who rated LPC above/below the best available overall LPC median (84.5) were then counted:

	<u>GA-</u>	<u>GA(M)</u>	<u>GA+</u>
<u>LPC+</u>	49	89	78
<u>LPC-</u>	72	70	61

While the greatest frequency of low LPC ratings occurred

*See p. 63 supra.

under low GA, the greatest frequency of high LPC ratings occurred, not under high GA, but under moderate GA. A sign test for three independent samples (Ferguson, 1959, p. 267) was applied to the distribution of high and low LPC scores. This test of deviation from random distribution yielded a chi square of 8.576 [$p < .01$, df 2]. The evidence indicates a relationship between LPC scores and GA scores such that low LPC scores are more likely to be associated with low GA scores, and high LPC scores are more likely to be associated with moderate or high GA scores. When this significant relationship is compared with the absence of a linear correlation noted on p. 164, it is concluded that the lack of independence registered by the sign test is due to the unexpected association of high LPC ratings with moderate GA ratings, a characteristic of the distribution which would act to reduce the size of a linear correlation.

When the principals' scores were classified in nine cells based on the two variables conjointly, some other characteristics of the relationship were observed:

	<u>GA-</u>	<u>GA(M)</u>	<u>GA+</u>
<u>LPC(3)+</u>	N:29 Mdn.:99	N:53 Mdn.:104.5	N:57 Mdn.:110
<u>LPC(3)M</u>	N:42 Mdn.:83.5	N:61 Mdn.:85	N:32 Mdn.:84.5
<u>LPC(3)-</u>	N:50 Mdn.:67.5	N:45 Mdn.:66.5	N:50 Mdn.:63.5

Ratings tend to converge on the positive diagonal, but with certain interesting exceptions. A positive correlation would require higher frequencies in the following cells:

LPC-/GA-

LPC(M)/GA(M)

LPC+/GA+

To some extent this has occurred, but it is the exceptions to this trend which must account for the conjunction of a lack of linear correlation with evidence of a non-linear association. There are at least three ways in which the distribution deviates from a positive correlation. Firstly, there were about as many high LPC ratings under moderate GA as under high GA. Secondly, though the most frequent low GA ratings came from low LPC principals, there were as many low LPC principals who rated their staffs high on GA*. Thirdly, the medians indicate a greater range of LPC scores as GA ratings become higher; or, put another way, while low LPC principals are just as likely to make low GA ratings as to make high GA ratings, high LPC principals are much more likely to make moderate or high GA ratings than they are to make low GA ratings.

In brief, when a test of linear correlation was applied to the relationship between LPC and GA, no

*This feature may be related to the interaction between leader LPC and mean member LPC. See Wearing and Bishop, 1967, p. 17.

evidence of association was found. However, when a non-linear test of relationship between the two variables was applied, the evidence indicated that the two variables are not independent. Interpreting the evidence from both tests, it is concluded that there is a non-linear relationship, tending to curvilinearity, between LPC and GA.

Correlating GA and Effectiveness across the Sample

Just as LPC and GA were found to be related in an unexpected fashion, evidence was found also of a curvilinear relationship between GA and effectiveness. As with LPC and GA, this relationship was masked by a linear correlation that was close to zero (Table IX).

GA was intended to be used as an index of the favorability of the leadership situation (FAV). It might be expected that, until account is taken of the differential effects of leadership styles, the least favorable groups would tend also to be the least effective groups. However, among schools at least, the least effective groups are those which the leader rates only moderately favorably on GA. Those which the principal rates unfavorably on GA are almost as effective as those the principal rates favorably on GA. If the effectiveness potential of school staffs is a determinant of FAV, then for schools $GA(M)=FAV-$:

<u>GA-</u>	<u>GA(M)</u>	<u>GA+</u>
EFF(03): 1.8067 (119) second highest	2.0274 (73) lowest	1.7388 (134) highest
s: 0.6281	0.7066	0.6709

A t-test (Ferguson, 1959, pp. 136-138) of the difference between the effectiveness of the low and moderate GA schools indicates that the difference is significant at the .05 level, two tail.

This evidence alone suggests that the GA ratings of school principals should be read cautiously as indices of FAV. It is possible that those school staffs which the principal rates only moderately favorably may offer the least favorable leadership situation. If this is a valid interpretation of the relationships observed, it is possible that moderate GA principals in many cases rate their staffs more favorably than they deserve. They may do this for any one of a number of reasons. It may be because they are indifferent to or insensitive to the problem, or perhaps because they are simply poor judges of staff attitudes. Probably, however, it is because they are sensitive to the problem in the characteristic fashions of high and low LPC personalities, as is suggested in part III of this chapter.

Summary

There are non-linear relationships between the GA

ratings of school principals and both their LPC scores and the effectiveness of their schools. The relationship between LPC and GA tends to be curvilinear, that between GA and effectiveness is quite distinctly curvilinear. High LPC ratings tend to be associated with high and moderate GA ratings, but low LPC ratings tend to be associated with either high or low GA ratings. Principals who rated GA low tended to be from the narrowest range of LPC scores. Principals' LPC scores ranged more widely as their GA ratings became more favorable. GA ratings are associated with school effectiveness such that the schools rated highest on GA are the most effective schools, the schools rated lowest on GA are also relatively high on effectiveness, but the schools rated only moderately favorably on GA are the least effective.

II. RELATIONSHIPS WITHIN SUBSAMPLES

LPC and GA

Though LPC and GA are uncorrelated across the full sample by a linear correlational test, a break-down into linear correlations by subsamples (Table XII) indicates that there is a positive correlation throughout all subsamples constituting the ML class of schools. Presumably the factor common to this class of schools, fragmentation

with respect to level (and therefore with respect to immediate institutional goals) influences LPC and GA ratings such that they are positively correlated in a linear fashion. Though there is a general trend to a positive correlation in the individual ML subsamples,

TABLE XII
LPC-GA CORRELATIONS BY SUBSAMPLES

SCHOOLS		LPC scores rho GA scores	LPC(3) r GA(3)
Sub-sample	Class		
CPEL MSEL	EL	10(72) 11(145)	10(72) 05(145)
		09(217)	06(217)
EL-JHS AL HS		09(48) 35(48)[p<.02,two tail] 25(29)	13(48) 35(49)[p<.02,2t.] 22(29)
	ML	19(125)[p<.05,one tail]	22(126)[p<.02, 2t.]
JHS SHS	SEC	12(46) 17(32)	09(46) 09(32)
		13(78)	09(78)

the correlation is statistically significant in only one of the ML subsamples. That is AL, the subsample composed of the most fragmented type of school.

The apparent randomness of association between the two variables for most subsamples is, however, belied

by the evidence of a systematic curvilinear relationship among all subsamples (Table XIII). In every subsample median LPC ratings are lower under low GA than under high GA, but the LPC ratings under moderate GA very rarely lie midway between those under high GA and those under low GA. In the MSEL and JHS subsamples, the highest median LPC ratings occur under moderate GA.

GA and Effectiveness

With most subsamples it was impossible to make a valid test of linear relationship because effectiveness ratings were only collected for two out of three GA categories*. For the two subsamples (Table X, p. 155) where a comparison could be made, it is worth noting that there was a positive correlation among CPEL, but none among SHS. It is possible that, in such a tightly constructed social system as a single city school district employing teachers and administrators for lifetime careers, the factors affecting reputation, status, effectiveness ratings, morale, and GA may all be well-known and closely related determinants of FAV**. On the

*See p. 99 supra.

**This hypothesis was further supported when the original sets of six-point ratings from the four raters of CPEL were correlated (r ; $N=72$) with GA(3): 24; 33; 30; 24 [all probabilities less than .05, two tail]. The relationship with GA is shared by all four raters.

TABLE XIII

MEDIAN LPC SCORES, BY SUBSAMPLES, UNDER THREE LEVELS OF GA

CLASS	SUB-SAMPLE	GA-		GA(M)		GA+	
EL	CPEL	76	(18)	79.5	(22)	86	(32)
EL	MSEL	82	(40)	89.75	(55)	84	(50)
ML	EL-JHS	86	(14)	84	(19)	92	(15)
ML	AL	78.5	(16)	81	(22)	96.5	(10)
ML	HS	86.5	(14)	91.5	(10)	102	(5)
SEC	JHS	67	(9)	91.5	(18)	80	(18)
SEC	SHS	78.5	(10)	81	(13)	90	(9)

other hand, with a loose collectivity of SHS drawn from throughout the province, and an independent measure of effectiveness, the principal's ratings of his staff appear to be independent of effectiveness by a linear test of relationship.

Summary

Among Calgary Public elementary schools only, there was a positive linear correlation between principals' GA ratings and system ratings of school effectiveness. Among multilevel schools only, there was a positive linear correlation between principals' LPC and GA ratings. When this class of schools was broken down by subsamples, there was a marked trend towards a positive LPC-GA correlation among all three subsamples, though the correlation was significant for only one subsample. With these two exceptions, GA appears to be independent of LPC and effectiveness among all subsamples, so long as a test of linear correlation is applied to the relationship.

However, where the test of association does not assume a linear relationship, there are indications of a curvilinear relationship between LPC and GA among all subsamples. The shape of the curve is not consistent among all subsamples, but the relationship is such that in all seven subsamples the level of LPC under high GA

is higher than the level of LPC under low GA, but the level of LPC under moderate GA does not lie midway between those under the extremes of GA. This finding controverts the hitherto assumed independence of LPC and GA, and casts doubt on the value of GA as an index of the favorability of the leadership situation in schools.

III. GA AND LPC AS SYSTEMATICALLY ASSOCIATED RATER RESPONSES TO THE SITUATION

In planning the study it was intended to use LPC as a subjective index of a personality trait, and GA as a valid and reliable (if unconscious) index of the situation. It was believed that GA, being independent of LPC, could be used in this fashion. If, however, GA is a function of LPC, then its value as an index of the situation is seriously compromised. Yet this seems to be the explanation of a systematic relationship observed among LPC and GA ratings as associated perceptual variables responding to effectiveness.

GA and Effectiveness

When the relative effectiveness of schools rated at three levels on GA was studied*, it became evident

*See p. 169 supra.

that low GA schools are quite high on effectiveness, and therefore probably not low on FAV. Evidence presented in Table XIV indicates that this trend is common to all classes of schools and to most subsamples. In one subsample, CPEL, the effectiveness means decline in the linear order GA+/GA(M)/GA-*, but even in this case schools rated GA(M) were almost as low on effectiveness as schools rated GA-.

In general schools rated most favorably by their principals were actually the most effective, though in one case, MSEL, those rated least favorably by their principals were rated most effective by their superintendents. This exception is only an extreme case of the most noteworthy feature of the table, that among those staffs rated least favorably on GA, in six subsamples out of eight** the schools were either almost as effective as, or more effective than, the schools whose staffs were rated most favorably by their principals. This fact suggests that the unfavorableness of the principal's GA ratings is not related to effectiveness, a fact which is not in itself inconsistent with the function of GA for the theory as an index of FAV. However, the fact that

*Possibly a special case. See p. 172 supra.

**AL schools are listed twice in Table XIV, since both the EFF(3) and the ATT criterion were available.

TABLE XIV

EFFECTIVENESS, BY SUBSAMPLES, OF SCHOOLS RATED HIGH,
MODERATE, AND LOW ON GA

CLASS	SUB-SAMPLE	GA- Σ Ranks=103	GA(M) Σ Ranks=138	GA+ Σ Ranks=59
EL	CPEL	25.95 (18) <u>21</u>	26.75 (22) <u>18</u>	33.88 (32) <u>2</u>
EL	MSEL	1.78 (40) <u>8</u>	2.13 (15) <u>19</u>	1.86 (50) <u>11</u>
ML	EL-JHS	26.78 (14) <u>17</u>	17.60 (3) <u>24</u>	27.60 (14) <u>15</u>
ML	AL (ATT)	33.12 (15) <u>4</u>	29.03 (10) <u>13</u>	35.35 (9) <u>1</u>
ML	AL (EFF)	2.10 (17) <u>12</u>	2.33 (9) <u>16</u>	2.06 (10) <u>2</u>
ML	HS	26.12 (12) <u>20</u>	33.48 (5) <u>3</u>	31.59 (4) <u>6</u>
SEC	JHS	31.36 (9) <u>7</u>	25.73 (9) <u>23</u>	33.07 (16) <u>5</u>
SEC	SHS	28.34 (10) <u>14</u>	25.87 (9) <u>22</u>	30.86 (9) <u>10</u>

Note.--Numbers with decimals are means on effectiveness measure; numbers in brackets are cell N's; underlined numbers indicate each cell's rank over the 24 cells. Ranks are summed at the head of each column. Ranks were required for a Kruskal-Wallis test of independence (see p. 178 *infra*).

GA(M) schools were in most cases the least effective suggests that GA may not even be a valid index of FAV.

The order of effectiveness of the three GA categories was markedly and significantly different from that which might have been regarded as consistent with the intended function of GA:

	<u>Acceptable Order</u>	<u>Observed Order</u>
<u>Most Effective</u>	GA+	GA+
<u>Mod. Effective</u>	GA(M)	GA-
<u>Least Effective</u>	GA-	GA(M)

The significance of this consistent trend observed in the subsamples (Table XIV) was tested by a Kruskal-Wallis test of independence (Ferguson, 1959, pp. 271-272). To order the cells in Table XIV on effectiveness, EFF(3) was normalized within the two subsamples concerned*, and the 24 cells were ranked on the basis of mean effectiveness compared on the basis of 30/10 normalized scores. The ranks were then summed for the three GA categories, from which it may be noted that there are differences of a similar order between the first (GA+) and the second (GA-), and the second and the third [GA(M)] most effective categories. When a Kruskal-Wallis test of

*Because EFF(3) ratings were to some extent a rating of type of school (see MSEL and AL means, Table III, p. 117, supra).

independence was applied to the differences between these summed ranks under the three levels of GA, H was 7.835 [$p < .02$].

Although the N 's for GA(M) were relatively small for several subsamples, the investigator is unable to think of any reason why the effectiveness of those GA(M) schools on which effectiveness measures were not collected should differ in any way other than random from the effectiveness of those on which measures were collected. Among the two subsamples on which full GA(M) effectiveness measures were collected (CPEL and SHS), the distribution of effectiveness under GA conformed closely to the general pattern induced from the data for all subsamples.

Further to this finding that it may be GA(M) rather than GA- which marks low FAV, evidence from the data indicates that principals' GA ratings may be a subjective perceptual function of the interpersonal orientations indexed by LPC.

LPC and Effectiveness

There is no evidence of a direct overall relationship between LPC and effectiveness (short of the particular relationships defined by the theory). When mean EFF(03) was computed for the three levels of LPC over the full sample, the variation observed was so slight as to

suggest only a random relationship between LPC and effectiveness:

<u>LPC-</u>	<u>LPC(M)</u>	<u>LPC+</u>
EFF(03): 1.8099(121) highest	1.8416(101) lowest	1.8302(106)

LPC, GA, and Effectiveness

When LPC scores were examined in the light of GA ratings, and compared with the effectiveness of schools in the three GA categories, a systematic relationship among the three variables became apparent. Figure 7 relates to the information tabulated in Table XIV the LPC medians under three levels of GA.

Normalized effectiveness scores for the 24 cells of Table XIV are scaled in three sets around a line representing both the mean effectiveness score (30.0) and the overall LPC median (set approximately at 84). The medians of the eight effectiveness scores for each level of GA (Table XIV) are joined by the effectiveness curve. Closely parallelling this curve is a curve linking the effectiveness means under three levels of GA*. The LPC medians under three levels of GA** are linked by the LPC curve.

*See p. 169 supra.

**See p. 165 supra.

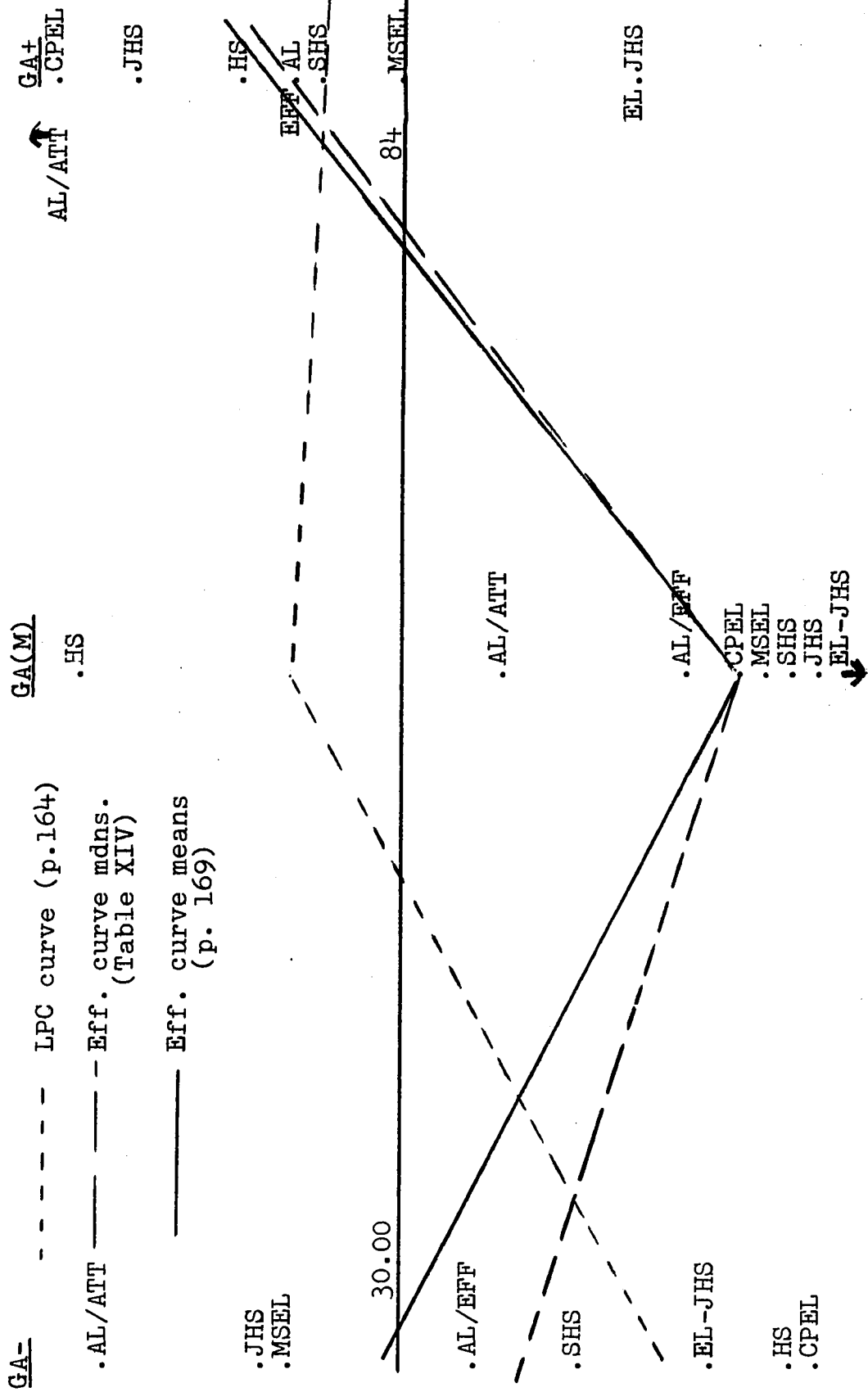


FIGURE 7

CONTRASTING LPC AND EFFECTIVENESS CURVES UNDER THREE LEVELS OF GA

It may be observed that the LPC and effectiveness curves constitute opposed curvilinear relationships with GA, with the maximum difference occurring under moderate GA. That is, where the principal rates the staff only moderately favorably, the staff is likely to be amongst the least effective, and the principal's LPC rating is likely to be amongst the highest. Since LPC does not appear to be directly related to effectiveness, and since the measures of effectiveness are provided by judges and examination results, independently of the principal's LPC and GA ratings, it is likely that the double relationship with effectiveness is either of the order:

A Effectiveness -----> GA -----> LPC

OR

B Effectiveness ---X-- LPC -----> GA

with the arrows indicating the movement of effects from an independent to a dependent variable, and (X) indicating interaction between two variables. That is to say, if it is agreed that school staffs vary in potential effectiveness regardless of the attitudes and leadership styles of their principals, then:

A The actual potential of the staff affects the principal's rating of the staff on GA; perceiving the staff as (un)favorably as he does,

the principal accordingly rates his least preferred coworker favorably or adversely.

OR

B The actual potential of the staff interacts with the principal's task-/person-orientation (as defined by Fiedler's theory and indexed by LPC); the principal accordingly rates GA in a fashion characteristic of high/low LPC personalities.

Since LPC scores are frequently obtained before an individual joins a group, yet still serve as predictors of effectiveness (Fiedler, 1967, p. 43), it is considered that LPC indexes the persistent personality variable which influences GA responses to the staff's potential effectiveness (rather than the reverse order). That is, order B is followed in offering a tentative explanation of the phenomena summarized in Figure 7. A causal order is suggested:

Conditions making for effectiveness	X	The principal's perceptions of the situation as threatening his goal achievement <u>or</u> his interpersonal esteem needs	Principal's rating of staff
		-->	

In terms of this model it is proposed that principals rating GA tend to respond differentially to the situation in the following manners, which underlie the distributions of LPC, GA, and effectiveness noted in this chapter:

	<u>Unfavorable Situations</u>	<u>Favorable Situations</u>
<u>Person-oriented principals</u>	Esteem need threatened; less concerned with actual task achievement; rate high as a soothing response to stress.	Esteem need not threatened; rate favorably.
<u>Task-oriented principals</u>	Being concerned with actual task achievement, rate unfavorably.	Those who perceive the staff's task orientation correctly rate favorably; those who misperceive due to task anxiety, rate unfavorably.

As a result of this pattern of response, the schools tend to be rated into three GA categories in accordance with the principal's need-directed response to the situation, on which an independent measure of effectiveness is also available. The appropriateness of this explanation may be checked against the relationships observed, as summarized in Figure 7.

GA+
Schools: Include effective schools accurately so rated by high and low LPC principals, but include also some less effective schools favorably up-graded by high LPC principals concerned with saying the nice thing to their staffs, to themselves, and to others (including researchers). This might be labelled a "Pollyanna" effect.

GA(M)
Schools: Heavily loaded by the "Pollyanna" effect with ineffective schools misrated relatively favorably

on GA by high LPC principals who fear, consciously or otherwise, that an admission of the real situation will lead to unpleasant interpersonal consequences.

GA-Schools: Low LPC principals are those more likely to make such a rating, where warranted, or invalidly, triggered by anxiety (hence the relatively high actual effectiveness of this group).

Summary

GA was intended to be used as an index of the favorability of the school leadership situation such that school effectiveness is contingent on the interaction between LPC and GA. The evidence suggests, however, that for schools at least, GA may be unreliable as an index of favorability because GA ratings are contingent on the interaction between the principal's need-directed leadership orientations and the school's potential for effectiveness.

GA is correlated with effectiveness by a curvilinear relationship in such a way that the least effective schools are those rated moderately on GA, and those schools rated least favorably on GA constitute, in fact, a group of schools which are moderate to high on effectiveness. This relationship is significantly different

from independence whether calculated for the full sample as a whole or by effectiveness ranks among the subsamples.

Analysis of the data yielded no evidence that LPC is directly correlated with effectiveness, by either a linear or a curvilinear relationship. LPC and GA are, however, jointly related to effectiveness in a way that is interpreted as reflecting the characteristic responses of high and low LPC principals to the situation. The evidence suggests that while the most effective schools tend to be rated favorably on GA by both high and low LPC principals, staffs rated low on GA are moderately high on effectiveness, but are more likely to have been rated low on GA by low LPC than by high LPC principals. The schools that are in fact least effective tend to be rated moderately favorably on GA, and the principals who thus misleadingly rate their staffs are more likely to be high LPC principals, less likely to be low LPC principals.

This finding is interpreted as indicative of the characteristic tendency of high LPC personalities, faced with an unfavorable situation, to allay any risk of interpersonal unpleasantness, in this case by rating favorably. Low LPC principals, however, being anxious about goal achievement, may in some cases misrate unfavorably staffs which are in fact quite effective in

terms of an independent measure of effectiveness. In such cases low LPC principals seem to be more concerned with what they perceive as a threat to goal achievement than with saying the nice thing about (and to) their colleagues.

In brief, the evidence suggests that among schools, where GA ratings are a reflection of long-term principal-staff relationships, the contingency relationship is the reverse of that predicted by the theory. That is to say, principals perceive the effectiveness of their staffs in ways which characteristically differentiate high and low LPC personalities, so that GA ratings are contingent on the interaction between LPC and effectiveness potential.

IV. LPC AS A DETERMINANT OF THE GA RESPONSES OF NEWLY-APPOINTED AND ESTABLISHED PRINCIPALS

As discussed in detail in Chapter XIV of this dissertation, the number of years a principal has been at his school has important consequences for the make-up of the staff he works with, and for the effectiveness of his leadership style. It is likely also that a newly-appointed principal in his first two years in the position finds the leadership situation much more stressful than after he becomes established and has developed stable structures-in-interaction with his staff..

No evidence was found of a relationship at a statistically significant level between the number of years principals had been at their schools and the effectiveness of their schools. Table X (p. 155) indicates five non-significant positive correlations, two non-significant negative correlations, depending on the subsample. There may be a low positive correlation in general.

As previously indicated (p. 169), the observed order of effectiveness of groups rated on GA is:

1. GA+
2. GA-
3. GA(M)

It might be expected, then, that when groups are further partitioned on the degree to which the principal has had the opportunity to become established, the order of effectiveness would be:

1. GA+/3+ years
2. GA+/2- years
3. GA-/3+ years
4. GA-/2- years
5. GA(M)/3+ years
6. GA(M)/2- years

When the mean effectiveness of these six groups was computed, the actual order was found to differ slightly from the expected order:

RANKS		GROUPS	EFF(03)	N
Expected	Observed		high	
1-----1		GA+/3+	1.6882	93
3	2	<u>GA-/3+</u>	1.7885	52
4	3	<u>GA-/2-</u>	1.8209	67
2	4	<u>GA+/2-</u>	1.8537	41
5-----5		GA(M)/3+	1.9200	50
6-----6		GA(M)/2-	2.2609	23
			low	

The three deviant groups are underlined. Two groups rated GA- were in fact more effective than their principals' ratings would lead one to expect, while one group rated GA+ was actually less effective than would be suggested by the principals' ratings of GA. The mean difference in effectiveness between the down-graded groups and the up-graded group is not significant--it is only the GA(M) schools which are significantly less effective than the rest. However, it is of interest to compare the LPC scores of the groups of principals the effectiveness of whose schools deviated from the expected order already indicated. The six groups are ordered on the median LPC scores of their principals:

<u>Group</u>	<u>Characteristics</u>	<u>Observed Eff.</u>	<u>Mdn. LPC</u>	<u>N</u>
A	GA+/3+	as expected	86	93
B	GA+/2-	deviated down	85	41
C	GA(M)/3+	as expected	84	50
D	GA(M)/2-	as expected	84	23
E	GA-/2-	deviated up	81	67
F	GA-/3+	deviated up	79	51

This analysis suggests that the high LPC principals in group B (i.e. in the more stressful period of the principalship) tended to misrate their staffs more

favorably than was warranted by the situation as indexed by an independent measure of effectiveness. On the other hand, the lowest LPC principals (groups E and F) tended to misrate their staffs less favorably than was deserved.

Summary

When the relationship among LPC, GA, and effectiveness was further partitioned on the number of years the principal had been leader at his school, the trend of relationships, though not statistically significant, was found to support the interpretation of GA ratings as a function of the interaction between LPC and effectiveness. In addition to the over-rating of GA(M) schools already noted, the one set of schools which was found to be over-rated on GA, as compared with actual effectiveness, was led by principals relatively high on LPC. The two sets of schools which appeared to be under-rated on GA were led by the groups of principals with the lowest LPC scores. That is, GA ratings, far from being independent of LPC and effectiveness, appear to be a need-directed response to potential staff effectiveness.

V. CONCLUSIONS CONCERNING GA AS AN INDEX OF FAVORABILITY IN SCHOOLS

In Chapter VIII are reported the results of

analyzing relationships among (1) school effectiveness as independently measured by an external examiner/rater, (2) the principal's leadership style as an aspect of personality indexed by LPC, and (3) the principal's rating of his staff (GA).

It was found that there is a complex, generally non-linear relationship between the LPC and GA variables, both obtained from the one rater, and between these two and effectiveness. While a relationship among the three had been hypothesized at the outset of the study, it was associated with an assumption that no pair of the three variables consisted of related variables. In fact, two of the three pairs were found to consist of related variables (LPC and GA; GA and effectiveness). The relationship among the three appears to be in the reverse direction to that proposed by the theory, and is such as seriously to compromise the value of the GA variable as an index of the favorability of the leadership situation in schools. While it had been proposed that LPC and GA may be used to predict school effectiveness, it was found that LPC and effectiveness might be used to predict GA! This relationship may to some extent be affected by a particular stress factor, the recency of the principal's appointment to his school as head of the staff. The nature of the inferred dependence of GA on the interaction

between LPC and effectiveness is such that it lends itself to explanation in terms of the characteristic responses of high and low LPC personalities.

It is possible that the hitherto assumed independence of LPC and GA* may be attributable to the use of a test of linear relationship to measure what is in fact a curvilinear relationship. On the other hand, Fiedler suggests (1967, p. 32) that the GA measure is particularly useful for short-term groups, where attitudes to the leader indexed by a sociometric measure have not yet had sufficient time to be communicated to the leader. It should be noted that the evidence for independence of LPC and GA reported by Fiedler in 1962* was based on leaders' GA ratings of short-term ad hoc groups meeting for no longer than a morning. The present evidence of a curvilinear relationship between LPC and GA is based on leaders' GA ratings of school staffs working together daily for a minimum of a year. It is possible that the non-linear relationship between LPC and GA may only be characteristic of long-term groups.

Just as Fiedler recommends GA in preference to sociometric measures as an index of favorability in short-term groups, the present evidence concerning the

*See p. 63 supra.

relationship between LPC and GA in schools would seem to support a recommendation in favor of using sociometric measures in preference to GA as indices of the favorability of the leadership situation among long-term groups such as school staffs. What does seem certain is that the GA and LPC ratings of school principals are not independent, and that GA ratings taken alone* are not likely to provide a valid index of favorability for schools. What also seems to follow from the findings reported in this chapter is that even for short-term groups the possibility of a non-linear relationship between LPC and GA may be worth investigating.

*For the value of GA in conjunction with sociometric indices of favorability see Chapter XIII infra.

PART III

TESTING THE HYPOTHESES

CHAPTER IX

THE STABILITY OF PRINCIPALS' LPC SCORES

The Problem

Elementary principals' LPC scores are related to differences in leader behaviors along a directive-permissive continuum (McNamara, 1967). If principals' LPC scores are stable, then it might be inferred that important differences in leader behaviors, indexed by a persistent rating response (LPC), are determined by enduring needs defining an aspect of personality.

Stability is normally investigated by a test-retest sequence over a time interval. The retest of the stability of LPC scores in the present study was made more rigorous by using different LPC scales in the retest version of the instrument, and by retesting at a different stage of the school year.

The Data

Of the 48 Edmonton elementary and elementary-junior high school principals who had provided LPC ratings in May 1966, forty-two were still employed as principals of Edmonton schools in November 1967. Of the 42, two had provided incomplete LPC scales in 1966. Of the 40 principals contacted in 1967, thirty-seven

responded but five of these provided incomplete and unusable scales*. This left a sample of 32 principals for whom a co-efficient of stability could be computed. Of the thirty-two, twenty-four were still at the same schools; eight had become principals of different schools.

Hypothesis I

Principals' LPC scores are consistent from one school year to another.

The original and retest forms of the questionnaires used to obtain the data to test Hypothesis I are reproduced in Appendix E2,6 (pp. 403-409). It may be noted that different sets of adjectives were used to define the bipolar rating scales. The correlation between LPC scores on the two tests was found to be:

rho: .45 (32) [$p < .01$, two tail]

Hypothesis I is supported by the data.

It is concluded from this evidence that the LPC scores of elementary school principals are stable across differences in time, changes in the stage of the year at which the ratings are made, and changes in the adjectives defining the scales. This finding accords with evidence from other groups concerning the stability of LPC scores,

*All five had changed schools in the interim.

and the consequent interpretation of LPC scores as indexing an enduring personality trait*.

The paired LPC scores are tabulated in Appendix E3 (p. 405). Scores which moved across the median are ranked below in order of increasingly greater shift, starting with scores which shifted only marginally in relation to one median:

<u>1966</u>	<u>1967</u>
Mdn. (32)**: 93.5	Mdn.: 102.8
94	95
113	100
93 -----	133
100	80
104	97
82 -----	116
82	116
59	133

Of the eight principals whose scores shifted from one LPC category to the other, three may be regarded as having made only marginal shifts. Of the three whose scores shifted most markedly, the scores of all three moved upwards (as did those of the full 32 as a group, from median 93.5 to median 102.8).

While the correlation for all 32 principals is statistically significant, the stability of the scores,

*See pp. 53-54 supra.

**The median for the full sample in 1966 was 100.5. This suggests that those principals who returned the retest scales in 1967 may have been those who were the lower LPC principals in 1966.

though established beyond reasonable doubt, is low. That is to say, while there is a relationship, it is only a low-level relationship, one which accounts for only 20% of the common variance. Evidently, while LPC scores are indeed stable, they are not highly stable. This fact suggests that, while they are useful for research and theory-building, they could not, by themselves, be used confidently in classifying individuals as being consistently person- or task-oriented over time and situational variation.

Implications

The fact that some degree of stability of principals' LPC scores has been established has implications for research and for the interpretation to be placed on factors related to LPC. To the extent that principals' LPC scores are stable across situational and staff variation* LPC is indeed a measure of an enduring personality trait; the characteristics and effects of LPC are likely to be associated consistently with individuals; administrative and leadership training may need to give attention to factors facilitating the exploitation of the differentiated leadership potentials of appointed leaders rather than to what may be a fruitless attempt to

*See limitations, p. 199 infra.

persuade leaders to modify their personal styles of leadership. Flexibility in leader behavior may be a less realistic objective than skill in assessing the situation, in recognizing its potential for one's own style, and in modifying the situation accordingly.

However, despite the evidence in support of Hypothesis I, some concurrent findings indicate that caution should be exercised in interpreting the results of testing this hypothesis as conclusive evidence that principals' LPC scores are stable.

Stability of GA Scores

While no hypothesis was proposed concerning the stability of GA scores, the opportunity was taken to collect GA scores along with LPC scores. It was assumed that LPC scores are independent of GA scores and that the latter, varying with the situation, are not stable over a time interval*. Both these assumptions were found to be inconsistent with the evidence, a fact which, linked with the evidence presented in Chapter VIII, further compromises the value of principals' GA scores as an index of FAV for schools.

Of the 32 principals whose scores were used for the test of LPC stability, 31 had returned complete GA

*See p. 63 supra.

questionnaires in both years. For these principals the correlation between GA scores over the test-retest period was:

rho: 42 [$p < .02$, two tail]

The correlation between their LPC and GA scores in 1967 was 48 [$p < .01$, two tail], though in 1966 it had been a non-significant 23. This movement from a non-significant correlation suggests a convergence of LPC and GA scores over time, at least in the particular subsample employed for the retest.

Limitations on the Finding

The tendency not to complete the LPC scale after taking up a new position (p. 195, footnote) suggests that principals saw the paired questionnaires as an attempt on two occasions to obtain ratings on particular persons and particular schools, a tendency which may unfortunately have been encouraged by the wording of the LPC questionnaire (Appendix E6, p. 409). If this is so, then the stability of LPC observed may be in part a function of an objective factor, the same teacher being the LPC on both occasions, rather than of the subjective variable intended to be measured. While the retest of GA took part in the second school year (1967-8) after the test (1965-6), it is only assumed that staff transferred to any extent on the two occasions (the intervening school

vacations) when this was possible. School staffing lists have not been checked to determine the stability of staff at particular schools over the test-retest period. It is therefore possible that many of the principals rated substantially the same staffs and LPC's on both occasions.

One further limitation on the generalizability of the finding from Hypothesis I is the fact that stability was tested only for the principals of elementary schools.

The limitations indicated impose restrictions on the theoretical value of the results of testing Hypothesis I. It is recommended that further testing of the stability of principals' LPC scores should incorporate controls designed to eliminate the possibility of such limitations arising. The stability of LPC scores collected during May-June 1967, from principals of all classes of schools, could be tested during the 1968-9 school year. The results of such testing could then be generalized to all levels and classes of schools, elementary and secondary, integrated and multilevel. If the retest were restricted to principals who had transferred to new schools in the interval*, then such stability as was observed among the scores could not be attributed to the possibility that the same staff and the

*With appropriate precautions against disinclination to return. See footnote, p. 195 supra.

same least preferred coworker were being rated on both occasions.

Summary

Principals' LPC scores were found to be stable, as hypothesized. This evidence lends some support to the interpretation of principals' LPC scores as an index of a personality trait. However a number of limitations on this finding emerged from additional analyses, and may be attributed to features of the test-retest design. Because original LPC scores were only available on elementary principals, the finding concerning stability is based only on the responses of principals at this level. Because the LPC questionnaire, in the 1966 "test" and therefore in the 1967 "retest", referred to the least preferred coworker at the principal's school, there is a possibility that many of the principals rated the same person at both administrations of the instrument. This interpretation of the results is supported by the observation that principals who had transferred to new schools during the interval between test and retest were less likely to have completed the retest questionnaire. Since GA scores were also stable, and since most principals were still at the same schools, it is possible that the staffs of the schools in the sample were relatively stable, and that the observed stability of

LPC and GA in conjunction was due to the stability of the particular staffs and least preferred coworkers rated. Recommendations were therefore made for further testing with appropriate controls.

CHAPTER X

INSTITUTIONAL EXPECTATIONS DEFINING THE FAVORABILITY TO PRINCIPALS' LEADERSHIP OF SCHOOL STAFFS GENERALLY

Fiedler's theory of leadership effectiveness currently comprises two well-defined models, the contingency model of interacting groups and the model of co-acting groups*. It seems likely that the model of coacting groups is the appropriate model for the analysis of leadership style effectiveness among most, if not all, school staffs**. Some school staffs, such as those working on a team teaching basis, and possibly some staffs of very small schools, may work as interacting groups.

Chapter X deals with two dimensions of the leadership situation which may be used to compare school staffs with different types of task groups (e.g. army units) representing other institutions. These two dimensions, leader position power (LPP) and task structure (TS), do not function in the same way for both models comprising Fiedler's theory. Whether each dimension is relevant for analyzing the relationship between principal leadership

*See Figure 2, p. 67 supra.

**See pp. 68-70 supra.

style and school effectiveness therefore depends on which model is considered applicable to the group processes relating school staff members to each other and to the principal.

If school staffs are coacting groups then the level of LPP is the determinant as to whether Fiedler's theory applies to school staff leadership. For those coacting groups whose leaders have low position power the theory is deemed to have no relevance. Not only do such leaders lack formal power, but because their group members are relatively independent of each other with respect to goal attainment, they are also unlikely to be assigned emergent powers by their coworkers*. If school staffs are coacting groups, and if school principals are low on LPP, then it follows from the theoretical arguments presented by Fiedler that his theory has no relevance for school staff leadership. If, however, school staffs are coacting groups but school principals are relatively** high on LPP, then the model of coacting groups is relevant to the analysis of leadership style-group effectiveness relationships among school staffs.

*See p. 66 supra.

**There is a wide range in the degree of power associated with positions judged high on LPP. For a discussion in relation to school principals as compared with leaders of other task groups see McNamara (1967), p. 150.

Among such school staffs as work as interacting groups, the LPP of principals, whether high or low, is an important consideration. For interacting school staffs the level of LPP is critical for the direction of principal leadership style-school effectiveness correlations.

TS is only of specific concern where school staffs are interacting groups. TS is not specifically indicated as a dimension of the model of coacting groups, and the level of TS of school staffs is not a determinant of the level of school effectiveness predicted in using this model. Where the model of interacting groups applies to staffs, however, the level of TS, just as was the case for the level of LPP, is critical for the direction of the principal LPC-school effectiveness correlations predicted.

I. OBTAINING AN INDEX OF EXPECTATIONS

It is considered possible to index the expectations defining institutional behavior by using either of two different methods. The most direct and valid index is likely to be obtained by measuring the expectations of typical participants in the institution. However, the use of this method would require time to ensure that the representatives of institutional participants first had

an accurate impression of the criteria on which they were specifying their expectations. An alternative, less direct, but quicker method is to ask a number of competent judges to estimate, on the basis of their observations, the expectations which characterize participants in the institution.

The present study used the latter, less direct method of estimating levels on the variables in terms of school leadership. Judges were asked to check and rate criteria of the two variables as applied to school staffs. Some attempt was made to select judges who were knowledgeable not only about concepts of power and decision-making but also about the situation in schools. An effort was made to develop common definitions of the criteria before applying them to judgements about schools. Finally, a control device was employed in order that judgements about schools could more accurately be compared with judgements about other task groups with which the model was developed.

The Judges were eight doctoral students in Educational Administration in the concluding week of a seminar on Administrative Behavior which had dealt with such topics as power, authority, and influence. The judges had all had practical experience as educators, but it should be noted that in some cases this experience had

been confined to the secondary or tertiary fields. One problem was that the judges' field experience, in various Canadian provinces and Australian states, may also have varied in terms of national and regional levels on the variables being judged.

The LPP Checklist and the TS Rating Scales

The instruments used to index the dimensions in schools were developed by Fiedler and Shaw (Fiedler, 1964, pp. 161-162). The forms of the instruments used in the present study may be seen in Appendix F3,4 (pp. 415-420). LPP checklist item scores are in brackets under the number for each item. TS ratings are the means of the four ratings for each task.

In preparation for the judgements the judges were asked to consider the definitions of the dimensions (Appendix F1, p. 411). At this stage there was some brief discussion of the meaning of the dimensions. The judges were then asked to make practice judgements on the three task groups in set A (Appendix F2, p. 414), and were encouraged to discuss these tasks freely with reference to the checklist and scales, in an attempt to develop their understanding of the implications of the criteria.

Two days later the judges were presented with the task groups in sets B and C (Appendix F5, p. 421). The

task groups in set B were intended to serve as a control, to be used to key the judges' evaluations to those of Fiedler's judges, whose means scores and ratings of these task groups were available. The task groups in set C were those on which valid and reliable judgements were required. Judges were asked not to discuss the application of the criteria to sets B and C, as independent judgements were required.

II. THE JUDGEMENTS

The judgements were required to test Hypothesis II.
Hypothesis II

- 1a.) Elementary school staffs are faced with a task which is relatively unstructured.
- 1b.) Secondary school staffs are faced with a task which is relatively unstructured.
- 2a.) The position of elementary school principal is a relatively powerful leader position.
- 2b.) The position of secondary school principal is a relatively powerful leader position.

A summary of the judgements follows:

	ELEMENTARY		SECONDARY	
	<u>Staffs'</u>	<u>Principals'</u>	<u>Staffs'</u>	<u>Principals'</u>
	<u>TS</u>	<u>LPP</u>	<u>TS</u>	<u>LPP</u>
<u>Judged high</u>	0 judges	7 judges	0 judges	6 judges
<u>Judged low</u>	8 judges	0 judges	8 judges	1 judge

A more detailed statement of the judgements summarized at the foot of the preceding page is set out in Appendix F7 (p. 424). It may be noted that rater V was ambivalent on LPP. Consequently, while the summary of judgements on TS incorporates the judgements of all eight judges, that on LPP is based on the judgements of only seven judges.

As may be seen from the summary, the judges were fully agreed in categorizing low the TS faced by both elementary and secondary school staffs. However the judgements on LPP were not unanimous, even though a majority of judges agreed that the LPP of both elementary and secondary school principals is high. Not only was one judge ambivalent about LPP in schools generally, but a second disagreed marginally about the LPP of secondary school principals*.

The judgements may also be examined (Appendix F7, p. 424) in terms of the more precise scores and ratings rather than of the broad high/low categories. In considering the judgements made on the three control groups (set B), it may be noted that among the four judges whose categorization of the groups conformed with that of Fiedler's judges, there is still some deviance from the

*Both the ambivalent judge (rater V, Appendix F7, p. 424) and the dissenting judge (rater VIII) judged the high LPP service station managers 16.0 (approx.). The fact of dissent is therefore a problem of validity.

ratings and scores of Fiedler's judges. LPP scores of low LPP positions tend to be lower, but high LPP scores and all TS ratings for these four judges conform closely to those of Fiedler's judges.

Conclusions concerning the hypothesis are based on the summary of judgements at the foot of p. 208.

Hypothesis II.1 is supported by the judgements.

All eight judges categorized both elementary and secondary school staffs low on task structure.

Hypothesis II.2 is not supported by the judgements.

Hypothesis II.2a was supported by all but the ambivalent judge. Hypothesis II.2b failed to get support from either the ambivalent judge or from the judge who rated secondary school principals low on LPP. It is therefore concluded that there exists some doubt among competent judges concerning the leader position power of principals of both elementary and secondary schools.

It would be possible to make a case for the validity of Hypothesis II.2 on the grounds that it was supported by all four judges selected as matching the categorization by Fiedler's judges of the control groups. It was also supported by an outright majority of the eight judges. Majority agreement could be tested statistically in relation to the degree of concordance of the eight judges in the 16 cells of Appendix F7.

However the issue is not to demonstrate that the degree of concurrence is greater than chance probability. For a problem of this nature, the fact of dissent, albeit slight, by even one competent judge, is in itself a challenge to the validity of the hypothesis. The evidence of doubt suggests that expectations of power defining the institutional principal position, particularly the position of secondary principal, are to some extent indeterminate, and, to the extent that this is so, weak.

Summary

The evidence suggests that the LPP of both secondary and elementary principals is quite high in the eyes of a majority of competent judges. However, a minority of dissenting judges indicate that it may be invalid to generalize about this dimension of school staff leadership. There may be some variation, either regional or personal, in the degree of power which teachers attribute to the position of school principal, particularly that of secondary school principal.

Competent judges are in full accord that the task structure of both elementary and secondary school staffs is low.

III. DISCUSSION

The majority of the judgements indicate that the position of school principal is quite high on LPP as compared with the leader positions of the full range of groups scored high/low by Fiedler's judges. However, the problem of local and personal variations in expectations, and the problem of disagreement by competent judges, remain to be solved. Conceptual problems are discussed, and measurement and estimation procedures suggested.

Refining the Bases for Judgements

Care needs to be taken that the judgements obtained are valid, i.e. that the judges are indeed judging criteria of the principal's position power with respect to the effectiveness criterion used to measure relationships of effectiveness with leadership style.

In follow-up discussions with the judges of their judgements, the investigator noted two conceptual problems that need to be clarified before judgements are made.

Some judges mentioned the problem of the standpoint from which the judgements are to be made. In terms of the definition of LPP (Appendix F1, p. 411), a person familiar with the theoretical function of LPP for the model would recognize that what is required is a judgement of the LPP of principals in terms of the weight their directives customarily carry in the eyes of

teachers. Some judges stated that they had a tendency to rate the position in terms of how they themselves used to respond to the leadership initiatives of principals as a class. This was an unfortunate tendency in view of the fact that the grounds for selecting them as judges made their former teaching background atypical. Evidently what was required was an explicit request to the judges to put themselves in the shoes of the typical elementary and secondary teacher.

The ambivalent judge regarded principals' LPP as high on managerial tasks, low on instructional tasks. In this connection the commonly-remarked problem of goal displacement among educational administrators is relevant, and may reflect limitations on their LPP with regard to instructional activities. One way of testing this possibility would be to develop two forms of the instrument (instructional LPP/managerial LPP) to obtain judgments as to whether teachers' expectations of their principals do indeed crystallize into two divergent sets.

Measuring Expectations Directly

Procedures available vary in their potential for yielding a reliable index--i.e. a consistent relationship with what is being measured.

Questionnaires could be administered to samples of teachers representing various levels and/or regions of

schools. In addition, the problem of confusion over the concepts being judged, a problem encountered with sophisticated judges, is likely to create even more serious validity hazards with teachers. Problems of reliability are also difficult to avoid, particularly as large-scale questionnaire completion is no guarantee that the responses are the result of thoughtful attention to complex problems.

Attitude Scales are complicated, with regard to reliability, by the difficulty of obtaining measures of covert attitudes which may differ from those expressed. The teacher who, though a talkative rebel in the faculty lounge, is a compliant subordinate in practice, is a familiar phenomenon to observant educationists.

Observed Behavior. While measures of actual behavior may be made free from the problems of validity and reliability discussed above, they are difficult and expensive to obtain, particularly from a field situation. Fortunately, observers, in the form of teachers themselves, are readily available, and while a teacher may be unreliable in reporting his own covert attitudes, he has no reason for making anything less than a frank statement as to the behavior of un-named colleagues. If the items were to be stated in terms of actual teaching behaviors, rather than of abstract concepts, the problem

of validity due to conceptual confusion would be confined to the item-writer, and so could be checked before administering the items.

A set of items could be written to describe a simulated school in terms of behaviors representing the items in the LPP checklist. Teachers responding could be asked to check whether they felt most teachers they have worked with over the years behave in the fashion described. For example, LPP item 3d (Appendix F3, p. 416) could be embodied in the following description:

At Pine Woods elementary school principal John Smith has a habit of finding opportunities to discuss each teacher's problems with her. When John offers a suggestion most teachers think it over, and if they can they try to put it into effect. Most teachers feel that it is a wise policy to keep on good terms with the principal.

The attitude of Pine Woods teachers to their principal's suggestions is . . .

. . . typical of teachers _____ (Check one
only)
. . . not typical of teachers _____

IV. SUMMARY

In this chapter the procedures adopted for obtaining judgements on leader position power and task structure were outlined. The judgements obtained were matched with those of Fiedler's judges, then used to test the hypothesis that both elementary and secondary school task groups are low on task structure and high on leader position

power.

The hypothesis concerning task structure was fully supported by the judges. The judges were not unanimous in supporting the hypothesis concerning leader position power. This hypothesis was supported by a majority of judges including all those whose judgements were similar to those of Fiedler's judges on the control groups. However one of the eight judges was ambivalent about the position power of the leaders of school staffs, and one dissented marginally concerning the position power of secondary school principals. In view of these departures from complete support for the hypothesis by all the judges, the problem of the level of leader position power of school principals is still regarded as an open question. Further investigation of the problem was recommended, and suggestions were made for improving the validity and reliability of both means of indexing the variables, that is to say, both by judgements and by direct measurement of the expectations of teachers.

CHAPTER XI

RELATING INTERACTIONAL FACTORS DEFINING THE FAVORABILITY TO THE PRINCIPAL'S LEADERSHIP OF PARTICULAR SCHOOL STAFFS

Just as LPP and TS define a level of FAV common to all principals, factors emerging in the interaction between principal and staff define the favorability of the situation to leadership by particular principals.

In planning the present study, principals' ratings of GA were intended to be used as the general measure of FAV at particular schools over the full sample. In addition, in an attempt to define the counterpart of the principal's attitudes in the perceptions of his staff members, three hypotheses were proposed concerning other possible indices of FAV, and the necessary data were gathered (CPS, CPT, MLT, SECT). The hypotheses were intended to determine whether GA is related to staff attitudes to the principal and/or colleagues at the same school; and to test the effects of GA as a moderator of staff attitudes in response to person- and task-oriented leadership.

The evidence in relation to these hypotheses was in part obtained from CPS, a significantly non-representative sample, and from CPT, on which also inadequate

returns were received*. Such results as were obtained with CPS and CPT should therefore be interpreted with caution.

I. GA AND STAFF ATTITUDES TO THE PRINCIPAL

It was proposed that principals perceive favorably the task-orientation of staffs which are in fact favorably inclined to the principal as leader.

Hypothesis III

Principals' GA ratings are correlated positively with staff preference for the principal as professional colleague.

The correlations observed are recorded in Table XV.

TABLE XV

CORRELATING PRINCIPALS' GA RATINGS WITH
STAFF ATTITUDES TO THE PRINCIPAL

CPS N:26 SOCIOMETRIC VARIABLE	GA scores rho sociometric variables	GA(3)** r sociometric variables
CHprof***	18	10
CHsoc ***	25	14

*See p. 108 (CPT) and pp.158 ff. (CPS) supra.

**Categorized into thirds within the CPEL subsample.

***See p. 133 supra.

The correlations indicate only a consistent tendency in the direction hypothesized. The results are not statistically significant.

Hypothesis III is not supported by the data.

The evidence suggests that in rating his staff as a group, the principal is not to any great extent affected by the degree to which he is chosen by his staff members. The source of variance in GA ratings must therefore be sought elsewhere.

Although no specific hypothesis was proposed in connection with attraction power, the investigator was interested in getting some indication as to whether principals' GA ratings are also related to staff preference for the principal as social companion*. This variable was indexed by CHsoc, and its relationships with GA are also recorded in Table XV. As with CHprof, no significant evidence of a relationship with GA was found, and the correlations can at most be taken to indicate merely the possibility of a slight relationship.

II. GA AND STAFF ATTITUDES TO COLLEAGUES

It was expected that school staffs manifesting a high degree of in-group preference and a low degree of

*See p. 38 supra.

interpersonal conflict would be rated favorably by their principals. It was considered that cohesive, conflict-free staffs would have greater freedom to concentrate on instruction-oriented leadership than those hampered by interpersonal disinterest or interpersonal conflict.

Hypothesis IV

1. There is a positive correlation between principals' GA ratings and the proportion of fellow staff members whom teachers at the school choose as preferred companions.
2. There is a negative correlation between principals' GA ratings and the degree of within-staff interpersonal conflict reported by staff members.

The results of testing this hypothesis are summarized in Table XVI.

TABLE XVI
CORRELATING PRINCIPALS' GA RATINGS WITH
STAFF ATTITUDES TO COLLEAGUES

CPS N:26 SOCIOMETRIC VARIABLE	GA scores	GA(3)
	rho sociometric variables	r sociometric variables
COH	47 [p<.02,two tail]	51 [p<.01,two tail]
CONFL	-28	-32 [p<.05,one tail]

While the correlation in one cell approaches the level required for significance, it is not statistically

significant. The other three correlations are statistically significant. The evidence supports Hypothesis IV.1, but does not consistently support Hypothesis IV.2.

Hypothesis IV.1 is supported by the data.

Principals' GA ratings are related to staff cohesion. The correlations, while not large, do indicate the presence of a relationship which accounts for approximately 25% of the common variance.

Hypothesis IV.2 is not supported by the data.

While there is evidence of a relationship in one case, this evidence is not consistent for both methods of dimensionalizing GA. Even where the correlation is statistically significant, it indicates a very low level of relationship.

The lack of support for Hypothesis IV.2 may, however, be due to a problem of measurement reliability rather than to the lack of validity of the hypothesis, especially in view of the fact that COH and CONFL are correlated $-65 (26) [p < .001, \text{two tail}]$. One problem in obtaining a CONFL index may have been the disinclination of many staff members to make unfavorable ratings of colleagues. This possibility was inferred from a comparison of the means and standard deviations of COH and CONFL:

CONFL:	0.0461	s:	0.0443
COH:	0.7218	s:	0.1120

Further, four of the 26 schools scored zero on CONFL, indicating that there is a possibility of a degree of unreliability in the correlations due to rater diffidence. It is probable that the lower correlations of GA with CONFL are in part due to the skewed distribution of these scores. In addition, it is likely that, with a measure which, due to the narrow range of the scores, must be relatively insensitive, trivial numerical differences in CONFL scores would be given exaggerated weighting by rho as compared with r. This possibility could account for the slightly lower, non-significant correlation with rho as the measure of relationship, even though the same subsample was used as with r.

It is concluded that principals' GA ratings may in part be a response to variance in the staff situation along a cohesion-conflict continuum. However, in view of the inadequacies of returns on this subsample, this conclusion needs to be validated by a follow-up study.

The cohesion-conflict continuum may be an important index of FAV at particular schools. In terms of the theory, it might be regarded as one of the factors defining which style of leadership would be appropriate in particular school staff situations, moderating accordingly LPC-effectiveness relationships. In Chapter XIII (infra) may be found a report of an

investigation into the effects of COH and CONFL as indices of FAV, singly, jointly, and in conjunction with GA.

III. GA AS A MODERATOR OF STAFF AUTONOMY NEEDS

One feature of the TRA instrument used by McNamara (1967) is the large number of items which appear to reflect teacher preference for autonomy. Factor analysis of teachers' responses from two samples indicated the presence of stable factors with high loadings on eight items interpreted as indexing teacher preference for autonomy. These eight items were scored and combined to yield AUT, an index of staff autonomy needs at particular schools*.

It was expected that in a favorable leadership situation directive leadership would be acceptable and staff autonomy needs would not therefore be strongly felt and expressed. On the other hand, it was felt that autonomy needs would be salient in a stressful situation, and that in such situations directive, task-oriented leadership would simply add to the stress. Data were collected (CPT, SECT, and MLT) in relation to this problem, and relationships were measured in both favorable and unfavorable situations, a procedure which

*See p. 136 supra.

yielded information of considerable interest concerning teacher responses to LPC as differentiated by class of school.

Hypothesis V.I

Principal LPC correlates negatively with the expressed need for autonomy of school staffs, in those schools where there is a relatively low level of principal-staff affective relations, as indexed by the principal's rating of the staff on GA.

Table XVII is a summary of the correlations observed in the three classes of schools. Relationships under high GA are also tabulated, and are of interest in view of the expectations underlying the hypothesis.

TABLE XVII

STAFF AUTONOMY NEEDS IN RELATION TO LPC, MODERATED BY GA

Sub-sample	LPC rho AUT		
	GA-	GA(M)	GA+
CPT	43(7)	25(11)	-71(18) [$p < .001$, 2t]
SECT	-90(6) [$p < .05$, 1t]	07(7)	-37(11)
MLT*	84(12) [$p < .02$, 2t]	83(6)	07(17)

*AUT scores of EL-JHS were based only on the responses of grade VII-IX teachers; see p. 98 supra.

Only one significant correlation under low GA conforms to the hypothesis. This correlation is from a

very small (N:6) subsample, and is evidently a reflection of a general negative correlation for all SECT*. The significant positive correlation among multilevel schools under low GA is in the opposite direction from that hypothesized.

Hypothesis V.1 is not supported by the data.

The only correlation under low GA which is statistically significant and in the direction predicted is merely a reflection of the significant negative correlation for the full SECT subsample. The only other significant correlation under low GA is contrary to hypothesis. On the other hand a significant negative correlation among elementary schools occurs under high GA, an observation which it is difficult to reconcile with the rationale underlying Hypothesis V.1. Staff autonomy needs do appear to be related to the principal's leadership style, but not in the fashion hypothesized. GA does appear to moderate LPC-AUT relationships, at least among the elementary and multilevel subsamples, but not in the manner expected.

These results need to be interpreted in the light of the finding that there is a significant relationship between LPC and GA**. If the median LPC scores under

*See Table XIX, p. 230 infra.

**See Chapter VIII supra.

three levels of GA are checked by subsamples*, it may be observed that the LPC median ranged only eight points for EL-JHS, which constituted the bulk of MLT, but 11.5 for SHS, 24.5 for JHS, and 10 for CPEL. The LPC median under low GA for EL-JHS was 86, but for SHS 78.5, for JHS 67, and for CPEL 76. That is, the positive correlation among MLT under low GA might be associated with differences in the range of LPC scores of principals in this subsample. The differences in response to LPC as between classes of schools might also be associated with differences in the relative effectiveness of schools of different classes**, that is, with the possibility that EL-JHS schools as a class are relatively unfavorable to leadership by the principal.

It is of interest, too, that LPC relates to AUT in ways that are differentiated by GA ratings. That is, the evidence indicates that GA does moderate the relationship between LPC and AUT. What is particularly interesting is that despite reservations concerning the value of GA as an index of FAV in schools, GA does moderate this relationship among elementary schools in the same way as sociometric indices of FAV, obtained independently of LPC.

*See Table XIII, p. 173.

**See Table XIV, p. 177.

This may be observed by comparing LPC-AUT relationships among elementary schools in Table XVII with those in Table XVIII. The similarity of the relationships under high GA suggests that, whatever the limitations on GA as an index of FAV in schools, due to its relationships with LPC, GA does in this respect at least operate in the same way as an independent sociometric measure of the leadership situation.

IV. SOCIOMETRIC CHOICE OF THE PRINCIPAL AS A MODERATOR OF STAFF AUTONOMY NEEDS

It was proposed to use staff attitudes, as well as GA, as an index of FAV for one subsample. Hypothesis V.1 therefore had a parallel hypothesis with FAV indexed by staff attitudes, sociometrically determined.

Hypothesis V.2

Principal LPC correlates negatively with the expressed need for autonomy of school staffs, in those schools where there is a relatively low level of principal-staff affective relations, as indexed by the extent to which staff members choose the principal as professional colleague.

LPC-AUT correlations as moderated by sociometric choice (Table XVIII) are consistent with those observed among CPT when GA was used as the moderator (Table XVII).

Taken together, these significant high correlations, using two different moderators of FAV, provide mutually reinforcing evidence that among elementary schools, it is in favorable, not in unfavorable, situations that LPC correlates negatively with staff autonomy.

Hypothesis V.2 is not supported by the data.

There is no evidence that principals' LPC scores are related to staff need for autonomy among staffs whose attitudes to the principal as leader are unfavorable.

TABLE XVIII

STAFF AUTONOMY NEEDS IN RELATION TO LPC, MODERATED BY
SOCIOMETRIC INDICES OF PREFERENCE FOR THE PRINCIPAL

CPS* Index	LPC rho AUT	
	Principal sociometrically rejected (bottom third)	Principal sociometrically chosen (top third)
CHprof	-17(8)	-67(8)[p<.05, one tail]
CHsoc	-07(8)	-68(8)[p<.05, one tail]

*CPT (Table XVII) included CPS, but was a larger subsample, because more schools returned an adequate proportion (70%+) of TRA questionnaires than was the case with the sociometric items.

The negative correlation among school staffs choosing the principal replicates the relationship observed when GA was used as the index of FAV, and suggests that the nature of the variable measured by AUT scores should be further investigated in relation to leadership style.

It is difficult to explain the findings resulting from the tests of Hypotheses V.1 and V.2 in terms of the assumptions defining the original hypotheses. Alternative assumptions are therefore offered as tentative explanations of the relationships observed.

Quasi-Therapeutic Leadership May Reduce Autonomy Needs

It may be that a negative correlation in FAV situations indicates not so much an increase in need for autonomy in response to directive leadership as a decrease in need for autonomy in response to the therapeutic behaviors of a high LPC principal. Among multilevel schools, on the other hand, the positive correlation may indicate a receptivity to task-oriented leadership in an ambiguous situation, and a consequent decline in the salience of autonomy needs.

Autonomy Needs as the Independent Variable

The hypothesis proposed implies an assumption that AUT reflects a staff attitude which emerges in response to leadership style. It may be, on the contrary, that AUT reflects an independent variable, a constant factor in the attitudes of individual teachers and particular staffs indicating commitment to professional goals and a preference for independence in making professional decisions. In this event, principals' ratings of GA as a

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function of LPC* may be influenced by their reactions to high and low AUT staffs. Task-oriented principals may undervalue low AUT staffs, high LPC principals may find their esteem needs threatened by high AUT staffs.

The hypothesis of independence of AUT might be tested by selecting, from the 95 staffs on which 1967 AUT scores are available, those from which few teachers have moved, but to which new principals have since been appointed.

V. STAFF AUTONOMY, LPC, AND CLASS OF SCHOOL

In the course of data analysis it became evident that LPC-AUT relationships are significantly differentiated by class of school. The contrasting correlations are presented in Table XIX.

TABLE XIX

STAFF AUTONOMY NEEDS RELATED TO LPC REGARDLESS OF GA

CLASS OF SCHOOL	LPC rho AUT
Elementary (CPT)	-30 (36) [p<.05, one tail]
Secondary (SECT)	-36 (24) [p<.05, one tail]
Unified (CPT+SECT)	-33 (60) [p<.01, two tail]
Multilevel (MLT)	34 (35) [p<.05, two tail]

*See pp.180 ff. supra.

Difficult as this difference is to explain, the problem of interpretation increases when these correlations are studied in the light of LPC-effectiveness correlations and AUT-effectiveness correlations (See Chapter XIV infra). For the moment, two possible interpretations are simply stated.

LPC as the Independent Variable

- a.) Among staffs of relatively unified schools (EL/SEC), directive leadership increases the salience of attitudes measured by AUT, permissive leadership minimizes awareness of autonomy needs.
- b.) Among the staffs of fragmented, multilevel schools, person-oriented leadership increases teachers' feelings of need for autonomy, task-oriented leadership minimizes these needs; perhaps because, in an ambiguous situation where the principal cannot be a specialist at all levels, task-oriented leadership is likely to be seen as facilitative rather than as controlling.

Autonomy as the Independent Variable

- a.) Principals of unified schools find high AUT staffs stressful, and accordingly tend to rate their LPC's lower; find low AUT staffs less threatening, and accordingly rate their LPC's favorably.
- b.) Principals of fragmented schools find high AUT staffs

relieve them of responsibility, and accordingly, free of stress, rate their LPC's higher. Finding low AUT staffs threaten goal achievement, because they need closer supervision than is practicable, they find them stressful, and accordingly rate their LPC's lower.

VI. SUMMARY

In this chapter were reported the results of analysis intended to define aspects of the relationship between principals' and staffs' attitudes to the group situation. Principals' GA ratings were found to be related not to staff choice of the principal, but to staff cohesion. It is inferred from these results that when principals rate their staffs on GA, one important factor they are rating is the degree of warmth of interpersonal relations among staff members.

Principals' LPC scores were found to be related to staff autonomy needs as moderated by GA and by staff preference for the principal. The fact that both these variables were found to moderate the relationship significantly and similarly is taken as indicating that GA does have some validity as an index of the leadership situation, even though its value as a general index of the favorability of school staff leadership situations is questionable. However, the relationship found did not

accord with that hypothesized, a finding which raises questions about the assumptions underlying the hypothesis. These assumptions concerned the nature of the relationship between leadership style and group needs for autonomy as moderated by the favorability of the leadership situation. While the hypothesis was not supported, the evidence does indicate that LPC is related to staff needs for autonomy, and in a way which differentiates between unified and fragmented schools. Some tentative explanations of this complex set of significant correlations were offered. Suggestions were made for possible follow-up research into the nature of the variable measured by AUT scores, and its relationship to leadership style.

CHAPTER XII

APPLYING THE THEORY TO SCHOOLS USING GA AS THE INDEX OF THE FAVORABILITY OF THE LEADERSHIP SITUATION

The foregoing discussion and analysis are all secondary to the central problem of interpreting the results of testing the theory which are presented in the next three chapters. Chapters XII and XIII are summaries of the evidence resulting from the steps taken to test the applicability of the theory to schools along the lines set out in the hypotheses proposed*. Chapter XIV consists of a re-analysis of the data in terms of factors observed during the analysis.

Chapter IX dealt with LPC as an index of an enduring personality trait among principals. Chapters X and XI dealt with factors defining the favorability of the leadership situation, in schools generally, (Chapter X), and in particular schools (Chapter XI). Chapters XII and XIII present summaries of the relationships observed when the interaction between these two dimensions of leadership was analyzed--i.e. the interaction between the principal's leadership style and the favorability of

*Hypotheses VI-XI, pp. 86-91 supra.

the school staff leadership situation. The latter was indexed for one subsample by staff attitudes (the sociometric variables--Chapter XIII), but chiefly, throughout the sample, by the principal's perceptions of his staff (GA--Chapter XII).

This operational version of the theory was applied to the analysis of leadership among schools in general, and among schools differentiated in turn on the basis of size, level, degree of integration-fragmentation, and sex of principal. It was felt that any of these factors might impose limitations on the applicability of the theory to schools.

I. IN SCHOOLS IN GENERAL

Underlying the analysis in particular kinds of schools is a general hypothesis which was expected to apply to some, if not all, kinds of schools.

Hypothesis VI

Principal LPC-school effectiveness correlations are contrasting in sign, contingent on the favorability of the leadership situation as indexed by the principal's rating of group atmosphere (GA). The two variables are correlated negatively among schools at which the principal rates the staff relatively favorably, positively among schools at which the

principal rates the staff relatively unfavorably. The results of testing this hypothesis are presented in Table XX. Five measures of effectiveness were used, the first three being primary measures applicable to parts of the sample, the fourth being an integrated measure applicable to parts of the sample, and the fifth being an integrated measure applicable to the full sample*. Columns (2) and (4) provide the evidence required to test the hypothesis. Columns (1) and (3) are included because they provide information relevant to determining the way in which the theory applies to schools.

None of the cells relevant to the hypothesis carry significant correlations.

Hypothesis VI is not supported by the data.

Test for Curvilinearity

In view of the evidence of a curvilinear relationship between LPC and GA, it was deemed advisable to test whether the lack of support for Hypothesis VI was due to the fact that a test of linear correlation was failing to detect a curvilinear relationship between LPC and effectiveness as moderated by GA. In view of the evidence (presented in Chapter XIV infra) that LPC is significantly related to school effectiveness in ways

*Measures related to subsamples, Fig. 6, p. 129 supra.

TABLE XX
LPC-EFFECTIVENESS CORRELATIONS
OVER FULL SAMPLE

MEASURE	(1) ALL SCHOOLS	(2) GA-	(3) GA(M)	(4) GA+
(1) LPC rho EFF(6)	-05(72)	06(18)	28(22)	-09(32)
(2) LPC(3) r EFF(3)	-06(195)	-01(71)	11(37)	-14(87)
(3) LPC rho ATT	18(149) [p<.05, 2tail]	-17(61)	17(36)	-05(52)
(4) LPC rho NS	-02(221)	-10(79)	20(58)	-06(84)
(5) LPC(3) r EFF(03)	-01(326)	-05(119)	15(73)	-07(134)

which differentiate among classes of schools (EL, SEC and ML), it was decided to carry out the test for curvilinearity separately for the three classes of schools. Otherwise, it is believed, the significant differences between classes of schools* in response to LPC might act to mask such curvilinear relationship as may, in fact, exist.

Mean EFF(03) under three levels of LPC** was computed for each of the three classes of schools. Mean levels of EFF(03) were found to be:

		<u>GA-</u>	<u>GA(M)</u>	<u>GA+</u>
EL	<u>LPC+</u>	1.94(17)	2.07(14)	1.85(31)
	<u>LPC(M)</u>	1.80(15)	2.00(13)	1.95(19)
	<u>LPC-</u>	1.85(26)	2.20(10)	1.66(32)
SEC	<u>LPC+</u>	1.40(5)	2.00(4)	1.40(10)
	<u>LPC(M)</u>	1.25(4)	2.00(8)	1.50(4)
	<u>LPC-</u>	1.70(10)	1.83(6)	1.82(11)
ML	<u>LPC+</u>	2.14(7)	1.25(4)	1.93(14)
	<u>LPC(M)</u>	1.81(20)	2.00(8)	1.71(7)
	<u>LPC-</u>	1.71(14)	2.50(6)	1.67(6)

The relationships between LPC and effectiveness for each of the nine cells are plotted in Figure 8. The

*Significant differences in relation to Yp are set out in Chapter XIV. Consistent (though non-significant) differences in linear correlations may be noted among Tables XXVI (EL--negative complemented by positive), XXVII (SEC--generally positive), and XXIX(ML--generally negative).

**Thirds across the full sample (pp. 142-145 supra).

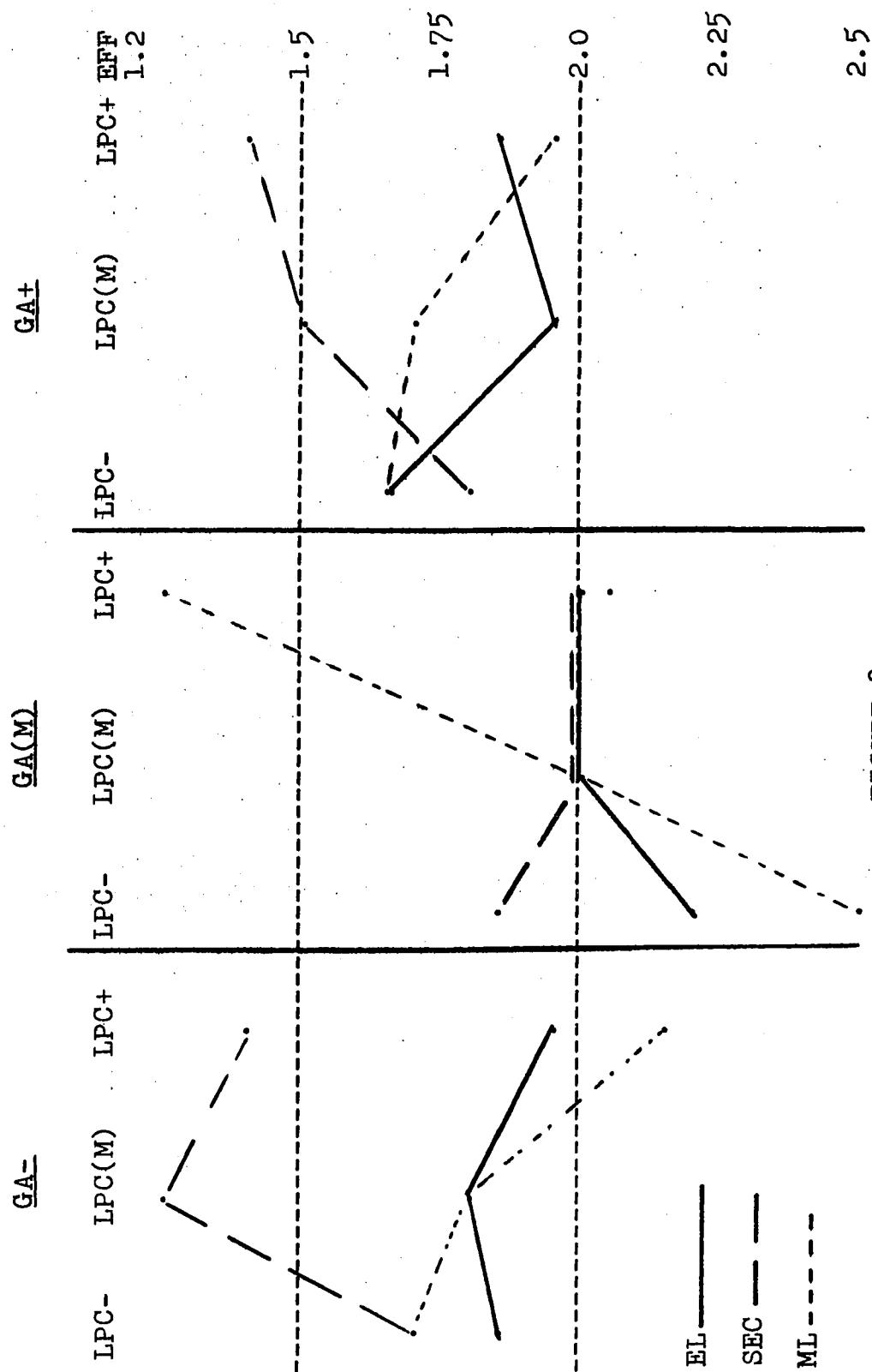


FIGURE 8

LPC-EFFECTIVENESS CURVES UNDER THREE LEVELS OF GA,
PLOTTED BY CLASS OF SCHOOL

differences between the means within each cell are not statistically significant, nor is there any indication of consistent curvilinear relationships, either by level of GA or by class of school. This evidence is not regarded as indicating the existence of a curvilinear relationship. There is therefore no evidence to indicate that the lack of support for Hypothesis VI may be attributed to the inappropriate use of a measure of linear correlation to test the hypothesis.

Inferences

The evidence to test Hypothesis VI was drawn from such a large sample that lack of support for the hypothesis casts considerable doubt on the validity of the theory for schools, at least as operationalized by a hypothesis stated specifically in terms of GA. These results suggest that if the theory does apply to schools, then it must be to particular types of schools only, and/or in terms of a more valid index of FAV.

It should be noted (Table XX) that the only significant correlation is a positive correlation between LPC and ATT, regardless of GA, among SEC and ML. This correlation taken alone suggests that secondary and multilevel schools which are more successful in public examinations tend to be led by permissive, person-oriented principals, either regardless of the favorability

of the leadership situation, or else because such schools are all at the appropriate level of FAV(i.e. situation unfavorable to the leader)*.

One other point should be noted. When the principal rates his staff moderately favorably (Table XX, column 3) the correlations are consistently positive over all measures, and approach significance in two cases. This observation suggests a need to reconsider the method of using GA as an index of the favorability of the school staff leadership situation, an inference which is supported by the evidence** that GA(M) schools are the least effective. If, then, schools rated GA(M) are considered those least FAV, the direction (though not the significance) of the correlations reported in column (3) lends partial support to Hypothesis VI.

II. IN SCHOOLS OF PARTICULAR SIZES

Data were collected on schools at five levels of size. Hypothesis VII was tested in turn with schools at each of these levels of size.

*A comparison of Tables XXVII (p. 257) and XXVIII (p. 259) suggests that this positive correlation is derived from SEC, not ML.

**See p. 169 supra.

Hypothesis VII

Principal LPC-school effectiveness correlations are contrasting in sign, contingent on the favorability of the leadership situation as indexed by the principal's rating of group atmosphere (GA). The two variables are correlated negatively among schools at which the principal rates the staff relatively favorably, positively among schools at which the principal rates the staff relatively unfavorably, among schools staffed by . . .

1. . . . between three and six professional persons.
2. . . . between 7 and 12 professional persons.
3. . . . between 13 and 24 professional persons.
4. . . . between 25 and 49 professional persons.
5. . . . by 50 or more professional persons.

Very Small Schools

Table XXI is a summary of the evidence gathered to test Hypothesis VII.1. The schools of this size in the sample included only one taking public examinations. The sample of very small schools was so small that it could be divided on GA in relation to only one direct and one integrated measure. Consequently in rows (1) and (3) the correlations are shown only for all schools, regardless of GA.

The correlations in columns (2) and (4) do not

indicate any degree of relationship.

Hypothesis VII.I is not supported by the data.

If high and low GA are used as the sole indices of FAV, the theory does not appear to have any relevance for very small schools.

However, a significant correlation in the very small subsample in column (3) suggests that, given GA(M)

TABLE XXI

LPC-EFFECTIVENESS CORRELATIONS
AMONG SCHOOLS OF 3-6 TEACHERS

MEASURE	(1) ALL SCHOOLS	(2) GA-	(3) GA(M)	(4) GA+
(1) LPC rho EFF(6)	-35(6)			
(2) LPC(3) r EFF(3)		-07(20)	-69(6) [p<.05, one tail]	-03(21)
(3) LPC rho NS	16(7)			
(4) LPC(3) r EFF(03)		-12(31)	-69(6) [p<.05, one tail]	-01(23)

Note.--For the blank cells there were too few very small schools on which the particular measure was available.

schools are regarded as those least FAV, directive leadership is more effective than permissive leadership among very small schools in the most unfavorable situations. That is, the evidence suggests that the model of interacting groups may fit the analysis of leadership

effectiveness among very small schools*. This observation is supported by the fact that the mean effectiveness of these six schools was 2.17, lower even than the overall mean for GA(M) schools**. It may be inferred from this fact that negative correlations are to be found among interacting staffs in the most unfavorable situations, which may be the case when a few teachers are thrown together in a small community for a year, yet are not perceived very favorably by at least one significant group member (the principal).

Small Schools

These are the schools referred to in Hypothesis VII.2--schools staffed by from 7 to 12 professional persons. The results of observations with these schools are summarized in Table XXII. The correlations computed to test the hypothesis (columns 2 and 4) offer it no support.

Hypothesis VII.2 is not supported by the data.

The correlations in the two critical columns are not statistically significant; nor are they large, nor even consistent within each column. That is to say, when FAV is indexed by the extremes of GA, the theory does not

*Possibly, if this case is appropriate to the contingency model, in conjunction with low TS and high LPP.

**See p. 169 supra.

appear to have any relevance for small schools.

It may be noted again that the correlations among schools rated GA(M) are, though low and non-significant, consistently positive.

TABLE XXII
LPC-EFFECTIVENESS CORRELATIONS
AMONG SCHOOLS OF 7-12 TEACHERS

MEASURE	(1) ALL SCHOOLS	(2) GA-	(3) GA(M)	(4) GA+
(1) LPC rho EFF(6)	11(28)	20(4)	25(12)	-13(12)
(2) LPC(3) r EFF(3)	-11(35)	00(10)	21(8)	-23(17)
(3) LPC rho ATT	-01(9)			
(4) LPC rho NS	08(37)	-26(6)	17(16)	29(15)
(5) LPC(3) r EFF(03)	-10(65)	-28(16)	07(21)	-08(28)

Medium-Sized Schools

Schools staffed by from 13 to 24 teachers include a good range of schools from all subsamples, and therefore provide data for testing the hypotheses by all five measures of effectiveness. The results of testing Hypothesis VII.3 for schools of this size range are tabulated in Table XXIII. Columns (2) and (4) present the evidence for testing the hypothesis.

The correlations in column (4) are consistently

TABLE XXIII
LPC-EFFECTIVENESS CORRELATIONS
AMONG SCHOOLS OF 13-24 TEACHERS

MEASURE	(1) ALL SCHOOLS	(2) GA-	(3) GA(M)	(4) GA+
(1) LPC rho EFF(6)		-01(9)	54(7)	-10(17)
(2) LPC(3) r EFF(3)	03(92)	07(37)	33(18)	-18(37)
(3) LPC rho ATT	-07(92)	-14(40)	14(21)	-32(31) [p<.05, 1 tail]
(4) LPC rho NS		-10(49)	16(28)	-24(48) [p<.05, 1 tail]
(5) LPC(3) r EFF(03)	09(148)	04(57)	41(30) [p<.05, 2 tail]	-08(61)

negative and in two cases statistically significant.

That is to say the trend of all five correlations, and the statistical significance of two of the correlations, support the hypothesis that in medium-sized schools, when the principal rates the staff relatively favorably, task-oriented principals lead more effective schools*.

However the correlations in column (2) not only are not statistically significant, but they are also consistently low. There is thus no indication in support of the hypothesis that, for this size of school, person-oriented principals are more effective among staffs which are rated unfavorably by their principals.

Despite the partial support for the hypothesis in column (4), Hypothesis VII.3 is stated in terms of contrasting complementary correlations, which are not observed over columns (2) and (4), both of which must be considered in conjunction in testing the hypothesis.

Hypothesis VII.3 is not supported by the data.

For medium-sized schools, where opposed levels of FAV are indicated by GA+ and GA-, the data do not support the hypothesis.

It might be concluded from this finding that the

*It should be borne in mind that even where the correlations are statistically significant, they are so small as to indicate the existence of a very slight relationship only.

theory does not apply to schools of this size. However, the apparent lack of validity of the theory may be due to the operational index of FAV in terms of which the investigator chose to frame the hypothesis.

As has been generally noted so far, correlations under GA(M) are consistently positive. For medium-sized schools, in column (3), all correlations are positive, four are moderately large but not significant, and one is statistically significant.

If GA(M) is regarded as indicating low FAV, then the evidence suggests that for schools of this size the predicted contrasting correlations may be found (columns 3 and 4), and as these are positive even in the least FAV situations, but negative in the most FAV situations, it is possible that the model of coacting groups applies to schools of this size. That is, the evidence suggests that, given a valid index of FAV, the theory itself may be found to be valid for schools.

Large Schools

Schools of from 25-49 teachers in the sample are mainly SEC, with a few ML and a very few EL. By design they do not include AL, which constitute the major group of schools on which the EFF(3) ratings were made available. The sample of large schools is therefore quite small for two of the effectiveness measures.

The evidence in relation to Hypothesis VII.4 is presented in Table XXIV. In an attempt to gain information from schools too few for some cells, schools in these instances were grouped across two cells.

TABLE XXIV
LPC-EFFECTIVENESS CORRELATIONS
AMONG SCHOOLS OF 25-49 TEACHERS

MEASURE	(1) ALL SCHOOLS	(2) GA-	(3) GA(M)	(4) GA+
(1) LPC rho EFF(6)			<---30(5)--->	
(2) LPC(3) r EFF(3)	-13(16)	<----07(7)----->		-26(9)
(3) LPC rho ATT	20(31)	04(10)	24(8)	21(13)
(4) LPC rho NS	07(36)	04(10)	17(11)	01(15)
(5) LPC(3) r EFF(03)	-01(43)	-32(12)	10(13)	11(18)

Note.--Arrows indicate cells grouped because of small N's.

The correlations observed (columns 2 and 4) are not statistically significant, nor does the trend of correlations support the hypothesis. The correlations in each of the two critical columns are not consistent. In four cases out of seven they are in opposite directions from those hypothesized.

Hypothesis VII.4 is not supported by the data.

The theory does not appear to have any validity for large schools, at least in the manner in which it was

operationalized for the study.

Very Large Schools

The size category of very large schools (50 or more teachers) includes only SEC and HS. The results available on the few schools of this size are recorded in Table XXV. The correlations are very low and are not statistically significant.

TABLE XXV

LPC-EFFECTIVENESS CORRELATIONS
AMONG SCHOOLS OF 50+ TEACHERS

MEASURE	(1) ALL SCHOOLS	(2) GA-	(3) GA(M)	(4) GA+
(1) LPC rho ATT	-02(17)	-12(9)	<-----07(8)-----> (7) + (1)	
(2) LPC(3) r EFF(03)	-13(17)	-11(9)	<- -16(8)-----> (7) + (1)	

Hypothesis VII.5 is not supported by the data

As the hypothesis is stated, no evidence has been presented to validate the theory for very large schools.

Summary--Size

Fiedler's theory was applied to schools at five levels of size ranging from very small (three to six teachers) to very large (50 or more teachers). High and low GA were specified in the hypothesis as the alternate

indicators of favorable and unfavorable school staff leadership situations. In no cases were the predicted contrasting complementary correlations observed. A literal interpretation of these results would lead to the conclusion that the theory does not apply to schools of any size.

If, however, moderate GA ratings are taken as indicating a less favorable leadership situation, then there is a general positive correlation in unfavorable situations through all schools staffed by from 7 to 49 professional persons. Among schools staffed by from 13 to 24 teachers this general positive correlation under moderate GA is in one case statistically significant, and is complemented by negative correlations, two significant, under high GA. It is concluded that, as indicated by earlier evidence (Chapter VIII) the moderate GA category may be regarded as including many schools in which the leadership situation is unfavorable to the principal, in which case these data lend support to the validity of the theory for medium-sized schools (staffed by from 13 to 24 professional persons). It may be noted that it was with schools of approximately this size category that McNamara (1967) found indications that the theory may be valid for elementary schools*. In the present study, the

*But where GA- was interpreted as low favorability.

subsample of schools of the same size, to which the theory appears to apply, included approximately equal proportions of EL, SEC, and ML. There is therefore some indication that the model of coacting groups may apply to schools of all types staffed by between 13 and 24 professional persons. Among very small schools, staffed by from three to six teachers, there is some indication that the model of interacting groups may apply, in that in a particularly unfavorable situation a significant negative correlation was observed.

III. IN SCHOOLS OF PARTICULAR LEVELS

McNamara (1967) found evidence that the theory has relevance for leadership style-effectiveness relationships among the principals of elementary schools. There was need for a validation study of the way in which it was believed the theory applied to elementary schools. At the same time there was a need for follow-up work to find out whether the theory might be generalized to other levels of schools, particularly junior and senior high schools.

Hypothesis VIII

Principal LPC-school effectiveness correlations are contrasting in sign, contingent on the favorability of the leadership situation as indexed by the

principal's rating of group atmosphere (GA). The two variables are correlated negatively among schools at which the principal rates the staff relatively favorably, positively among schools at which the principal rates the staff relatively unfavorably, among . . .

1. . . .elementary schools.
2. . . . junior high schools.
3. . . . senior high schools.

Elementary Schools

Two subsamples of elementary schools were available. These were also combined to provide an overall EL sample. When one subsample, MSEL, was broken down by size of community, it was found that one set of schools, the small schools from rural areas (i.e. not located in cities of any size) failed to yield any indications of relationships in terms of the theory, under any of the conditions which proved meaningful for the other subsamples. Throughout the analysis which follows, therefore, relationships observed among MSEL are matched by those observed by a part of this subsample [MSEL (excluding rural)], the latter being regarded as the subsample for which the theory has greater relevance. It should be noted that MSEL (excluding rural) is comprised mainly of schools in similar systems to that of the CPEL subsample.

Many of the schools are from big city systems (e.g. Calgary and Edmonton Separate Schools), others are from moderate and small cities such as Medicine Hat and St. Paul. Results for MSEL (excluding rural) are regarded as less random than those from the full MSEL subsample, a fact that will become apparent to the reader as he reads through this report of analysis*.

It should be noted also that the N's under GA(M) for MSEL (excluding rural) are very small, due to the decision not to collect effectiveness measures on schools so rated on GA.

The resulting four sets of relationships for elementary schools are summarized in Table XXVI. Correlations under GA+ are consistently negative, and in one case statistically significant. However the correlation for CPEL, using the more refined effectiveness measure from a more closely-knit set of raters, is very low. The correlations under low GA in three cases approach zero.

Hypothesis VIII.1 is not supported by the data.

When FAV is operationally indexed by GA+ and GA-, the theory does not appear to be valid for elementary schools.

However, when rural schools are excluded from MSEL,

*Particularly in Chapter XIV infra.

TABLE XXVI
LPC-EFFECTIVENESS CORRELATIONS
AMONG ELEMENTARY SCHOOLS

MEASURE	(1) ALL SCHOOLS	(2) GA-	(3) GA(M)	(4) GA+
CPEL (1) LPC rho EFF(6)	05(72)	06(18)	<u>28</u> (22)	- <u>10</u> (32)
MSEL (2) LPC(3) r EFF(3)	12(105)	-01(40)	-15(15)	-17(50)
MSEL (excl. rural) (3) LPC(3) r EFF(3)	-18(56)	19(17)	<u>15</u> (11)	- <u>37</u> (28) [p<.05, 2 tail]
CPEL + MSEL (4) LPC(3) r EFF(3)	-05(177)	-03(58)	06(37)	-11(81)

Note.--The underlined correlations are complementary in direction, in conformity to the hypothesis--see p. 256 infra.

there is a consistent, though neither high nor significant, positive correlation under GA(M). If the four underlined correlations are considered together, it may be noted that negative correlations in favorable situations are complemented by positive correlations in unfavorable (moderate GA) leadership situations*. The directions of these complementary correlations conform to hypothesis.

Secondary Schools

The results for JHS and SHS are presented together in Table XXVII. EFF(3) ratings were available in

TABLE XXVII
LPC-EFFECTIVENESS CORRELATIONS
AMONG SECONDARY SCHOOLS

MEASURE	(1) ALL SCHOOLS	(2) GA-	(3) GA(M)	(4) GA+
(1) LPC(3) <u>JHS</u> r EFF(3)	12(20)		82(6) [p<.02, 2t]	-21(11)
(2) LPC <u>JHS</u> rho ATT(IX)	16(34)	26(9)	36(9)	10(16)
(3) LPC <u>SHS</u> rho ATT(XII)	25(30)	55(10)	18(9)	17(9)

*That is, the underlined correlations do suggest a trend in support of the validity of the theory for elementary schools.

sufficient number to permit this measure to be used as an additional criterion for JHS (but not for SHS). Otherwise ATT is the criterion used.

With one non-significant exception all the correlations among SEC were positive. Significant and contrasting correlations, as predicted under low and high GA, were not observed.

Hypothesis VIII.2 is not supported by the data.

Hypothesis VIII.3 is not supported by the data.

The evidence does not indicate the existence of the hypothesized differential effectiveness of alternative leadership styles among the staffs of secondary schools.

Once again, however, there are features of the relationships observed which indicate that the problem may not be one of the validity of the theory for schools, but of the validity of the index of FAV for school staffs.

The only significant correlation, under GA(M) for JHS, was positive as predicted for unfavorable situations, and was complemented by a negative, though low and non-significant, correlation under high GA. Further, all the correlations under GA(M) and GA- were positive and were larger than the correlations under GA+.

This evidence from secondary schools is interpreted as indicating that further investigation will need to be carried out before it can be demonstrated that the theory

does differentiate the effectiveness of alternative leadership styles among secondary school principals. This investigation may well concentrate on the problem of developing a valid index of FAV.

Summary--Level

The results observed do not support the hypothesis proposed by the investigator. If, however, GA(M) is regarded as reflecting a low FAV situation, then there are some slight indications that the model of coacting groups does have meaning for leadership among elementary school staffs. Among JHS and SHS, principals' LPC scores were found generally to correlate positively with school effectiveness. This may mean that the theory is not valid for secondary schools, or that some more powerful index of FAV for such schools needs to be found.

III. IN MULTILEVEL SCHOOLS

The hypothesis was tested among three types of multilevel schools.

Hypothesis IX

Principal LPC-school effectiveness correlations are contrasting in sign, contingent on the favorability of the leadership situation as indexed by the principal's rating of group atmosphere (GA). These

two variables are correlated negatively among schools at which the principal rates the staff relatively favorably, positively among schools at which the principal rates the staff relatively unfavorably, among . . .

1. . . . elementary-junior high schools (grades I-IX).
2. . . . high schools (grades VII, VIII, or IX-XII).
3. . . . all-level schools (grades I-XII).

The relationships observed are summarized in Table XXVIII.

TABLE XXVIII
LPC-EFFECTIVENESS CORRELATIONS
AMONG MULTILEVEL SCHOOLS

MEASURE	(1) ALL SCHOOLS	(2) GA-	(3) GA(M)	(4) GA+
(1) $\frac{\text{EL-JHS}}{\text{LPC rho ATT(IX)}}$	-20(31)	-24(14)	50(3)	-37(14)
(2) $\frac{\text{EL-JHS}}{\text{LPC(3) r EFF(3)}}$	29(17)	20(7)		27(8)
(3) $\frac{\text{AL}}{\text{LPC rho ATT(IX)}}$	09(35)	-16(15)	26(10)	-07(9)
(4) $\frac{\text{AL}}{\text{LPC(3) r EFF(3)}}$	-18(36)	-08(17)	-20(9)	-40(10)
(5) $\frac{\text{HS}}{\text{LPC rho ATT}}$	-05(21)	-30(12)	-20(5)	40(4)

For two subsamples it was possible to use more than one criterion of effectiveness. It will be noted that the results with the two methods do not correspond under the

same conditions, even though EFF(3) and ATT are generally correlated*. Two factors are believed to contribute to the lack of correspondence between relationships with the two effectiveness measures.

Because of the difficulty in obtaining complete criterion data, particularly effectiveness ratings**, the sets of schools used for the two effectiveness criteria sometimes vary considerably, even though they do overlap. This may be noted (Table XXVIII) particularly among EL-JHS under GA-. Also, due to the nature of ML schools, while EFF(3) is an index of the work of the whole school, ATT is a measure of the achievement of one part of the school only*** (i.e. grade IX and/or XII students).

Due to these factors, together with the small size of many of the subsamples for which actual correlations were computed, it is difficult to induce any consistent pattern from the non-significant correlations constituting Table XXVIII. Even the positive correlations found elsewhere among GA(M) schools are not found consistently among ML.

Hypothesis IX is not supported by the data.

The evidence suggests that some characteristic of

*See p. 123 supra.

**See p. 106 supra.

***For a fuller analysis, see pp. 123 ff. supra.

multilevel schools limits the value of Fiedler's theory for the analysis of leadership effectiveness in this class of schools. This factor may be their distinguishing feature--the fragmentation of the schools*--such that they are a loose collection of constituent parts, in which the subsection leader is the only influential formal leader, as for example the assistant-principal in charge of the secondary classes at an elementary-junior high school.

V. UNDER MALE AND UNDER FEMALE PRINCIPALS

In view of culturally set expectations defining leadership roles largely in terms of males, it was decided to test whether sex of leader differentiated principal LPC-school effectiveness relationships in schools.

Hypothesis X

Principal LPC-school effectiveness correlations are contrasting in sign, contingent on the favorability of the leadership situation as indexed by the principal's rating of group atmosphere (GA). The two variables are correlated negatively among schools at which the principal rates the staff relatively favorably, positively among schools at which the

*See p. 89 supra.

principal rates the staff relatively unfavorably, among schools led by female principals.

As the schools led by female principals were, with one exception, in the elementary subsamples, Hypothesis X was tested only with reference to the two subsamples of EL. Table XXIX summarizes the correlations observed, both for male and for female principals. The correlations in

TABLE XXIX
LPC-EFFECTIVENESS CORRELATIONS AMONG SCHOOLS
LED BY PRINCIPALS OF THE SAME SEX

MEASURE	(1) ALL SCHOOLS	(2) GA-	(3) GA(M)	(4) GA+
(1) CPEL MALE LPC rho EFF(6)	17(44)	18(12)	61(13) [p<.05, 2t]	-04(19)
(2) CPEL FEMALE	-16(28)	-32(6)	-09(9)	-16(13)
(3) MSEL MALE LPC(3) r EFF(03)	-16(77)	-16(29)	-18(10)	-05(39)
(4) MSEL FEMALE	-14(27)	36(11)	00(5)	-51(11) [p<.05, 1t]

columns (2) and (4) for female principals are the correlations relevant to Hypothesis X.

Under GA+ there are, as predicted, negative correlations, one of which is significant. Under GA- the correlations from the two subsamples are contrasting in direction. In row (4) the significant negative correlation under GA+ is complemented by a positive correlation under

GA-. That is, the pair of correlations for MSEL supports the hypothesis, but the pair for CPEL does not. Overall there is a lack of pairs of statistically significant correlations in the directions predicted by the hypothesis.

Hypothesis X is not supported by the data.

The evidence does not consistently and significantly indicate that the theory applies to schools led by female principals.

Going beyond the literal interpretation of the results of testing the hypothesis, the results over the two subsamples are no more consistent for male principals than for female principals. The evidence cannot be taken, therefore, as indicating significant differences between male and female principals with respect to the theory. If there are sex differences, this can only be tested once an adequate index of FAV for schools has been devised.

VI. SUMMARY

The analyses reported in Chapter XII were designed to test the practical consequences for school effectiveness of Fiedler's theory. The theory was applied to the analysis of the leadership effectiveness of various types of schools, using GA as an index of favorability to leadership.

No evidence was found to support the hypothesis that the theory applies to schools in general (the full sample) regardless of school characteristics. When the theory was applied to schools of particular sizes, it was not, as operationalized by the hypotheses and the variables employed, found valid for any category of school size. If, however, moderate GA is interpreted as indicating a situation of low favorability to the leader, then there is some indication that the model of interacting groups may apply to very small schools (three to six teachers), and that the model of coacting groups may apply to medium-sized schools (13-24 teachers). When the theory was tested among schools of different levels, the hypotheses were not supported by the data, and the theory did not appear to be valid for schools at any level. Again, however, if moderate GA is reinterpreted as indicating what it was expected would be indicated by low GA, there are some indications that the model of coacting groups may be valid for schools at the elementary level. The theory did not appear to apply to multilevel schools. No evidence was found to indicate that sex of principal differentiates the way in which the theory applies to schools.

In brief, the evidence presented in Chapter XII does not support the hypotheses. However, despite the

lack of correspondence between the hypotheses and the evidence, there are indications that the theory may in fact be valid for schools, and that the research problem which has not yet been solved is one of finding a true index of favorability to the leader at any given school. Where account is taken of the curvilinear relationship between LPC and effectiveness, so that moderate GA scores are accordingly reinterpreted as indicating a situation of low favorability, the trend of correlations among school staffs thus categorized as favorable and unfavorable to the principal's leadership suggests that the model of coacting groups may be valid for medium-sized schools (13-24 teachers), and that the model of interacting groups may be valid for very small schools.

That is to say, the fact that Hypotheses VI-X were not supported by the data need not necessarily imply that Fiedler's theory is not valid for the analysis of the effectiveness of principals' leadership styles. The lack of support for the hypotheses appears to be due to the choice of an operational index of the favorability of the situation to the leader which, due to its dependence on LPC, is (at least taken alone, and taken at its face value) invalid for such long-term groups as school staffs.

It is concluded that the development of a valid index of the favorability of the school staff leadership situation is a research problem deserving early attention.

CHAPTER XIII

APPLYING THE THEORY TO SCHOOLS USING SOCIOMETRIC INDICES OF THE FAVORABILITY OF THE LEADERSHIP SITUATION

Using GA as an index of FAV, it was assumed that the leader's perceptions of the situation function in much the same way for the theory as do group attitudes, usually measured by sociometric variables. While the principal's rating of GA is (just as staff attitudes are) a response to the situation, it may be regarded as affected by subjective perceptual factors contributing variance not accounted for by staff attitudes. Staff attitudes, shared by the majority of group members, largely define FAV, but the principal's GA ratings are subject to the particular subjective influences of the one individual rater. This subjective variance should not, however, be regarded as "noise", since the principal's perceptions of the situation may be as important as the situation itself in moderating the effectiveness of his leadership style.

Hypothesis XI was proposed to test the assumption that among schools, as with other task groups, sociometric variables may be used as a valid alternative index of FAV. In view of the extremely limited support for

the theory when GA was used to index schools on FAV, and considering that principals' GA ratings are related to their LPC scores, the validity of GA as an index of FAV among schools is now questionable. The significance of sociometric measures as indices of FAV is accordingly of greater interest, since, rather than providing cumbersome alternative indices of FAV, they may constitute the only valid index. Insofar as Hypothesis XI is validated by the relationships observed, a potential, and possibly unique, index of FAV for schools is identified.

Hypothesis XI

Principal LPC-school effectiveness correlations are contrasting in sign, contingent on the favorability of the leadership situation as indexed by certain indices of staff attitudes:

1. The two variables are correlated negatively among schools at which relatively many staff members choose the principal as professional colleague, positively among schools at which relatively few staff members choose the principal as professional colleague.
2. The two variables are correlated negatively among schools at which the staffs are relatively cohesive, positively among schools at which the staffs are relatively uncohesive.
3. The two variables are correlated negatively among

schools at which staff members report relatively few instances of interpersonal conflict, positively among schools at which staff members report relatively many instances of interpersonal conflict.

The Limitations of the Subsample

The hypothesis was tested with one subsample only, CPS. Given the unintended selective factors distorting the representativeness of this subsample*, the results of testing Hypothesis XI can only be regarded as suggestive for further research, certainly not as conclusive evidence relating the theory to schools.

The correlation between LPC and EFF(6) for CPS was -.19 (26). Though this correlation was not statistically significant, a negative correlation was to be expected in view of the characteristics distinguishing CPS from the full CPEL subsample**. A trend in the test subsample towards negative correlations could be expected to bias the relationships observed in testing Hypothesis XI. That is, in measuring LPC-effectiveness relationships for parts of the CPS subsample, it was more likely that negative correlations would be obtained, less likely that positive correlations would be obtained. Since the

*See pp. 158 ff. supra.

**See columns (B) and (C), Table XI, p. 159 supra.

characteristics of CPS suggest it is as a subsample higher on FAV than CPEL, it might be expected that negative correlations would obtain over a larger proportion of samples taken from the CPS subsample, positive correlations over a smaller proportion.

Associated with selective return was the relatively low rate of return of sociometric questionnaires, a factor which also has important consequences for the results of testing Hypothesis XI. When a small subsample of 26 schools is divided in three parts on FAV, the test samples are quite small and the probability is therefore greater that large correlations will occur by chance.

In order to reduce the associated risks, both of selecting an inappropriate level of FAV for a biased sample, and of being unduly influenced by a high chance correlation, correlations to test each part of the hypothesis were obtained for several portions of the subsample. The procedures described below are illustrated in Table XXX. One method of dividing the subsample on FAV was simply to take the upper and lower third (approx.) on the relevant index. A supplementary method was to examine relationships for those schools scoring more than half a standard deviation above ($> +\frac{1}{2} s$) or below ($< -\frac{1}{2} s$) the mean on the sociometric variable being used as index. At the same time the opportunity

was taken to observe the correlations for portion of the subsample which was only moderately FAV on the sociometric index (i.e. those schools scoring between half a standard deviation above and below the mean score on the variable: \pm half s). Thus column (3) of Table XXX lists the

TABLE XXX

LPC-EFFECTIVENESS CORRELATIONS USING PROFESSIONAL CHOICE OF PRINCIPAL AS THE INDEX OF FAVORABILITY

Level of FAV on CHprof	(1) UNFAV	(2) MOD FAV	(3) FAV
MOST FAV			
>+half s			20(4)
upper third			-27(8)
\pm half s		-41(17)	
lower third	-10(9)		
<-half s	-22(5)		
LEAST FAV			

Note.- All correlations are rho

correlations observed among high FAV schools, both those in the upper third on professional choice of the principal and those scoring more than half a standard deviation above the mean on this index. Column (2) refers to those schools indicated by this variable to be moderately FAV, that is, those scoring between half a standard deviation above and below the mean on CHprof. Column (1) refers to

those schools indexed as least FAV on CHprof by both methods of indexing FAV.

I. FAVORABILITY INDEXED BY SINGLE VARIABLES

Hypothesis XI proposed indexing FAV by three single variables. The relationships observed, using the three different indices of FAV referred to in the hypothesis, together with those observed when CHsoc was used as the index of FAV, are presented in Tables XXX to XXXIII.

Choice of Principal (Professional)

Table XXX consists of the correlations observed when FAV among CPS was indexed by CHprof. The results are relevant to Hypothesis XI.1. All correlations are low and non-significant, particularly among those schools indexed as high or low on FAV by CHprof. This variable does not appear to discriminate between sets of schools in the manner predicted by the theory.

Hypothesis XI.1 is not supported by the data.

There is no evidence that staff preference for the principal as professional colleague moderates the effects of leadership styles. Lack of support for the hypothesis may in part be associated with the fact that LPC is significantly correlated with CHprof among CPS (p. 161). That is, teachers responding tended to prefer as

professional colleagues those of their principals who were low LPC, task-oriented principals. Correlations in the most FAV situations (column 3) tend therefore to be among low LPC principals, those in the least FAV situations (column 1) tend to be among high LPC principals.

Choice of Principal (Social)

Although no hypothesis was proposed using CHsoc as an index of FAV, this variable is correlated with CHprof* but not with LPC, so that its effects as moderator by comparison with CHprof are of some interest. Table XXXI presents the correlations observed using CHsoc as the index of FAV. The larger correlations were found in the

TABLE XXXI

LPC-EFFECTIVENESS CORRELATIONS USING SOCIAL CHOICE
OF PRINCIPAL AS THE INDEX OF FAVORABILITY

Level of FAV on CHsoc	(1) UNFAV	(2) MOD FAV	(3) FAV
MOST FAV			
>+half s			-40(4)
upper third			-73(8)
+half s		-14(15)	[p<.05, one tail]
lower third	-25(9)		
<-half s	-26(7)		
LEAST FAV			

*Compare p. 277 infra with p. 161 supra.

FAV situations, and one of the two FAV correlations is statistically significant. However the correlations are consistently negative through FAV, MOD FAV, and UNFAV situations. Despite the statistically significant and predicted negative correlation in the FAV situation, contrasting positive correlations among low FAV schools were not observed.

There is therefore no evidence that staff choice of the principal as social companion moderates the effects of leadership styles in the fashion predicted by the theory.

Cohesion

Table XXXII is a statement of the correlations observed when FAV was indexed by the degree to which staff members chose their fellows at the same school.

TABLE XXXII

LPC-EFFECTIVENESS CORRELATIONS USING COHESION
AS THE INDEX OF FAVORABILITY

Level of FAV on COH	(1) UNFAV	(2) MOD FAV	(3) FAV
MOST FAV			
top seven			-22(7)
>+half s			-22(8)
upper third			-25(9)
+half s		-43(10)	
lower third	00(9)		
<-half s	-07(8)		
bottom seven	-27(7)		
LEAST FAV			

In interpreting the results it should be borne in mind that COH correlates positively with EFF(6)*. In view of the general negative correlation between LPC and effectiveness for CPS, the correlations observed among the most FAV schools in Table XXXII are such as might be expected among any eight schools drawn at random from the sociometric subsample. The zero correlation and the near-zero correlation are however, in a positive direction from this general trend for all CPS. Nevertheless, none of the correlations are statistically significant, nor even moderately large. The results cannot therefore be regarded as evidence in support of the hypothesis.

Hypothesis XI.2 is not supported by the data.

There is no evidence that COH moderates leadership style effectiveness in the fashion predicted by the theory.

Conflict

Table XXXIII is a statement of the correlations observed when CONFL was used as an index of FAV. There is only one large correlation in the direction proposed, and it is from an extremely small subsample, is not statistically significant, and may well have occurred by chance.

Hypothesis XI.3 is not supported by the data.

*See p. 161 supra.

There is no evidence that the degree of interpersonal conflict among staff members reported by teachers moderates the effectiveness of leadership styles in the fashion predicted by the theory.

The only statistically significant correlation, among staffs only moderately favorable to leadership in terms of reported conflict, suggests that low LPC principals are more effective among those staffs which are neither severely troubled by nor entirely free from conflict.

TABLE XXXIII

LPC-EFFECTIVENESS CORRELATIONS USING CONFLICT
AS THE INDEX OF FAVORABILITY

Level of FAV on CONFL	(1) UNFAV Most conflict	(2) MOD FAV	(3) FAV Least conflict
MOST FAV <-half s lower third			-11(4) 22(10)
+half s upper third	-02(9) 83(4)	-47(18) [p<.05, 2t]	
LEAST FAV			

Note.-- All correlations are rho

Hypothesis XI is not supported by the data.

Hypothesis XI proposed indexing FAV independently by each of three measures of staff attitudes. The

relationships observed do not support the hypothesis that sociometric variables may be used as indices of FAV in applying Fiedler's theory to schools.

It would be unwise, however, to conclude from this lack of evidence in support of the hypotheses that it is not worth persevering with sociometric indices of FAV in schools. It may be that, as with GA, the indifferent results owe more to the inadequate operationalization of the basic hypothesis than to the lack of validity of the theory for schools. By using more sophisticated techniques for developing sociometric indices of FAV, it may be possible to obtain results more in line with those predicted by the theory.

II. COMBINING THE SOCIOMETRIC INDICES

Similarities in function among pairs of the sociometric variables suggest that they are likely to be correlated. By combining sociometric variables it should be possible to develop a sociometric index of FAV with increased discriminating power.

Factor Scores

As the sociometric variables were all interval scales, the derivation of factor scores based on factor analysis appeared to be a technique capable of utilizing to the optimum degree the information carried in the

sociometric variables. Since SAT is similar to and correlated with the sociometric variables, it was included in the factor analysis. The five variables were found to be correlated among the 26 schools as follows:

	CONFL	CHsoc	CHprof	SAT
COH	-65	08	05	19
CONFL		00	-10	-11
CHsoc			74	72
CHprof				87

An unrotated factor matrix yielded two factors with eigenvalues greater than one. These factors had the following values on each of the variables:

COMMUNALITIES		FACTOR I	FACTOR II
COH	83	28	86
CONFL	83	-23	-88
CHsoc	79	86	-22
CHprof	89	93	-18
SAT	88	93	-10
	421	260	161

FACTOR I: was based on a closely-knit set of three variables all with high loadings on a factor identified as sociometric preference for the principal and labelled CHOICE.

FACTOR II: was based on two less closely* related

*42% common variance, versus 52%-75% (FACTOR I).

variables. The two were identified as jointly indexing staff in-group preference and the factor was labelled COHESION.

Factor scores on the two factors were weighted by the loadings of the variables on the unrotated factors, so utilizing, not only the power of the variables with high loadings on the factors, but also the small amount of additional variance contributed by each variable to that factor on which it was not highly loaded. For example, although the three CHOICE variables are not closely related to Factor II, they do contribute an additional six per cent to the total amount of common variance accounted for by that factor.

Factor scores were transformed to a mean of 30 and a standard deviation of 10. Each of the two sets of 26 factor scores was then used to index schools on FAV after which the basic hypothesis was applied to CPS.

In order to minimize two problems--of selecting an appropriate level of FAV and of being misled by apparently high correlations with small subsamples--the relationships were measured over an array of correlations. This technique is illustrated in Table XXXIV.

Correlations are arrayed in two orders, one of FAV and one of UNFAV on the factor. The subsample was divided at the mean of 30 on the factor scores, and correlations

TABLE XXXIV
LPC-EFFECTIVENESS CORRELATIONS WHEN FAV
IS INDEXED BY CHOICE FACTOR

	UNFAV	FAV
THE MOST FAVORABLE		
4		-40(4)
7		-36(7)
9		-28(9)
11		-22(11)
13		-22(13)
14		-23(14)
16		-27(16)
Mean score (30) on factor		
THE LEAST FAVORABLE		
10	02(10)	
8	20(8)	
7	07(7)	
5	-22(5)	
4	-32(4)	

Note.--Rationale underlying the array of correlations is presented on p. 278.

were then obtained for samples consisting of schools of progressively higher/lower scores on the factor. Consequently the sets of schools became progressively more exclusive with respect to the factor as indexed by the factor scores, but this refinement was achieved at the cost of progressively smaller N's. By surveying the trend in correlations, it is possible to discount the influence of an untoward deviant correlation.

The Two Combined Indices

CHOICE as Index. The array of correlations observed when the CPS subsample was indexed on FAV by scores on the CHOICE factor may be seen in Table XXXIV. It may be noted that there is little difference in the correlations as between the most FAV and the least FAV schools, and that most correlations are typical of the slight negative correlation for the CPS subsample as a whole. There is a slight trend to extremely low positive correlations in the UNFAV situation for N:10, N:8, and N:7. The fact that this trend was not observed for CHprof and CHsoc as separate indices (Tables XXX and XXI) may be taken as indicating an increase of power in the index of FAV resulting from the combination of single indices. Such increase of power as may have been obtained is, however, so slight as to have little effect on discriminating between schools with respect to leadership

style effectiveness. This may be due to a random factor in the two CHOICE indices CHprof and CHsoc*.

COHESION as Index. Table XXXV presents the array of correlations observed when the COHESION factor was used as the index of FAV. In general there seems to be little difference between the two sets of correlations except at the extremes, where contrasted correlations in the predicted directions may be observed. While these results are far from conclusive, the evidence does suggest that a combination of sociometric measures of staff attitudes along a cohesion-conflict continuum may serve as an index of FAV that is valid for school staffs, given an adequate sized sample which is truly representative of the population.

Summary--Sociometric Variables Alone

Four sociometric variables, based on the four items in Appendix C4**, were tried as indices of FAV. Each of the variables was used independently, and none appeared to discriminate between sets of schools in the fashion predicted by Fiedler's theory. Factor analysis of these four variables taken together with an index of staff satisfaction yielded two factors, CHOICE and COHESION,

*See p. 134 supra.

**See p. 385 infra.

TABLE XXXV

LPC-EFFECTIVENESS CORRELATIONS WHEN FAV
IS INDEXED BY COHESION FACTOR

		UNFAV	FAV
THE MOST FAVORABLE			
5	} SCHOOLS		-67(5)
6			-21(6)
7			06(7)
9			-09(9)
11			-02(11)
12			-25(12)
Mean score (30) on factor			
THE LEAST FAVORABLE			
11	} SCHOOLS	-26(11)	
9		-02(9)	
8		41(8)	
7		25(7)	
6		-07(6)	

factor scores on which were used to index FAV. Neither factor discriminated significantly between schools on FAV, but there was some slight indication that the COHESION factor may represent the lines along which a valid index of FAV for schools may be developed.

III. STAFF AND PRINCIPAL ATTITUDES COMBINED AS AN INDEX OF FAVORABILITY

While the attitudes of staff members are expected in large measure to define the favorability of the situation, the principal's perceptions of his staff are relevant to the relationship between the situation and leadership style in that they are likely to affect, if not determine, the style of behavior he adopts to satisfy his needs for gratification through either task completion or the improvement of interpersonal relations. For example, it is possible that a task-oriented principal may behave directly or in a laissez-faire fashion, may lead skilfully or ineptly, depending on the degree of confidence he has that his initiatives will meet with a predictable and favorable response from his staff. So while sociometric variables help to index the leadership situation as it is, the addition of GA to the index would take account also of the principal's perceptions as an immediate personal determinant of the manifestations and consequent effectiveness of his leadership style.

Combining GA Scores with Factor Scores

In the search for a sufficiently sensitive index of the situation as perceived by the principal, for combination with the sociometric indices, it was decided to use GA scores instead of GA(3). The latter is markedly skewed for CPS, with only six out of 26 schools categorized low on GA.

Since GA scores are regarded as an ordinal variable, a non-parametric statistical technique was used in combining them with factor scores. The subsample was sufficiently large to permit combining the variables by the use of composite rank orders. That is, for each combination (GA with CHOICE, GA with COHESION) the two variables were rank-ordered, and the ranks for each school on the two variables were summed and averaged. This sometimes resulted in tied ranks. The two composite rank-orders were then used to index schools on varying degrees of FAV, yielding the arrays of LPC-effectiveness correlations reported in Tables XXXVI and XXXVII.

GA and CHOICE

Table XXXVI presents the array of correlations observed when GA and CHOICE were combined as an index of FAV. Although only one correlation is statistically significant, there are trends in the relationships which are of interest in connection with the theory. In view

TABLE XXXVI

LPC-EFFECTIVENESS CORRELATIONS WHEN FAV
IS INDEXED JOINTLY BY GA AND CHOICE FACTOR

		UNFAV	FAV
THE MOST FAVORABLE			
7	SCHOOLS		-77(7)
8			[p<.05, one tail] -35(8)
9			-48(9)
10			-46(10)
11			-44(11)
12			-39(12)
13			-36(13)
THE LEAST FAVORABLE			
13	SCHOOLS	00(13)	
12		-09(12)	
10		-12(10)	
9		-10(9)	
7		07(7)	
6		26(6)	
5		20(5)	

of the consistent bias to negative correlations in the CPS subsample, the two sets of correlations may be regarded as contrasting in the directions predicted by the theory. This trend suggests that the principal's and the staff's attitudes to each other, taken together, do have some power as an index of FAV.

GA and COHESION

Table XXXVII presents the array of correlations observed when GA was combined with COHESION to yield a single joint index of FAV. Although only two correlations are statistically significant, the correlations for FAV and for UNFAV schools are consistently in the contrasting directions hypothesized (when account is taken of the overall negative correlation among CPS*). The differences between the correlations for the two sets of schools are quite large, particularly at the extremes of high and low FAV. Such an array of complementary correlations in conformity with the theory is hardly likely to have arisen by chance, and the relationships presented in Table XXXVII are interpreted as providing some indication that the theory is valid for schools, and that a valid index of FAV for school staffs may be developed by using a combination of the principal's perceptions of his staff

*See p. 268 supra.

TABLE XXXVII

LPC-EFFECTIVENESS CORRELATIONS WHEN FAV IS INDEXED
JOINTLY BY GA AND COHESION FACTOR

	UNFAV	FAV
THE MOST FAVORABLE		
6		-47(6)
7		-67(7)
8		-72(8)
10		[p<.05, one tail] -66(10)
11		[p<.05, one tail] -49(11)
12		-45(12)
13		-39(13)
THE MOST UNFAVORABLE		
13	03(13)	
12	-08(12)	
11	20(11)	
10	05(10)	
9	35(9)	
8	20(8)	
7	17(7)	

with staff members' perceptions of their coworkers. In this connection it is worth recalling* that GA(3) correlates (r) .51 [$p < .01$, two tail] with the variable COH, and -.32 [$p < .05$, one tail] with CONFL. The best index of FAV therefore appears to be a combination of implicit principal perceptions and explicit staff perceptions of the warmth of staff interpersonal attitudes.

IV. SUMMARY

In Chapter XIII were reported the results of analyzing relationships between the principal's leadership style and the school's effectiveness when staff attitudes, sociometrically measured, were used as indices of the favorability of the leadership situation. That is to say, school effectiveness was examined in relation to the interaction between the principal's leadership style and staff members' attitudes to their colleagues and to the principal. In addition, tests were made of the power, as a combined index of favorability, of the principal's GA ratings combined with measures of staff attitudes.

When sociometric variables indexing staff attitudes were used independently as indices of FAV, the results did not conform to hypothesis. Nor was the hypothesis

*See Table XVI, p. 221 supra.

supported when the sociometric indices were statistically combined to increase their power as an index of FAV. When, however, principals' GA ratings were combined with two factors of staff attitudes in turn, the sets of correlations observed, though not statistically significant, were in the complementary directions predicted by the theory. This was particularly the case when principals' GA ratings were combined with a factor identified as staff cohesion, derived from the sociometric indices of staff cohesion and staff conflict.

The data presented in Chapter XIII lend only very weak support to the case for the validity of Fiedler's theory for schools, and even this meagre support may in any case be challenged on grounds of sampling error associated with poor return of sociometric questionnaires. Nevertheless, there are features of the analysis and of the results which could be of value in guiding researchers interested in pursuing this problem further.

As with GA (Chapter XII), the problem appears to be one of developing an operational index of the favorability of the school leadership situation which does in fact discriminate between sets of schools in the fashion predicted by the theory. Relationships reported in part III of Chapter XIII provide indications of the lines along which such an index might be developed. When

principals' GA scores were used together with a combined sociometric index of staff cohesion to provide a joint principal/staff index of the favorability of the situation, the trends in the correlations observed suggested that task-oriented principals are the most effective leaders of cohesive staffs while person-oriented principals are the most effective leaders of uncohesive staffs. It is concluded that a valid and reliable index of the favorability of the leadership situation among school staffs may have to take account of both the principal's perceptions of his staff and staff members' perceptions of their coworkers.

PART IV

REANALYSIS OF THE DATA,
AND CONCLUSIONS

CHAPTER XIV

TIME, TEACHER MOBILITY, AND THE EFFECTIVENESS OF THE PRINCIPAL'S LEADERSHIP STYLE

Chapter XIV presents the results of supplemental analyses emerging from significant and consistent relationships which, though not predicted, were observed during the formal analyses. While the relationships reported constitute no more than ex post facto hypotheses, they are statistically significant and in most cases consistent across two or more subsamples. It is therefore believed that they will be of interest both to students of Fiedler's theory generally, and to those concerned with the implications of the theory for schools.

Duration of Group as a Factor in Leadership

In general, the task groups with which Fiedler's theory has been developed have been treated as if they were stable groups for the period to which the analysis was applied. Either they have actually been stable groups, as in the case of military groups gathered together for one or several training or discussion exercises, or they have been treated as if movement of members in and out of the group has had only random

effects on the leadership situation (e.g. the farm-supply companies). One notable exception is the study of leadership in open-hearth steel shops (Cleven and Fiedler, 1956), where it was assumed that all shop-foremen were in fact sociometrically chosen formal leaders because the crews were well-established over a long period. Any crew member who rejected his foreman could move with little difficulty. In effect, where there is time for group member mobility to reflect personal reaction to a leader, the continuing members of a well-established group may ipso facto be regarded as having found the leader acceptable just because they have not chosen to leave him.

In the present study data on principal (Yp) and staff (Ys) length of association with the group were gathered in the expectation that group structure would develop over time and thereby become more meaningful for group effectiveness. Time proved to be an important factor, though not exactly in the manner expected. That is, not only do the leadership styles of well-established principals have characteristic effects for their schools, but those of newly-appointed principals have also their characteristic but contrasting effects.

I. TIME AS MODERATOR OF LEADERSHIP EFFECTIVENESS

In the process of analyzing the data on the formal

hypotheses, it became apparent that GA ratings are not independent of other characteristics of the principal. One point of interest was that among CPEL*, principals' GA ratings are correlated with the number of years the principal has been at the school. In addition, for the same subsample, the number of years the principal has been at the school correlates with effectiveness. It was felt that these relationships might have some significance for the effects of GA as a moderator variable. The data on Hypotheses VI-X were then reanalyzed, as indexed by GA, for subsamples further subdivided on the Yp variable. It was noticed that in some cases, where this was done, the relationships observed when the principals had been only one or two years at their schools conformed to the general hypothesis, but when principals had been three or more years at their schools, the correlations observed were in the reverse directions from those hypothesized. The LPC-EFF(6) correlations for CPEL illustrate this finding:

<u>Yp</u>	<u>GA-**</u>	<u>GA+**</u>
<u>2- years</u>	40(14)	-25(7)
<u>3+ years</u>	-37(8)	11(19)

*Table X, p. 155 supra.

**GA categorized within the CPEL subsample.

Although these correlations were not statistically significant, examination of this trend throughout the sample led to a statistically significant finding, consistent across four subsamples and two classes of schools. This finding in turn generated new approaches to the reanalysis of the data.

Time and Elementary School Leadership

Table XXXVIII presents a statement of the results of applying a two-way (2 x 2) analysis of variance design (AN2) to the analysis of relationships among EL. Since the relationships observed were found to be consistent across classes of schools, it was deemed more economical to present and discuss the relationships by class of school rather than by the individual subsamples*.

School effectiveness--EFF(3)--is interpreted as being the dependent variable and used as the criterion. Since superintendents' ratings on this measure ran from I (high) to III (low)**, the set of most effective schools in Table XXXVIII consists of those in cell 4, the set of least effective schools consists of those in cell 2. The analysis therefore indicates that among newly-appointed elementary principals it is those with high LPC scores who

*For analyses by subsamples see Appendix H1,2,3,4, pp. 428-431 infra.

**See Appendix D2, p. 395 infra.

TABLE XXXVIII

VARIANCE OVER YEARS IN THE EFFECTIVENESS OF THE
LEADERSHIP STYLES OF ELEMENTARY SCHOOL PRINCIPALS*

Cell	N	Factor A (LPC)	Factor B (Yp)	Mean EFF(3)
1	18	High**	Newly-appointed	1.61
2	20	Low**	Newly-appointed	2.15 (least eff.)
3	24	High**	Established	1.92
4	33	Low**	Established	1.55 (most eff.)

Source of Variance	df	MS	F	p
Factor A	1	0.00	0.000	0.991
Factor B	1	0.85	2.089	0.152
Interaction	1	4.67	11.524	0.001
Error	91	0.40		

*Subsample excludes rural schools (see p. 253 supra). For separate analyses by CPEL and MSEL subsamples, see Appendix H234, pp. 429-431 infra.

**Top and bottom thirds only (see pp. 142 ff. supra).

lead the most effective schools, while among established principals it is the low LPC principals who lead the most effective schools. Neither LPC nor Yp has a significant main effect, but the interaction between the two is statistically significant.

Where the interaction is restated in terms of LPC-effectiveness correlations among newly-appointed and established principals*, it may be noted that the contrasting positive and negative correlations among elementary schools are in directions which could be interpreted as conforming to those predicted by Fiedler's theory, if time is regarded as an index of FAV. In this view, person-oriented, quasi-therapeutic leadership would be regarded as most effective in the principal's first two years**, when staff and principal, unsure of each other, experience considerable stress. An established principal, however, would have had time to define by his behaviors a personal image as leader, and to establish stable structures-in-interaction with those staff members who, by remaining at the school, have become senior and influential. In such a case, principal and

*See Table XL, p. 299 infra.

**The 2-/3+ split was found to be critical for all subsamples along which time was found to moderate LPC-effectiveness relationships.

staff might be expected to find each other's behaviors and responses predictable, so that stress would be minimal, and the situation favorable to task-oriented leadership.

The relationships presented in Table XXXVIII, being statistically significant and common as they are to two large subsamples, cannot be dismissed and deserve further explanation. At first glance they would appear to support the model of coacting groups, with time as the index of FAV, established principals as implicitly accepted leaders, and newly-appointed principals being as yet unchosen leaders during a period of stress. However, before this explanation could be accepted, data presented in Table XXXVIII need to be reconciled with other equally striking relationships.

Time and Secondary School Leadership

The relationships reported in Table XXXIX appear to be strikingly similar to those reported in Table XXXVIII. They are, however, different in a very important respect. While the EL principals were observed to move through time to a situation benefiting from task-oriented leadership, the SEC principals move through time from a situation benefiting from task-oriented leadership. This may be seen from the cell means in Table XXXIX. The contrasting interactions with LPC among schools at the two

TABLE XXXIX

VARIANCE OVER YEARS IN THE EFFECTIVENESS OF THE
LEADERSHIP STYLES OF SECONDARY SCHOOL PRINCIPALS*

Cells	N	Factor A (LPC)	Factor B (Yp)	Mean ATT***
1	6	High**	Newly-appointed	29.25
2	7	Low**	Newly-appointed	38.23
3	13	High**	Established	32.02
4	20	Low**	Established	25.91

Source of Variance	df	MS	F	p
Factor A	1	32.84	0.631	0.432
Factor B	1	297.20	5.707	0.021
Interaction	1	522.20	10.025	0.003
Error	42	52.09		

*Separate analyses for JHS and SHS may be found in Appendix H5,6, pp. 432-434 infra.

**Top and bottom thirds only (see pp. 142 ff. supra).

***For analysis with EFF(3) as the criterion, see Appendix H5b, p. 433 infra.

levels are stated another way by the complementary correlations reported in Table XL. It may be noted from both Tables XXXIX and XL that while among newly-appointed SEC principals task-oriented leadership is highly effective, among established SEC principals this is the less effective style of leadership. The situation is exactly the reverse among elementary schools.

TABLE XL

DIFFERENCES BETWEEN ELEMENTARY AND SECONDARY SCHOOLS IN EFFECTIVENESS OF LEADERSHIP STYLES OVER TIME

	Newly-Appointed Principals (2-yrs)	Established Principals (3+yrs)
Elementary* LPC(3) r EFF(3)	35(51) [p<.01,two tail]	-25(77) [p<.05,two tail]
Secondary LPC rho ATT	-48(19) [p<.05,two tail]	45(45) [p<.01,two tail]

*Subsample excludes rural schools (see p. 253 supra).

One factor which also appears to differentiate between EL and SEC is the occurrence of a significant main effect by Yp among SEC (Table XXXIX) but not among EL. The main effect of Yp among SEC is statistically significant at the .021 level. This is, however, regarded as an artifact of the powerful contrasting effects over time of low LPC principals as compared with high LPC principals (reported in Table XLII). It may be noted, by

comparing cells 1 and 2 of Table XXXIX with cells 3 and 4, that the main effect is of such a nature that established principals appear as a group to be less effective than newly-appointed principals. This implication is difficult to accept as it stands, but is much more acceptable if account is taken of the interaction, from which it may be observed that it is only the low LPC principals who become less effective the longer they stay at their schools.

Time and Leadership among Multilevel Schools

The relationships observed among ML are presented in Table XLI. Neither for this class of schools in general, nor for any of the constituent subsamples* are significant relationships/interactions with LPC observed. In fact, this class of schools is distinguished from the other two classes by apparent freedom from the trends characterizing EL and/or SEC. The problem of applying the theory to this class of schools has not been solved.

Task-Orientation as the Operative Level of LPC

One other interesting feature of the relationship should be noted. Though a significant interaction effect has been found, most of the variance occurs under low LPC

*Appendix H8,9,10, pp. 436-438 infra.

TABLE XLI

VARIANCE OVER YEARS IN THE EFFECTIVENESS OF THE
LEADERSHIP STYLES OF MULTILEVEL SCHOOL PRINCIPALS*

Cell	N	Factor A (LPC)	Factor B (Yp)	Mean Att***
1	8	High**	Newly-appointed	25.21
2	12	Low**	Newly-appointed	29.21
3	17	High**	Established	29.32
4	14	Low**	Established	32.35

Source of Variance	df	MS	F	p
Factor A	1	144.34	1.471	0.231
Factor B	1	152.68	1.556	0.218
Interaction	1	2.75	0.028	0.868
Error	47	98.11		

*Separate analyses by constituent subsamples may be seen in Appendix H8,9,10, pp. 435-437, infra.

**Top and bottom thirds only (see pp. 142 ff., supra).

***Analysis for this class of schools with EFF(3) as the criterion of effectiveness may be seen in Appendix H7, p. 434 infra.

principals (Tables XXXVIII and XXXIX, cells 2 and 4). For example, among SEC, the mean effectiveness of the schools led by newly-appointed low LPC principals is over 1.2 standard deviations greater than that of schools led by established low LPC principals. On the other hand, among high LPC principals the difference (Table XXXIX, cells 1 and 3) is only about a quarter of a standard deviation.

The significance of this difference in effects was tested by applying AN1 in turn to schools led by high and by low LPC principals among both EL and SEC. The presence/absence of relationship in each case may be noted from Table XLII.

TABLE XLII

DIFFERENCES IN THE SIGNIFICANCE OF MAIN EFFECTS (Y_p)
FOR HIGH AND FOR LOW LPC PRINCIPALS

GROUP	EFFECT of $Y_p(2-/3+)$					ERROR	
	N	MS	df	F	p	MS	df
Elementary* High LPC	42	0.96	1	2.12	0.153	0.45	40
Elementary* <u>Low</u> LPC	53	4.55	1	12.39	0.0009	0.37	51
Secondary High LPC	19	31.48	1	1.2	0.286	25.93	17
Secondary <u>Low</u> LPC	27	787.91	1	11.28	0.0025	69.87	25

Note.--The measure of relationship was AN1.

*Subsample excludes rural schools--see p. 253 supra.

While the effects of newly-appointed high LPC principals are not significantly different from those of established high LPC principals, the differences in the effects of low LPC principals over time become even more significant than for AN2, despite the fact that in each case the N has been almost halved. That is, most of the variance in the interaction appears to be derived from the alternatively harmful/beneficial effects on school goal achievement of low LPC principals, depending on whether the principal is established. This accords with the finding among elementary principals (McNamara, 1967, p. 117) that while the supervisory practices of low LPC principals are positively characterized by a number of behaviors, the practices of high LPC principals appear to be distinguished only by the absence of these behaviors.

The Scope of LPC-Time Interaction among Schools

Hypotheses VI-X were proposed to test the extent to which characteristics differentiating schools impose limitations on the applicability of Fiedler's theory to schools, using GA as the index of FAV. The hypotheses were in no cases supported by the data (Chapter XII), from which it might be inferred that the theory has no validity for schools. However, in view of the limitations on GA as an index of FAV (Chapter VIII), and in view of the significant interaction between LPC and time among

both EL and SEC already discussed, it is proposed that the evidence indicates that the LPC variable is significant for the study of school leadership, even though a valid and reliable index of FAV for schools has yet to be found.

To the extent that the leadership styles indexed by LPC are significant for school leadership, it is important to test the limitations, in terms of the characteristics differentiating among types of schools, on the extent to which the relationship found is a valid statement of school leadership processes. The major characteristics already proposed were size of school, level and fragmentation of school, and sex of principal. It has already been indicated that school effectiveness is a function of the interaction between LPC and time for unified schools (EL and SEC), but not for fragmented schools (ML); and that the nature of the interaction differentiates between the EL and SEC levels of schools. No data have yet been presented concerning the degree to which size of school and sex of principal impose limitations on the applicability of the interaction to schools.

Size of School. AN2 interaction data on schools (both EL and SEC) in various size categories are presented in Table XLIII. Six of the seven interactions are statistically significant; but among SEC staffed by 24 or

TABLE XLIII

THE INTERACTION BETWEEN LPC AND YEARS
AMONG SCHOOLS OF VARIOUS SIZES

LEVEL OF SCHOOL	SIZE OF STAFF	N	INTERACTION EFFECTS**			
			MS	df	F	p
Elementary*	All sizes	95	4.67	1	11.524	0.001
Elementary*	24-	87	4.68	1	11.270	0.001
Elementary*	12-	47	4.13	1	11.259	0.002
Secondary	All sizes	46	522.15	1	10.025	0.003
Secondary	49-	35	435.64	1	7.006	0.013
Secondary	24-	19	198.58	1	2.319	0.149
Secondary	13+	42	415.68	1	7.570	0.009

*Subsample excludes rural schools (see p. 253 supra).

**Criterion was EFF(3) for elementary schools, and ATT for secondary schools.

fewer professional persons the interaction is not statistically significant. Since the interaction is significant for schools staffed by 13 or more professional persons, and since there were only four SEC staffed by 12 or fewer professional persons, it is likely that the non-significant interaction was due to the smallness of a subsample among which there were only six high LPC principals of whom three were newly-appointed and three established. That is, there were two very small cells for one-half of the interaction.

It is inferred from these data that size of school (at least below 70 teachers) does not impose a limitation on the interaction between LPC and time, and that this interaction is significant for all sizes of elementary and secondary schools.

Sex of Principal. The AN2 interactions (LPC x Yp) among male and among female principals are presented in Table XLIV. Since female principals were only found in elementary schools, this phase of the analysis was confined to EL. It may be noted that the interaction is statistically significant for both male and female principals, from which it is inferred that sex of principal does not impose a limitation on the characteristic interaction between LPC and time in schools.

Summary

It is concluded that principals' leadership styles interact with the extent to which the principal has had time to become established at his school (first two versus later years), and that this interaction is significant for school effectiveness. It is likely that the interaction may validly be applied to the analysis of leadership style

TABLE XLIV

THE INTERACTION BETWEEN LPC AND Y_p AMONG SCHOOLS
LED BY MALE AND BY FEMALE PRINCIPALS

SEX OF PRINCIPAL	INTERACTION EFFECTS				
	N	MS	df	F	p
Both sexes	95	4.67	1	11.524	0.001
Male	61	2.04	1	5.018	0.029
Female	34	3.82	1	9.861	0.004

Note.--Subsample composed of CPEL + MSEL (excluding rural). Criterion is EFF(3).

effects among unified schools, both elementary and secondary, but not among fragmented schools such as elementary-junior high schools and grade I-XII schools. The nature of the interaction differentiates between elementary schools on the one hand and junior and senior high schools on the other. The interaction appears to apply to elementary, junior high, and senior high schools of all sizes, regardless of whether the principal is male

or female. While the existence of these characteristic interactions among elementary and secondary schools is strongly and consistently indicated, the relationship observed is relatively slight. When expressed in terms of correlations, it was found to account for between 6% and 23% of the common variance.

II. TENTATIVE EXPLANATIONS OF THE INTERACTIONS

Staff Training and the Response to LPC

One factor which differentiates between EL and SEC is the length of training (TRG) of staff members at these two classes of schools. In order to determine whether this factor had any bearing on the significant difference between the two classes of schools in response to LPC over years, data from CPT and SECT (on which TRG data were available) were analyzed with reference to TRG. The sixty schools were grouped, split at the median (2.87 years) on mean staff TRG for each school, then split again on Yp. The correlations between LPC and effectiveness for the four sub-groups are reported in Table XLV.

Only one correlation is significant, and suggests that among staffs with low TRG task-oriented principals are more effective. The correlation observed is typical of that for newly-appointed SEC principals, even though most of the schools for which the significant correlation

was obtained were from the EL subsample. Far from explaining the difference between SEC and EL, this analysis in terms of TRG presents an atypical correlation among newly-appointed EL principals. This significant negative correlation may be an artifact both of the typical negative correlation among newly-appointed SEC

TABLE XLV

STAFF TRAINING AND RESPONSE TO LPC AMONG NEWLY-APPOINTED
AND ESTABLISHED PRINCIPALS

MEAN STAFF TRAINING	NEWLY-APPOINTED 2- years	ESTABLISHED 3+ years
<u>HIGH TRAINING</u> Highest: 4.67 years		
20 SEC 10 EL	4 SEC -16(10) 6 EL	14 SEC -15(20) 6 EL
Median: 2.87 years		
4 SEC 26 EL	4 SEC -60(16) 12 EL [p<.02, two tail]	0 SEC -24(14) 14 EL
Lowest 1.0 years <u>LOW TRAINING</u>		

principals, and of the selective* return of CPT, which may have predisposed this subsample to negative correlations.

A significant correlation is not, however, to be

*See Table I, p. 105 supra.

dismissed. Certainly the relationship indicated in this case lends no support to the hypothesis that differences between SEC and EL with respect to LPC-effectiveness relationships over time can be explained in terms of differences in length of training of teachers.

Relating the Results to the Theory

Can the contrasting relationships observed among EL and SEC be reconciled in relation to either the model of coacting groups or the model of interacting groups? Which variables related by the theory are at different levels among EL and SEC so that they might account for the difference?

Coacting Model. The relationships observed among EL appear to support the validity of the model of coacting groups for this class of schools, if it is accepted that the most stressful leadership situations are those of staffs to which the principal has only recently been appointed. However it is difficult, using the same model, to account for the fact that pairs of correlations in exactly the opposite directions were observed among the SEC subsamples. That is, the model of coacting groups at its present stage of development does not appear to be adequate to account for the relationships observed at both levels.

Interacting Model. The model of interacting

groups by its nature offers some hope of reconciling the contrasting relationships observed among EL and SEC. If the contingency model curve* is applied to the two sets of relationships, it might be suggested that the complementary correlations among EL fit Octants III and VII, while those among SEC fit Octants IV and VIII. However it is difficult to believe that secondary school staffs fit all the characteristics defining Octants IV and VIII. That is to say, in view of the judgements already reported in Chapter X, it is difficult to regard secondary principals as low on LPP. If they are, then this may be in relation to instructional rather than managerial matters, as was believed by the ambivalent judge**. If this minority judgement is valid, then there are some grounds for using the contingency model of interacting groups to reconcile the relationships observed.

The correlations among SEC also fit Octants V and VA of the contingency model, Octants in which both LPP and TS are high. There are some grounds for conceding that TS among SEC may have been high, in that examination results were used as the criterion. But the application of these two Octants to SEC could only be supported if one were prepared to agree that principal-staff relations

*Reproduced in McNamara (1967) p. 54.

**See p. 213 supra.

in secondary schools range from moderately poor to very poor and are rarely, if ever, good. In this event, SEC principals of one or two years' standing would be regarded as having very poor relations with their staffs, SEC principals of three or more years as having graduated to the optimum situation of having only moderately poor relations with their staffs.

One other argument against applying the model of interacting groups to the analysis of relationships among SEC is the fact that most of their staffs are of a size between 25 and 49 teachers. Of all schools surveyed, these are the ones least likely to be regarded as interacting groups, by virtue of the size of their staffs. On the other hand, secondary teachers within a subject department may be regarded as interdependent with respect to the exam results used to develop the ATT index*.

Goal Displacement. It may be that the differences can be explained in terms of factors other than those related by Fiedler's theory. One possible explanation is that the task-oriented principals of secondary schools work hard at exam performance during their first two years to build up confidence and establish a favorable

*In this connection it may well be worth while reanalyzing the SEC data in relation to the LPC scores of the subject department heads at the schools in the SEC subsample.

reputation with respect to a countable and publicly visible criterion. Afterwards, being task-oriented and so concerned with "real" achievement, they give priority to less measurable educational goals such as the development of student attitudes and the fostering of personality growth. This could explain the sharp decline in the ATT scores of their schools after the first two years. That this behavior would be tolerated among Alberta secondary school principals is, however, hard to believe in view of the anxiety of parents, students, and teachers over examination results.

LPC, Time, and Teacher Mobility

In an attempt to explain the differential effects of leadership style over time, such data as were available on length of principal and staff stay at their schools were analyzed. This proved a fruitful step, and the similarities and differences observed should be of value in guiding future research.

The results of this reanalysis are summarized in Table XLVI. LPC scores of established principals were correlated with Ys among CPT, SECT, and MLT, separately and together. Mean Ys, under all principals, established and newly-appointed, were obtained for the staffs constituting these three subsamples. Mean Yp were computed for these classes of schools and for all schools.

Differences. Typically, while Y_s is related to LPC among CPT and SECT, this relationship is not found among MLT. This observation reinforces considerable other evidence in this study which suggests that the LPC variable is not meaningful for this class of schools, or at least, that the way in which it relates to this class of schools has not yet been fathomed.

TABLE XLVI
STAFF STABILITY IN RELATION TO LPC

	LPC rho Y_s^*	\bar{Y}_s^{**}	\bar{Y}_p
FULL SAMPLE	39 (52) [$p < .01, 2t$]		4.29 (335)****
CPT	48 (20) [$p < .05, 2t$]	2.25 (36)	3.74 (72)***
SECT	64 (15) [$p < .01, 2t$]	2.85 (24)	4.38 (26)**
MLT	11 (17)	2.68 (32)	3.94 (32)**

*Computed for all CPT, SECT, and MLT with established principals.

**Both newly-appointed and established principals.

***All CPEL

****All schools--full sample.

The LPC/ Y_s correlation among secondary schools is considerably higher than among elementary schools. It is, however, in the same direction, and as both are significant, the difference between elementary and secondary schools in the effects of leadership style does not

appear to be accounted for by differences in teacher mobility in response to leadership style. Teachers in schools at both levels appear to prefer to remain with person-oriented principals, and to prefer to leave task-oriented principals.

Similarities. Despite the characteristic differences found between EL and SEC schools in the effectiveness over time of task-oriented principals, staffs of both classes of schools respond to task-oriented leadership in the same way--they tend to transfer to other schools. Since the average length of staff stay at the school is only between two and three years in all classes of schools, established task-oriented principals (who are in secondary schools declining in effectiveness, but in elementary schools increasing in effectiveness) are in each case faced with substantially different groups of teachers from those they led when they were first appointed principals of their schools. The nature of the characteristic EL/SEC differences over time may therefore be related to differences in the attitudes of persons, if not differences in the kinds of persons, principals find themselves leading as they become established. These differences may be either personality differences (e.g. task-orientation of staff members, measurable by LPC scores) or emergent attitude differences contingent

on the situation.

In all three classes of schools the average duration of teacher stay is about the same--between two and three years. This is approximately equivalent to the critical length of stay differentiating between newly-appointed and established principals, and so between schools and between classes of schools on effectiveness. It does appear to offer some tentative explanations of this difference. It would not be unreasonable to interpret the relationships presented in Tables XXXVIII and XXXIX as a function of the interaction between newly-appointed principals dealing with established staffs on the one hand, and established principals dealing with newly-appointed staffs on the other. On the basis of the data presented in Table XLVI, it is evident that established high LPC principals have a greater chance of working with established staffs than the established low LPC principals, who are more likely to have to deal with staffs consisting of a larger proportion of newly-appointed teachers. Certainly, the relative newness of principal and staff viz-a-viz each other has obvious implications for the confidence of the one in dealing with the other, and therefore for interpersonal expectations defining relative power differences. The effectiveness differences observed may depend on an emergent relative

power difference motivating responses to the leadership initiatives of one defined as "knowing the ropes" (compared with me/us) or one defined as just feeling his way (compared with me/us). This possibility might be tested by a questionnaire designed to differentiate staff reactions to the instructional and managerial initiatives of newly-appointed and established principals.

On the other hand, selective transfers from a school may leave principals with staffs whose collective LPC level is (in)compatible with that of the principal (i.e. low LPC principal with low LPC staff*). Perhaps low LPC teachers gravitate to low LPC principals in secondary schools but not in elementary schools. This eventuality alone would be sufficient to explain the significant differences in the success of established task-oriented principals as between EL and SEC. Such a possibility is fairly easy to test in relation to presently available data by obtaining the LPC scores of staff members who have transferred from/remained at the EL and SEC schools from which the data for the present study were obtained.

Certainly, nothing in the evidence so far serves to explain conclusively this consistent and significant

*Low member LPC. See pp. 62-63 supra.

difference between EL and SEC. Rather, the similarities between EL and SEC presented in Table XLVI make the problem of the difference even more challenging. Enduring differences between staff members transferring from/remaining at these schools may of course be explained by factors other than staff LPC. Those who transfer from low LPC principals may be the kinds of teachers whose orientations and skills are essential to the quality of a secondary but not an elementary program.

Principal LPC, Staff Autonomy, and School Effectiveness

One final step in analysis is presented because it does throw some light on questions raised in the earlier analyses. While the investigator is unable to explain to his own satisfaction the significant correlations presented in Table XLVII, they are linked in a systematic if puzzling fashion, and are reported in the hope that they may be helpful to researchers engaged in follow-up studies. They are believed to provide some evidence concerning the processes underlying the interaction between principal LPC, staff attitudes, and school performance, and in this connection they are relevant to the relationships reported in Tables XVI and XVII*. They are also believed to provide evidence that the LPC

*See pp. 221 and 225 supra.

variable is indeed relevant to multilevel schools as well as to elementary and secondary schools.

Briefly, the pairs of relationships between LPC and AUT, and between AUT and effectiveness, are parallel among EL and SEC and differentiate these schools from ML. This would seem to be a repetition of the puzzling (in

TABLE XLVII

LPC-AUTONOMY-EFFECTIVENESS RELATIONSHIPS DIFFERENTIATED
BY CLASS OF SCHOOL AND PRINCIPAL YEARS

	LPC rho AUT	AUT r EFF/ATT	LPC rho EFF/ATT	
			Newly-appointed principals	Established principals
CPT	-30 (36) [p<.05, 1t]	27 (36)	08 (16)	-23 (20)
SECT	-36 (24) [p<.05, 2t]	21 (24)	-44 (10)	27 (14)
MLT*	34 (35) [p<.05, 2t]	-46 (32) [p<.01, 2t]	-30 (15)	-20 (17)

*AUT scores for EL-JHS are based only on the responses of teachers of grades VII-IX (see p. 98 supra).

the light of Tables XXXVIII and XXXIX) similarity (Table XLVI) between EL and SEC. However, for the particular subsamples where these AUT relationships were observed (the respective "T" subsamples) LPC correlates with effectiveness negatively, though not significantly, only at the stage of experience (newly-appointed--SEC;

established--EL) at which task-oriented principals have been found to be particularly effective for that class of schools.

It would appear that among EL and SEC, task-oriented principals stimulate an increased awareness of need for autonomy among staff members, and that this enhanced awareness of autonomy (professional self-respect?) manifests itself in greater school effectiveness, but probably only under the conditions related to the recency of the principal's appointment which characteristically benefit from task-oriented leadership in the particular class of schools.

On the other hand, among ML, LPC-AUT-EFF relationships are in the reverse directions from those among EL/SEC, and the investigator is unable to conceptualize how these relate to the overall LPC-effectiveness relationship for this class of schools.

III. SUMMARY

Leadership style-school effectiveness relationships were reanalyzed in relation to the number of years principals had been at their schools. The school vacation period between a principal's second and third years of tenure at his school appeared to be the watershed period between situations favoring contrasting

leadership styles. Leadership style-school effectiveness relationships are differentiated sharply and significantly as between newly-appointed (one and two years) and established (three or more years) principals. However these interactions between the principal's leadership style and the degree to which he has become established at his school have opposite effects depending on the level of school. That is to say, among newly-appointed elementary principals, those who are task-oriented are less effective than those who are person-oriented, but among established elementary principals task-oriented principals lead more effective schools than person-oriented principals. On the other hand, among newly-appointed secondary principals, it is the task-oriented principals who are more effective, while among established secondary principals, task-oriented principals are less effective than person-oriented principals.

One interesting feature of the interactions, among both elementary and secondary schools, is that most of the variance in school effectiveness was accounted for by the task-oriented principals. That is to say, school staffs were markedly more or less effective over time in response to the leadership style of task-oriented principals, but varied little in effectiveness in response to the leadership style of person-oriented principals.

Though these interactions between leadership style and time, with respect to school effectiveness, differentiate significantly between the elementary and secondary levels of schools, they were not observed at all among fragmented schools such as elementary-junior high schools. Among those schools to which they do apply (elementary, junior high, senior high) they appear to apply to all schools regardless of differences in size of school and sex of principal.

A number of factors were analyzed in relation to the effects on schools of leadership style-time interactions, in an attempt to explain the significant interactions contrastingly characterizing the leadership styles of elementary and secondary principals.

Differences in staff training were examined in relation to the contrasting interactions, but were not found to account for these characteristic differences between levels of schools

Attempts were made to explain the findings consistently in terms of the model of coacting groups and in terms of the model of interacting groups, but in each case without success. It is concluded that the theory may need further amplification to take account of a time dimension along which selective transfer leads to changes in the composition of the group and thereby to

changes in the favorability of the leadership situation.

Teacher mobility is a factor which may eventually be found to explain this hitherto unremarked feature of leadership style effects, presumably related to the fact that school staffs are such long-term groups that time becomes an important dimension of the leadership process. Among principals who have been three or more years at their schools, LPC scores correlate positively with the average number of years staff members have been at the school. This relationship is consistent for both elementary and secondary schools, despite the characteristic differences in leadership style effects already remarked for the two levels of schools. That is to say, teachers at both levels tend to remain longer with person-oriented, permissive, quasi-therapeutic principals than with task-oriented, directive principals. This preference of teachers for person-oriented principals is particularly significant in view of the fact that it is the task-oriented principals whose leadership style accounts for most of the variance in school effectiveness observed in the interactions with time, by contrast with the relatively small amount of variance attributable to the person-oriented principals. The movement of teachers away from task-oriented principals may help to account for the differences over time in their effectiveness.

Presumably it takes more than one year for a principal's style to have marked effects on the composition of his staff. Possibly also it takes two years before his reputation becomes sufficiently well-known to have a selective effect on the type of teacher coming to his school. Change in staff composition could be studied in relation to teacher LPC and to effectiveness potential, with a view to clarifying the nature of the processes underlying the relationships observed.

Data relating staff autonomy needs to leadership style and to school effectiveness were presented in the hope that they might be of value to the student trying to explain the effects of leadership style in schools. Although throughout the analysis the theory had given no indication of being relevant to multilevel schools, it was found during this stage of analysis that autonomy among ML staffs was significantly related to LPC and to school effectiveness. This finding suggests that the theory may have meaning for fragmented schools also, presenting the interested student with the difficult but challenging research problem of determining how the theory relates to multilevel schools.

Although the relationships reported in this chapter have not been demonstrated to have predictive validity, they are so strongly indicated by the evidence

as to deserve the attention of a validation study. In that they have been found to be significant and consistent over two or more subsamples, using different and independent measures of effectiveness, they are in themselves mutually validating. Further, the relationships observed do appear to lend themselves to explanation in terms of Fiedler's basic hypothesis concerning the differential effects of contrasting leadership styles. It is concluded that the evidence presented in this chapter makes a strong case for elaboration of the theory in relation to time as a dimension of the leadership process in long-term groups. Such a development of the theory would need to be supported by research to confirm the existence of the relationships moderated by time so strongly indicated by the evidence presented in this chapter.

CHAPTER XV

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

I. SUMMARY

Objectives of the Study

Fiedler's theory of leadership effectiveness delineates a hypothesized process relating leadership style and group effectiveness. This relationship is moderated by a number of factors defining the favorability of the leadership situation to the leader. The study reported in this dissertation analyzed a number of facets of these three key variables and their interrelationships in terms of school staff leadership. Data were analyzed in relation to:

1. The stability of principals' personal leadership styles.
2. The nature of institutional factors defining the favorability, to principals as leaders, of the staff leadership situation at schools generally.
3. The relationship between the interactionally generated attitudes of principal and staff as alternative indices of the favorability of the leadership situation, at particular schools, to the principal as leader.

4. The effectiveness of schools as a function of the interaction between leadership style and the favorability of the leadership situation when favorability is indexed by the principal's rating of his staff (GA). The nature of this interaction, the crux of the theory, was observed among all schools constituting the full sample, and then among sets of schools differentiated in turn by size, level, and fragmentation of school and by sex of principal. The purpose of this extensive analysis in relation to school characteristics was to determine whether the validity of the theory for schools is limited to certain types of schools only.
5. The effectiveness of schools as function of the interaction between leadership style and leadership situation when the favorability of the leadership situation is indexed by staff attitudes, sociometrically measured.

These research problems were operationalized as specific hypotheses which gave direction to the analysis of relationships in the sample.

Analysis by Hypotheses Proposed

Hypothesis I proposed that principals' LPC scores are stable over time. The hypothesis was supported by the evidence, but the fact that GA scores were also

found to be stable raises doubts as to the implications of the finding concerning LPC. Since both LPC and GA were found to be stable, there remains a possibility that the observed stability of LPC scores was an artifact of the stability of the staffing situation at the schools in the relevant sample.

Hypothesis II proposed that among both elementary and secondary schools leader position power is high and task structure is low. Judges were unanimously agreed that task structure is low in both classes of schools, and the hypothesis is supported with reference to this variable. Though a majority agreed that leader position power is high in both classes of schools, there was some ambivalence and dissent with regard to this variable. The hypothesis was, therefore, not adequately supported with respect to this dimension of the leadership situation in schools.

Hypothesis III proposed that principals' GA ratings are positively correlated with staffs' preference for their principals as professional colleagues. This hypothesis was not supported by the data. No evidence was found to support the belief that the principal's GA ratings are in fact a reflection of the staff's leader-orientation.

Hypothesis IV proposed that principals' GA ratings

are positively correlated with staff cohesion, and negatively correlated with staff conflict. Principals' GA ratings were found to be positively correlated with staff cohesion, but were not found to be related to staff conflict.

Hypothesis V.1 proposed that principals' LPC scores correlate negatively with staff need for autonomy among schools which the principal rates low on GA. This hypothesis was confirmed for one very small subsample only, but rejected for two others. In fact, the two non-supportive subsamples provided some evidence contrary to the hypothesis. The hypothesis was not supported by the data.

Hypothesis V.2 proposed that principals' LPC scores correlate negatively with staff need for autonomy among staffs which reject the principal as professional colleague. On the contrary, the negative correlation was found among schools which chose the principal as professional colleague. The hypothesis was not supported by the data.

Hypothesis VI proposed the standard LPC-effectiveness hypothesis (model of coacting groups) for all schools. This hypothesis proposes contrasting complementary LPC-effectiveness correlations contingent on the favorability of the situation to the leader. In this case favorability was indexed by GA, such that

negative correlations were predicted under high GA, positive correlations under low GA. Significant correlations in the predicted directions were not observed. The hypothesis was not supported by the data.

Hypothesis VII proposed the standard LPC-effectiveness hypothesis for schools of varying sizes, with GA specified as the index of favorability. The hypothesis was not supported by the data from schools in any size category.

Hypothesis VIII proposed the standard hypothesis, as indexed by GA, for schools of varying level--elementary, junior high, and senior high. The hypothesis was not supported by the data from schools at any of these three levels.

Hypothesis IX proposed applying the standard hypothesis, with favorability indexed by GA, to three kinds of multilevel schools--elementary-junior high schools, high schools (grades VII/VIII/ or IX to XII), and all-level schools (grades I-XII). The relationships observed among each of these three types of schools did not support the hypothesis.

Hypothesis X proposed the standard hypothesis, with GA as the index of favorability, for schools led by female principals. No evidence was found to differentiate LPC-effectiveness relationships under male and

under female principals. The hypothesis was not supported by the data.

Hypothesis XI proposed the standard LPC-effectiveness hypothesis for schools, with favorability to the leader indexed, not by GA, but by sociometric indices of staff attitudes. The favorability of the leadership situation was indexed in turn by staff choice of principal as professional colleague, by staff cohesion, and by staff conflict. The relationships observed did not support the hypothesis.

Reanalysis of the Data on the Hypotheses

A strict interpretation of the results of testing the hypotheses leads to the conclusion that the study has provided little but negative information concerning the validity of the theory for schools. One positive finding helps to define the GA variable and the interpersonal climate in school staffs. The principal's rating of his staff (GA) is related, not to the staff's preference for the principal, but to staff members' attitudes towards their coworkers (cohesion). Although GA was not found to be consistently related to staff conflict, there were indications that such a relationship exists. It is therefore likely that the principal's GA ratings are in part influenced by variation in the school leadership situation along a cohesion-

conflict continuum.

In spite of the lack of support for Hypotheses V-XI, when account was taken of certain relationships observed during the analysis, and the data accordingly reanalyzed, the results were more meaningful in terms of the theory. The relationships observed during this stage of reanalysis provide indications which could offer useful guidance to students planning to use the theory for further research into school leadership.

One problem appearing to underlie the lack of support for the hypotheses may be the lack of an adequate operational index of the favorability of the school staff leadership situation. Hypotheses V-X were proposed on the basis of an assumed independence of GA from LPC, an assumption legitimated by evidence from earlier research, but which evidence gathered during the present study indicates is not warranted for schools. Analysis of relationships among leadership style, school effectiveness, and GA, in a very large sample of schools, indicated the presence of a complex curvilinear inter-relationship. The hitherto unsuspected relationships among these three variables may well be interpreted as additional evidence of the ways in which high and low LPC personalities respond to the stresses of a leadership situation. When account

was taken of this relationship, and the favorability levels of GA scores accordingly reinterpreted, the trend of LPC-effectiveness relationships did, in a number of cases, conform to the directions hypothesized. The indications were that the model of coacting groups may be valid for medium-sized schools (13-24 teachers), while the model of interacting groups may be valid for very small schools (3-6 teachers).

Though both GA and sociometric measures of staff attitudes, taken alone, proved unsatisfactory as indices of favorability, the two taken together appeared to provide a more powerful index. When these measures of the principal's and the staff's perceptions of the situation were combined into a joint index of favorability, the trends in the correlations observed did conform to the complementary directions predicted by the theory, even though only a few of the correlations observed were statistically significant.

Though expressed staff need for autonomy did not relate to leadership style in the fashion predicted, it did relate consistently and significantly to LPC in favorable leadership situations, both when favorability was indexed by the principal's rating of GA, and when favorability was indexed by staff attitudes to the principal, sociometrically measured. This finding would

indicate that the response of teachers to leadership style, in terms of valuing autonomy, is contingent on whether the leader is acceptable. The nature of this response may help to define aspects of the leadership process. Contrary to hypothesis, where staff and principal rate each other favorably, then high staff need for autonomy is associated with task-oriented leadership, and low staff need for autonomy is associated with person-oriented leadership*.

Reanalysis--Unanticipated Relationships

When school staffs were differentiated into those under newly-appointed and those under established principals, the effects of leadership style as moderated by this variable were found to be highly significant for elementary and secondary schools, regardless of size or level of school and regardless of sex of principal. One interesting feature of this relationship is the fact that though it is highly significant for both secondary and elementary schools, it is in the reverse directions in the two classes of schools. Differences in staff training do not appear to account for these characteristic differences between elementary and secondary schools.

While, among newly-appointed elementary principals, those who were person-oriented were more effective,

*Among staffs of elementary and secondary schools.

among newly-appointed secondary principals it was the task-oriented principals who were more effective. By contrast, among established principals, task-oriented elementary principals, but person-oriented secondary principals, led more effective schools. These characteristic relationships were noted across all subsamples of elementary and secondary schools, regardless of size of school or sex of principal, but were not found among multilevel schools. The characteristic differences between schools at the two levels do not appear to be a function of the different effectiveness criteria used. Where effectiveness ratings were used as an alternative criterion to exam results for secondary schools, variance in leadership style-school effectiveness relationships over time conformed to the same pattern of interaction as was observed when examination results were used as the criterion of effectiveness.

A striking feature of this relationship was that most of the variance over time in both elementary and secondary school effectiveness was due to the task-oriented principals, and not to the person-oriented principals. That is, schools were either markedly more or less effective under task-oriented principals, contingent on whether they had become established in the position. Contrariwise, under person-oriented principals

there was little variance in school effectiveness over time.

Related findings might throw some light on the processes underlying these characteristic differences among classes of schools.

Principals' LPC scores are related to length of staff stay at the school, indicating that the processes underlying principal LPC-school effectiveness relationships are moderated not only by changes in the social structure of the staff, but also by changes in the actual composition of the staff. If changes in staff membership contribute to changes in leadership style-school effectiveness relationships, this effect may be due to characteristics differentiating those teachers who stay with task-oriented principals from those who leave them.

Staff autonomy needs were found to be related to leadership style among all classes of schools, but in contrasting directions differentiating between elementary and secondary schools on the one hand, and multilevel schools on the other. While this relationship appears to be linked to effectiveness among elementary and secondary schools, no relationship between LPC and effectiveness was found to characterize multilevel schools.

II. CONCLUSIONS

The Significance of the Results

Very little evidence was found to support the hypotheses, and none at all was found in support of the hypotheses concerned with the fundamental leadership style-group effectiveness relationship on which Fiedler's theory is built. It might be concluded from these results that the theory is not valid for the analysis of school staff leadership. Such a conclusion might, however, be premature, in that it would fail to take account of a number of features of the analysis which suggest that the lack of support for the hypotheses may be due to problems of operationalizing the favorability of the school staff leadership situation rather than to the lack of validity of the theory for schools. This conclusion is reinforced by some indications that, once account is taken of the limitations of the indices used for this variable, relationships in schools tend to conform more closely to Fiedler's basic hypothesis. In addition, in view of the consistent and significant leadership style-school effectiveness relationships observed when time was used to moderate this relationship, it is evident that the LPC variable does have significance for school effectiveness. It is therefore concluded that to discard the theory at this stage would be to overlook

a conceptual framework which gives meaning to a variable of demonstrated significance for the study of school leadership.

One feature of the study design which lends support to these conclusions is the size of the sample and the existence of several subsamples. The use of three different measures of effectiveness further diversifies data which nevertheless yield a number of mutually validating relationships. In view of the consistency of certain results in the face of diversity in the sample and the measures, to discard the theory at this stage would be to run all the risks of excessively formal decision-making. While ex post facto hypotheses are always in need of validation due to the possibility of having based a conclusion on a chance relationship, this risk is considerably less where the relationships have been found over more than one sample. While the problem remains of validating the relationships emerging from the supplemental analyses reported herein, the fact of the internal consistency of the relationships across subsamples demands early attention, in terms both of theoretical explanation and of follow-up studies. Conclusions are therefore stated with rather more confidence than would be warranted by results based on relationships observed in a single sample.

Conclusions from the Study

It is probable that principals' leadership styles are relatively stable over time, though evidence from a more rigorously controlled sample is required on this point. School staffs are faced by a task which is low on structure, and it is likely that principals occupy a position which is relatively high on formal power, though competent judges are not unanimous on this point, particularly as regards the power of the principals of secondary schools. The evidence from a possibly unrepresentative sample of elementary schools indicates that principals' ratings of their staffs (GA) may not be related to staff leader-orientation, but are related to staff cohesion. Though these results help to define the nature of the principal's GA ratings, it is very doubtful whether the ratings themselves function as intended in terms of the theory, as an index of variance in the favorability of the school staff leadership situation from school to school. This may be because schools are such long-term groups that GA ratings become influenced by other variables of which their function for the theory assumes them to be independent. Evidence taken over the full sample and by subsamples indicates that GA is related to both effectiveness and LPC, in a fashion which may well be characteristic of high/low LPC responses to

stress. In view of this relationship it is not likely that low GA schools are, as had been expected, those offering the situation least favorable to the principal as leader. It is more likely that the moderate GA schools include a good proportion of staffs among which the leadership situation is unfavorable to the principal. This conclusion is supported by the trend of LPC-effectiveness relationships observed under moderate GA.

Staff attitudes, sociometrically determined, were not found to provide a satisfactory moderator of leadership style-school effectiveness relationships, possibly because returns of questionnaires related to staff attitudes were unsatisfactory, so that the sample used may not have been representative of the population. When staff attitudes and GA were integrated into combined indices of favorability, it was noted that the directions of leadership style-school effectiveness relationships conformed to Fiedler's theory, particularly where the principal's and the staff's attitudes to their coworkers were combined into a single index of cohesion among professional personnel at the school.

It is concluded from these results that the chief research problem facing students interested in applying Fiedler's theory to schools is the development of a valid and reliable index of the favorability of the leadership

situation in schools. It is possible that this index will have to take account of staff interpersonal attitudes defining a feeling of group identity, and that the principal's attitudes in this connection should be more heavily weighted than those of any other single staff member.

Staff members' role attitudes concerning the autonomy of the teacher were found to be related to the principal's leadership style, but not in the fashion hypothesized. Among elementary schools in which the situation was favorable, using either index of favorability, staff members expressed stronger expectations concerning the autonomy of the teacher's role under task-oriented principals than they did under person-oriented principals. The pattern of relationships observed in secondary schools may be interpreted in the same fashion, if the classification of these schools on favorability takes account of the relationship between GA and effectiveness. However, while leadership style is related to staff need for autonomy in the same way in both classes of unified schools (elementary and secondary), the relationship between these two variables among fragmented (multilevel) schools is in the reverse direction. That is, among such schools as elementary-junior high schools, it is under person-oriented principals that staff

members are more likely to express need for autonomy. These significant differences between unified and fragmented schools in staff response to task-/person-oriented principals may indicate subinstitutional differences in the favorability of the staff leadership situation differentiating between the two types of schools.

When the data were reanalyzed to take account of differences in the leadership situations of newly-appointed and established principals, significant and consistent differences in leadership style-school effectiveness relationships were found to differentiate between classes of schools. However the differences found to exist between elementary and secondary schools are so great as to make it difficult to relate both these sets of significant results to the theory. This problem of interpretation may be due to lack of sufficient knowledge of aspects of the problem, including the way in which group processes vary from one type of school to another, and the way in which the theory may be developed along a time dimension.

Since leadership style was found to be relevant to staff mobility, it is likely that the reconciliation of these results with Fiedler's theory will need to take account of variance in group composition as a response to leadership style. Presumably time operates to modify

the nature of groups and the relationships among leaders and members in such a way as to transform the favorability of the situation. Consequently, favorable situations gradually become unfavorable, and vice versa. It is likely that the explanation of the characteristic elementary-secondary differences will have to take account of the differences in group processes in the two classes of schools, and the significance of these differences for leadership processes among groups whose members change while the leaders remain constant. The critical difference in group processes may be related to the substitutability of teacher units in schools at each level.

III. IMPLICATIONS

For Schools and for School Systems

Analysis of the data along the lines hypothesized at the outset of the study yielded only very limited evidence in support of the validity of Fiedler's theory for the analysis of the leadership process in school staffs. The probability that principals' leadership styles are stable does have important implications for approaches to the training and posting of principals. Staff members' feelings about each other and the principal's feelings about his staff are related

variables, and may well index jointly an important aspect of the leadership situation in schools. The importance of cohesion suggests that the principal may have little control over a major determinant of whether the leadership situation suits his personal leadership style. The evidence in relation to this variable suggests that the sense of "group-ness" is an important element of the school staff situation, perhaps more important than would be indicated by a strict reliance on the model of coacting groups. In general, Fiedler's theory and variables do appear to have some validity for schools, though many of the operational details of the way in which the theory applies to schools have yet to be determined.

Supplemental analyses provided consistent evidence concerning the importance of time as a moderator of relationships between the leadership styles of principals and the effectiveness of their schools. This evidence suggests that a good proportion of established principals are inappropriately posted. Such personnel might best be used as short-term, two-year, "new-broom" appointees, since teacher mobility quickly destroys their utility, even makes them a liability if left at the same school. Differences between classes of schools in LPC-autonomy relationships suggest that systems wishing to make the best use of a principal's leadership style may also have to take account of the kind of school he is posted to.

For Fiedler's Leadership Theory

Insofar as the meagre indications from the results of testing the hypotheses are to be considered, they suggest that the best index of favorability among such long-term groups as school staffs is a combination of GA and group cohesion. This suggests that the most important interactional factor in the favorability of the school staff leadership situation is not, as had been believed, the warmth of leader-member affective relations, but rather the warmth of member-member affective relations (so long as the leader's share of these feelings is given due prominence). Put another way, this suggests that the situation most favorable to task-oriented leadership is that in which a warm "we-feeling", a sense of "group-ness", is shared by leader and members. To the extent that this is true, the leader's influence is a function of factors independent of his person and of the institution. That is, power flows to the leader from the situation, rather than from the leader's position or person to the situation.

The indications in relation to the hypotheses, and the significant relationships emerging from the supplemental analyses, that leadership styles relate in complementary ways to school effectiveness, contingent on the situation, suggest that the LPC variable and the

associated theory are meaningful for school leadership in terms of "hard" measures of effectiveness. The fact that the relationships as moderated by time appeared to apply to the largest schools in the sample indicates that what has often been regarded as a theory of small groups may be valid for much larger groups than was originally expected to be the case. The fact that significant relationships were found with the attainment index, based on individual student scores, indicates that the theory may be meaningful for large organizations (schools) averaging about three hundred members (students), and often as large as one thousand members. Whatever the problems of interpretation, the evidence strongly indicates that leadership styles and the situation interact significantly for very large groups.

The evidence concerning the dependence of GA on LPC and on the effectiveness criterion raises doubts concerning the value of this variable (taken alone) as an index of variance in favorability among schools. It would be of interest to know whether the leader's GA is similarly dependent on LPC for other long-term groups whose members are obliged to work with the same coworkers for at least a year. It should not be overlooked, of course, that the evidence of dependence among school principals does provide additional support for

the interpretation of LPC scores as indexing differential sensitivity to goal achievement/the feelings of others.

The characteristic ways in which time differentiates the effects of alternative leadership styles among elementary and secondary schools raises a problem of fitting the theory to observed data. The investigator is unable to conceptualize how the theory, as it stands at present, can provide a consistent explanation of the contrasting results observed among the samples of schools at the two levels. To fit these results to the theory may require further information about differences between the two classes of schools, either with respect to variables already incorporated in the theory (e.g. leader position power), or with respect to other aspects of group processes differentiating between classes of schools (e.g. the interchangeability of teacher units). Alternatively, a satisfactory explanation may require an elaboration or extension of the theory along a dimension which takes account of changes over time.

The importance of time as a major factor in the effectiveness of leadership styles raises an extremely interesting issue of the possibility of elaborating Fiedler's theory along (a) dimension(s) which will account for leadership as an aspect of an on-going social process. Greenfield (1968, pp. 72-73) concludes his

critique by pointing out that most school leadership studies (among which could be included the study herein reported) simply "photograph" a particular moment of the leadership process, so that it is difficult to generalize among photographs of what may be different phases. Evidently a "system" approach to leadership needs to take account of variance over phases of group problem-solving. In such long-term groups as schools the duration of the phases must surely be on a larger scale than that observed by Bales and Strodtbeck (1951) with laboratory groups.

It is possible also that such elaboration of the theory as is necessary to explain the changing relationships over time observed among schools will take account of such social system factors as the mobility of teachers, and the effects of communication among teachers of the reputations of principals and schools.

The findings concerning autonomy may be helpful in defining the way in which the situation moderates the response to leadership style. Teachers in fragmented schools value autonomy under one style of leadership, teachers in unified schools value autonomy under the alternative style. Among the two types of schools, autonomy is differentially related to school effectiveness. These findings seem to indicate that both the response to leadership style and school effectiveness are

related to social work attitudes ranging along an independence-interdependence continuum, in accordance with the nature of the group and the range of activities for which the leader is responsible. It is likely, however, that the resolution of this problem is hindered, not so much by the limitations of Fiedler's leadership theory, as by a general lack of knowledge concerning group processes among school staffs.

For Conceptualizing the Leadership Process in Schools

The results of testing the formal hypotheses provide only very slight indications concerning the validity of Fiedler's theory for describing the leadership process in schools. They do, however, give some promise that more conclusive evidence may be obtained once the problem of indexing favorability in schools has been solved. Evidence from the supplemental analyses does provide consistent indications, on which validation studies are required, concerning aspects of the school staff leadership process which have so far received very little theoretical attention.

It is probable that the principal's leadership style is an important factor in the transfer of teachers to and from schools. The evidence that teachers remain longer with person-oriented principals, who were found to have relatively slight effects on school performance,

has interesting implications concerning teachers' attitudes to their task and to leaders, and probably concerning their attitudes to autonomy and to co-operative group activity. It is possible that persons enter and remain in the teaching profession with firm expectations of working as individualists. It is interesting, in this connection, that staff cohesion, as perceived by staff members and by the principal, appears to be the most important factor identified as defining the favorability of the school staff leadership situation.

The difference between elementary and secondary schools, and between these two levels of unified schools and fragmented schools, suggests the presence of important differences among types of schools in group processes, differences about which educators are largely ignorant. Fiedler's distinction between coacting and interacting groups is a useful starting point for the analysis of the characteristics of school staffs as task groups. It is only a starting point in that little but data-free opinion is as yet available as to whether school staffs are coacting or interacting groups. Fiedler's analysis of differences in the leadership functions of leaders of the two types of groups could provide useful guidance in creating real and effective teaching teams.

The lack of agreement by competent judges on the

leader position power of principals has further implications for the uncertainty of educational administrators about the nature of group processes in schools. Significant differences between elementary, secondary, and multilevel schools likewise remain unexplained in the face of ignorance concerning what probably are important differences in teacher attitudes to interdependence and co-ordination in each of these types of schools.

IV. RECOMMENDATIONS FOR FURTHER RESEARCH

Investigation of the stability of principals' LPC scores needs to be further extended to incorporate the controls suggested in Chapter IX. Fortunately, LPC scores are now available on some 500 principals, so that the selection of a suitable sample should not be too difficult a problem.

In view of the dissenting judgements concerning the leader position power of principals, steps should be taken to obtain a more direct index of this variable for schools. In Chapter X a measurement technique was suggested in preference to estimation, as it is believed that a more direct approach would reduce problems of validity and reliability. Any investigation of leader position power in schools should provide for the possibility of differences in power with respect to

instructional/managerial areas.

Trends observed during the study indicate that staff cohesion, indexed by a combination of the principal's and the staff's responses, may be a useful, perhaps the only, index of favorability for schools. Despite the difficulty of obtaining adequate returns of sociometric data from school staffs, indications concerning the significance of this index for schools make it highly desirable that a follow-up study test its validity as an index of the favorability of the leadership situation for school staffs. An adequate test would require special precautions to ensure full co-operation from staffs. It would probably require that the investigator visit all schools personally, and would certainly require that steps be taken to obtain the collaboration of the teachers' association to assure teachers that no problems of professional ethics were involved. As this particular research problem is critical for testing the validity of Fiedler's basic hypothesis for schools, it may be regarded as a problem of high priority.

Since teacher mobility is related to the principal's leadership style, this variable may be regarded as an important dimension of a continuing leadership process, and accordingly deserves further investigation. It may well provide the key to some of the significant

relationships reported in the supplemental analyses. The quickest, simplest, and initially most useful step would be to investigate patterns of staff transfer over the past few years under principals whose LPC scores are already available. This information could also be used for a reanalysis of effectiveness relationships for the sample used in this study. By dividing established principals into those who had retained most of their staff members and those who had lost most of their staff members, it may be possible to develop a behavioral, and possibly therefore more valid, index of favorability to principals' leadership.

What may be important in teacher mobility is the kind of teacher who transfers in response to leadership style. Steps could therefore be taken to incorporate into the analysis such characteristics of teachers as their LPC scores and their years of training. In view of the ease with which teachers' LPC scores may be collected, it should be possible, using an optical scorer and a computer program, to relate teacher mobility throughout Alberta to differences in teachers' responses to principals' leadership styles as a function of individual teachers' task/interpersonal attitudes as indexed by LPC scores. The analysis of variance could be designed to take account of differences among schools on such factors

as level and fragmentation.

No evidence has yet been obtained from schools in support of the view that person-oriented leaders are therapeutic in effect on group members under stress, and, in the appropriate situation, as significant for effectiveness as are task-oriented leaders. On present indications (McNamara, 1967, and the present study), person-oriented principals would appear to be merely laissez-faire leaders, whose effects on school performance are only significant by contrast with the significantly beneficial/harmful effects of task-oriented principals. There is a need for an investigation into the distinctive supervisory behaviors and effects of person-oriented principals, probably through case studies and/or critical incident descriptions.

Since examination results have proved a significant means of discriminating among secondary schools on effectiveness, and in view of the possibility that the teachers in a secondary school subject department may constitute an interacting group, attention should be given to testing Fiedler's basic hypothesis for these groups. This analysis could be carried out by using data already available. In view of the unexpected significance of time as a moderator, the analysis of the leadership effectiveness of secondary school subject department heads should

be designed to take account of possible effects of this variable.

As leadership is an aspect of group process, it is not surprising, in view of the present state of ignorance concerning group processes among school staffs, that so many of the results of the present study have not been satisfactorily explained. The study of group processes among school staffs will have to start at such a primitive level that the initial stages are likely to be exploratory, possibly making use of a case study technique such as that employed by House (1966). Besides investigating differences in group processes among the three classes of schools found to differ in the present study, exploratory studies could give attention to such problems as differences in organization between conventional schools and those organized on a genuine team teaching basis. Areas of investigation could include, to name but a few, the scope and frequency of communication among teachers as well as between teachers, principals, and team leaders; roles of staff members, including the principal, as defined by expressed expectations and by those implicit in specific behaviors; variance in scope and pervasiveness of communication with respect to instructional, managerial, and socio-emotional areas; and behavioral evidence of teachers' covert attitudes to

various forms of school organization and leadership styles. Such evidence might include the rate of transfers to and from schools, and the kinds of schools and principals to/from which teachers transfer.

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APPENDIX

APPENDIX A1

INITIAL LETTER TO SUPERINTENDENTS.

Dear _____:

I am writing to you in regard to a research project on the supervision of instruction which is currently being carried out in the Department of Educational Administration.

The study makes use of a conceptual model which relates principal and staff interpersonal perceptions and values to the effectiveness of supervision. An adequate study of the problem requires the co-operation of a large number of schools. It is therefore hoped that you will grant your approval for us to approach the principals of schools in your inspectorate. Fortunately, the study will make very slight demands on the staffs of schools co-operating (see Appendix).

You will be interested to know that the theoretical model being employed in the study has been partially validated with the staffs of typical Alberta schools and provides useful new insights into problems of school supervision. It is hoped, as a result of the projected study, to provide school administrators with further research evidence regarding the supervision of schools.

Since only seven weeks of the school year remain, I would be grateful for an early indication from you as to whether I could approach the principals of schools under your supervision. So as not to intrude too much on your time, I have enclosed a standard reply form and a stamped addressed envelope.

Thank you for your attention to this matter.

Yours sincerely,

Vincent McNamara

APPENDIX A2

APPENDIX TO LETTER TO SUPERINTENDENTS

STUDY OF FACTORS IN SCHOOL SUPERVISION

1. As approval is received from superintendents, the principals of schools in their inspectorates will be approached and their co-operation sought. Principals willing to participate in the project will be asked to complete Questionnaire A (Attached), requiring approximately ten minutes of their time.*
2. On the basis of the principals' responses, some of the schools will be selected for further study;**
 - In selected larger High Schools, subject department heads will be asked to complete Questionnaire A, and their principals will be asked to indicate the degree to which they endorse each of their subject department heads as supervisors.***
 - In other selected schools, principals and teachers will be asked to complete Questionnaire B (attached).
 - In some of the Elementary-Junior High Schools selected, principals will be asked to indicate the degree to which they endorse their assistant principals as supervisors.
 - In some of the schools completing Questionnaire B, a sociometric preference questionnaire will be administered, to ascertain the influence structure at the school.
3. Superintendents will be asked to rate *** selected schools on relative effectiveness of instruction, using scales similar to the following:
 1. Outstanding
 2. Very good
 3. Slightly above average
 4. Slightly below average
 5. Poor
 6. Very poor
4. Follow-up work with some of the schools may be necessary during the 1967-8 school year. This work will focus on selected schools, and probably on selected principals and teachers. It will be designed to elicit detailed information regarding factors which the study has indicated to be significant in supervision.

It will very likely make use of such techniques as in-depth interviews and written descriptions by principals and teachers of typical supervisory practices.

- * In all cases where responses are to be returned from superintendents, principals, and teachers, stamped addressed envelopes will be provided.
- ** The schools will be selected in such a way that no school will be required to complete more than two of the activities listed.
- *** Where confidential information is required, code numbers will be used to ensure security.

APPENDIX B1

INITIAL LETTER TO PRINCIPALS

Dear _____:

I am writing to request your assistance in an Alberta-wide research project currently being carried out in this department.

The project is designed to determine the extent to which certain factors, hitherto relatively neglected in the study of the supervision of instruction, are in fact of major practical importance. The conceptual model employed has already been applied on a small scale in a sample of typical Alberta schools, and it has yielded useful new insights into problems of school supervision. An adequate study on a large scale requires the co-operation of a considerable number of schools of all types throughout Alberta.

The report of the results of the study is expected to be of general interest and practical value to all school administrators. The report will make no reference to individual schools, and principals agreeing to participate are assured that all replies will be treated in strictest confidence

It is hoped that you can see your way clear to assisting us in the project*, particularly as it has been carefully designed so as to make minimal demands on schools. Participation on the part of your school will require only that you complete Questionnaire A (attached), a task which will take up no more than ten minutes of your time.

If you are willing to participate in the project, please complete and return the attached questionnaire. To ensure security in transmission of your ratings through the mails, no names are used and only the school code number appears on the questionnaire. Enclosed please find a stamped addressed envelope to facilitate your reply.

Thank you for considering this request.

Yours sincerely,

Vincent McNamara

*Your superintendent has granted approval for an approach to be made to the principals of schools in his district.

APPENDIX B2

APPENDIX TO LETTER TO PRINCIPALS

On the basis of responses to Questionnaire A (attached) some schools will be asked to co-operate in the second stage of the research project. In order to avoid making heavy demands on any one school, the follow-up work has been distributed among various kinds of schools:

High Schools

In a small number of high schools, subject department heads will be asked to complete a suitably modified form of Questionnaire A. As is evident from the questionnaire, this will make negligible demands on their time.

Smaller High Schools (less than 25 teachers)

The principals and teachers of selected schools will be asked to complete a short, twenty-item questionnaire.*

Junior High Schools

The principals and teachers of selected schools will be asked to complete a short twenty-item questionnaire*.

Elementary-Junior High Schools

The principals and the teachers of the Junior High classes at selected schools will be asked to complete a short twenty-item questionnaire*. In a few cases, some additional information about the assistant principal may be requested.

Elementary Schools

No further assistance will be required.

FOLLOW-UP, 1967-8

During the 1967-8 school year, some follow-up may be necessary in order to define more clearly supervisory variables which appear to be important. This follow-up will probably take the form of interviews with a small number of selected principals, subject department heads, and teachers. It is likely that the interviews will be of assistance to school administrators generally.

- * This questionnaire, requiring at most fifteen minutes of each teacher's time, asks teachers to indicate their attitudes to various aspects of the role of the teacher.

APPENDIX B3

GA SCALES

QUESTIONNAIRE A

1. STAFF CLIMATE RATINGS

Use each of the following scales to rate your staff as a group. Put a circle around the number indicating your rating of the relative position of your staff on each scale.

As an example, the relative levels of warmth of climate may be expressed in words as follows:

----	1----	----	2----	----	3----	----	4----	----	5----	----	6----	----	7----	----	8----
Extremely	Very	Quite	More	More	Quite	Very	Extremely								
cold	cold	cold	cold	warm	warm	warm	warm								
			than	than											
			warm	cold											

Now rate your staff on the ten scales below. Do not bother to do more than circle the appropriate number on each scale.

e.g. COLD --1--:--2--:--3--:--4--:--5--:--6--:--7--:--8--WARM

please continue

School Code Number _____

HELPFUL	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-	FRUSTRATING
ENTHUSIASTIC	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-	UNENTHUSIASTIC
HOSTILE	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-	SUPPORTIVE
CO-OPERATIVE	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-	UN-CO-OPERATIVE
DISTANT	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-	CLOSE
COLD	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-	WARM
QUARRELSOME	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-	HARMONIOUS
SINCERE	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-	SUPERFICIAL
GLOOMY	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-	CHEERFUL
SPONTANEOUS	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-	RESERVED

APPENDIX B4

LPC SCALES

II. LEAST PREFERRED CO-WORKER RATINGS

Individuals differ in the importance they attach to the traits of co-workers. Such differences may be significant in team-work. Please give your immediate, first reaction to the items below.

Think of, but do not name, the teacher with whom you can work least well. He/she may be some you know now, or someone you knew in the past. He/she should be the person with whom you would have the most difficulty getting a job done.

Use the following scales to rate this person. Indicate your ratings in the same way as you rated staff climate, by circling the appropriate number on each scale.

please continue

School Code Number _____

QUITS EASILY	-1--2--3--4--5--6--7--8-	KEEPS TRYING
ENERGETIC	-8--7--6--5--4--3--2--1-	TIRED
CASUAL	-1--2--3--4--5--6--7--8-	DEDICATED
PRACTICAL	-8--7--6--5--4--3--2--1-	IMPRACTICAL
INTELLIGENT	-8--7--6--5--4--3--2--1-	UNINTELLIGENT
CONFIDENT	-8--7--6--5--4--3--2--1-	UNSURE
STABLE	-8--7--6--5--4--3--2--1-	UNSTABLE
RESPONSIBLE	-8--7--6--5--4--3--2--1-	UNDEPENDABLE
IMMATURE	-1--2--3--4--5--6--7--8-	MATURE
CALM	-8--7--6--5--4--3--2--1-	UPSET
BOLD	-8--7--6--5--4--3--2--1-	TIMID
UNGRATEFUL	-1--2--3--4--5--6--7--8-	GRATEFUL
IMPATIENT	-1--2--3--4--5--6--7--8-	PATIENT
THOUGHTLESS	-1--2--3--4--5--6--7--8-	THOUGHTFUL
RELAXED	-8--7--6--5--4--3--2--1-	TENSE
FRANK	-8--7--6--5--4--3--2--1-	SECRETIVE
CARELESS	-1--2--3--4--5--6--7--8-	CAREFUL
SELF-ASSURED	-8--7--6--5--4--3--2--1-	HESITANT
CONTROLLED	-8--7--6--5--4--3--2--1-	QUICK-TEMPERED
BOASTFUL	-1--2--3--4--5--6--7--8-	MODEST

APPENDIX B5

III. How many years (including the current school year) have you been principal of your present school?

_____ years.

APPENDIX C1

LETTER TO SECONDARY PRINCIPALS

Dear _____:

I would like first of all to thank you for your consideration in completing Questionnaire A in connection with our Alberta-wide study of factors affecting the supervision of instruction. The information provided by you and by other principals will be of considerable assistance to us in comparing the problems of schools at different levels.

On the basis of the information provided, a representative sample of schools has been selected for follow-up work. Your school has been included in the final sample and your continued support would be very much appreciated.

The follow-up work depends on the completion by staff members* at the selected schools of the single-sheet, printed questionnaires entitled Teacher Role Attitudes and Professional Guidance, copies of which are attached. Realizing that your staff will be very busy with end of the year activities, we have kept the follow-up questionnaire short and simple.

In order to ensure the privacy of teachers cooperating in the study, each questionnaire is accompanied by an envelope in which the teacher completing the questionnaire will be able to seal his/her responses. To further assure teachers of complete anonymity, it would help if you would follow the normal practice of nominating a staff member to collect the completed questionnaires and return them to this office. For this purpose a stamped addressed (brown) envelope is provided.

Since the aim of the study is to investigate the attitudes of school staffs as groups, it is important to have a high rate of return from each school. Where this does not occur, there is a risk that the attitudes of the teachers responding do not fairly represent the attitudes of the staff as a whole. It would be appreciated if you could point out to staff members the importance of a good rate of return.

It would assist the study considerably if you also, as principal, could complete Part II (not Part I)

of the questionnaire. It is hoped to study also the expectations of teachers concerning their role as compared with the opinions of principals about the role of the teacher. You will appreciate that differences of outlook in this area could be significant for supervision. In order that you may give your opinions as administrator, an extra copy of the questionnaire is pinned to this letter. If we are to compare the opinions of principals with the attitudes of their staffs, it is not possible to offer principals the same anonymity as teachers, and you will note that your copy of the questionnaire is marked with the additional code symbol "P". In order, therefore, to protect the privacy of your opinions, a special (white) printed envelope is attached to enable you to return your own responses direct to this department.

Thank you for your co-operation.

Yours sincerely,

Vincent McNamara

* For the purposes of the present study, assistant-principals are considered as staff members.

APPENDIX C2

TRA QUESTIONNAIRE

TEACHER ROLE ATTITUDES AND PROFESSIONAL GUIDANCE

This questionnaire is designed as part of a research project currently being carried out in the Department of Educational Administration at the University of Alberta, Edmonton. Both your superintendent and your principal have granted permission for an approach to be made to you in connection with the project and it is hoped that you will be prepared to assist by completing this short questionnaire.

The aim of the project is to study a number of factors which it is believed may be important in the adjustment of professional guidance to the needs of the teachers. Results will be reported in general form only, without reference to specific teachers, principals, or schools. You will note that the identification on this questionnaire is a coded identification of the school only, not of the individual teacher. You are assured that your replies will be treated in strictest confidence and used only for the purpose of providing information as a basis for theory of supervision.

When you have completed the questionnaire, place it in the envelope provided, seal the envelope and hand it to the member of staff designated by the principal to receive the envelopes. He will return all envelopes to the Department of Educational Administration at the University.

please continue

School Code Number

The questionnaire is in two parts:

1. PROFESSIONAL AND POSITION DATA

1. How many years of training are you credited with for salary purposes?
(Please drop fractional years).

(1) 1 year.	(4) 4 years.
(2) 2 years.	(5) 5 years.
(3) 3 years.	(6) 6 years.

2. How many years (including the current school year) have you been teaching at your present school?

(1) 1 year.	(4) 4 to 6 years.
(2) 2 years.	(5) 7 to 12 years.
(3) 3 years.	(6) 13 or more years.

3. How well satisfied are you with the supervision offered at your present school?

(1) Enthusiastic	(4) Somewhat dissatisfied.
(2) Satisfied	(5) Dissatisfied.
(3) Fairly well satisfied.	(6) Very dissatisfied.

please continue

II. TEACHER ROLE ATTITUDES

The section which follows is designed to measure attitudes to the role of the teacher in the school. The sixteen statements below express attitudes towards different aspects of the teacher's role. You are asked to express your reaction to each statement. There are five possible reactions to each statement. They are:

Strongly Agree (SA) Undecided (U) Disagree (D)

Agree (A) Strongly Disagree (SD)

For each statement circle the answer which indicates your reaction towards the attitude expressed.

1. It should be permissible for the teacher to violate a rule if it is felt that the best interests of the student will be served in doing so SA A U D SD
2. Unless a teacher is satisfied that it is best for the student, a teacher should not do anything which the teacher is told to do SA A U D SD
3. A good teacher should not do anything that may jeopardize the interests of the teacher's students regardless of who gives the directive or what the rule states SA A U D SD
4. Teachers should try to live up to what they think are the standards of the profession even if the administration or the community does not seem to respect them SA A U D SD
5. In view of the teacher shortage, it should be permissible to hire teachers with letters of authority SA A U D SD

- | | | | | | |
|---|----|---|---|---|----|
| 6. A teacher should try to put the standards and ideals of good teaching into practice even if the rules or procedures of the school discourage it | SA | A | U | D | SD |
| 7. Teachers should subscribe to and read diligently the standard professional journals | SA | A | U | D | SD |
| 8. A teacher should be an active member of at least one specialist council..... | SA | A | U | D | SD |
| 9. A teacher should attend all local association meetings | SA | A | U | D | SD |
| 10. A teacher should consistently practice ideas of the best educational practices even even though the administration prefers other views | SA | A | U | D | SD |
| 11. The major skill which a teacher should develop is an acquaintance with the subject matter | SA | A | U | D | SD |
| 12. Teachers should be evaluated primarily on the basis of their knowledge of the subject that they teach and on the basis of their ability to communicate it | SA | A | U | D | SD |
| 13. Schools should hire no one to teach unless the person holds at least a bachelor's degree in education | SA | A | U | D | SD |

please continue

14. One primary criterion of
a good school should be
the degree of respect
that it commands from
other teachers around
the province SA A U D SD
15. Teachers should be able
to make their own de-
cisions about problems
that come up in the
classroom SA A U D SD
16. The ultimate authority
over the major education-
al decisions should be
exercised by qualified
teachers SA A U D SD

THANK YOU FOR YOUR ASSISTANCE

APPENDIX C3

LETTER TO ELEMENTARY PRINCIPALS

Dear _____:

I would like first of all to thank you for your consideration in completing Questionnaire A in connection with our Alberta-wide study of factors affecting supervision. It is hoped that your staff will be equally willing to co-operate in the second stage of the project, the materials for which are enclosed.

The second stage of the study requires each teacher at the participating schools to complete Parts I-IV of the partly-printed, partly-duplicated questionnaires. Parts I and II, for use in all levels of schools, are printed. Parts III and IV refer to individual elementary schools, and have therefore been duplicated independently for each school. Enclosed please find sufficient copies for all staff members, plus a spare copy.

In order to ensure the privacy of teachers co-operating in the study, each questionnaire is accompanied by an envelope in which the teacher completing the questionnaire will be able to seal his/her responses. To further assure teachers of complete anonymity, it would help if you could follow the normal practice of nominating a staff member to collect the completed questionnaires and return them to this office. For this purpose a stamped addressed (brown) envelope is provided.

Since the aim of the study is to investigate the attitudes of school staffs as groups, it is important to have a high rate of return from each school. Where this does not occur, there is the risk that the attitudes of the teachers responding do not fairly represent the attitudes of the staff as a whole. It would be appreciated if you could point out to staff members the importance of a good rate of return.

It would assist the study considerably if you also could complete Parts II-IV (not Part I) of the questionnaire. It is hoped to compare the opinions of principals with the attitudes of

teachers, since differences of this kind may also be important in supervision. In order that you may give your opinions as administrator, an extra copy of the questionnaire is pinned to this letter. If we are to compare the opinions of principals with the attitudes of their staffs*, it is not possible to offer the principals the same anonymity as teachers, and you will note that your copy of the questionnaire is marked by the additional code symbol "P". In order, therefore, to protect the privacy of your opinions, a special (white) printed envelope is enclosed to enable you to return your own responses direct to this department.

Finally, there have been a number of enquiries from principals interested in the theoretical background to this study. As mentioned in my letter of May 19th., the present study seeks to investigate further some factors found to be significant in an earlier study of Alberta schools. This study is reported in a printed article which throws some light on the purposes of the present study. Copies of the article concerning the earlier study are available and will be mailed on request to interested principals. If you would like a copy of the report on the earlier study, pencil a note to that effect next to the school code number on your printed questionnaire.

Yours sincerely,

Vincent McNamara

* For the purposes of the study, includes Vice-Principals and Asst. - Principals.

APPENDIX C4

SOCIOMETRIC QUESTIONNAIRE

III. PREFERENCES IN TEAM WORK

When individuals work together regularly as a team, each member of the team tends to develop preferences for particular co-workers with whom he/she shares common interests and values. When the preferences of all members of the team are considered together, those team members who are most preferred may be regarded as having contributed most to certain shared needs of team members. For example, some persons may be preferred for social reasons, others for their skill in helping the team to get on with its tasks. Sometimes the same individual is a preferred co-worker for both reasons. Such exceptional individuals not only contribute to the social needs of their groups, but also regularly make suggestions which help their colleagues in solving common problems, so enabling the team to carry out its tasks.

The professional staff of a school may be considered as an educational team whose members interact closely for a relatively lengthy period. During this period, the members of the team develop preferences which may be related to shared attitudes and which are probably important in the co-ordination and guidance of team activities.

Section IV of the questionnaire seeks information on preference patterns within school staffs. It should also serve to identify influential educational personnel. Some of the persons so identified may be asked to express their opinions on problems of professional guidance when a follow-up study is being carried out during the 1967-8 school year.

In the box on the back of this page is a list, in alphabetical order, of the names of the professional educational personnel at your school. You are asked to indicate from among the names on the list, your preferences with respect to a number of purposes.

please continue

Please note that the questions have been framed to protect both your privacy and the feelings of your colleagues. You are not asked to indicate your own name, and your responses, taken together with those of your colleagues, will be used to indicate the overall preference pattern at your school. Where you are asked to indicate the names of professional colleagues at your school, your preferences cannot but reflect favourably on the persons you have indicated.

IV. PREFERRED COLLEAGUES (VARIOUS PURPOSES)

SCHOOL CODE NUMBER _____

MRS. R. ATHWAL
MR. I. BOON
MRS. G. CAMERON
MR. E. FORSTER
MR. J. GAMBLE
MRS. N. HUNT
MRS. L. LEISHMAN
MRS. R. LOOSE
MRS. F. O'NEIL
MRS. L. PARSONS
MRS. A. ROMAN
MRS. R. SIX
MRS. C. STRAIN
MRS. M. TARIO
MRS. B. WOODWARD

If you were able to choose the staff you had to spend a year with, which of your present colleagues would you choose? UNDERLINE the names of the ones you would choose.

(You may underline all or none, and in any case just as many as you would prefer to have at the same school as you, given a choice.)

Put a CROSS* next to the names of the five colleagues you find socially most congenial.

If you were posted to a newly-opened six teacher school next year, which five of your present colleagues would you choose to work with in getting the school off to a sound educational start? CIRCLE* the names of the five you would choose.

Do you feel that any of your present colleagues are destructively critical? If so, indicate how many such persons there are, but do not name them.

_____ PERSONS

please continue

- * There is no restriction on overlapping choices -- i.e. you may indicate the same or different colleagues for one, two, or three different purposes.

APPENDIX C5

SOCIOMETRIC QUESTIONNAIRE -- SMALL SCHOOL

IV. PREFERRED COLLEAGUES (VARIOUS PURPOSES)

SCHOOL CODE NUMBER _____

MRS. A. ARMSTRONG

MRS. P. CLAPP

MRS. G. DICKAU

MISS A. FUNK

MRS. P. JACKSON

MRS. H. McNEILL

MRS. L. QUIRING

MISS N. SAVILL

MR. S. TAVERN

If you were able to choose the staff you had to spend a year with, which of your present colleagues would you choose? UNDERLINE the names of the ones you would choose.

(You may underline all or none, and in any case just as many as you would prefer to have at the same school as you, given a choice.)

Put a CROSS* next to the names of the three colleagues you find socially most congenial.

If you were posted to a newly opened four teacher school next year, which three of your present colleagues would you choose to work with in getting the school off to a sound educational start? CIRCLE* the names of the three you would choose.

Do you feel that any of your present colleagues are destructively critical? If so, indicate how many such persons there are, but do not name them.

_____persons

* There is no restriction on overlapping choices -- i.e. you may indicate the same or different colleagues for one, two, or three different purposes.

APPENDIX D1a)

REQUEST FOR SIX-POINT EFFECTIVENESS RATINGS

STUDY OF THE EFFECTIVENESS OF SCHOOL STAFFS AS TASK GROUPS

Request to Co-operating Raters:

I would be grateful if you would assist a research project by rating on effectiveness* those of the following schools which are well-known to you. The ratings are required to test the validity for elementary schools of a theoretical model relating factors believed to be important whenever a group of people work together on a common task. The model has already proved useful in an earlier study of Edmonton elementary schools. The present study in Calgary schools replicates the earlier study in an attempt to determine whether the factors under consideration are indeed generally applicable to elementary schools.

Several Calgary school system officers are being asked to rate each school, and the means of your ratings of each school will, taken together, provide the criterion to test the model. The information you provide will be used for no other purpose, and considerable care is being taken to ensure security in transmitting the ratings from the raters to the anonymity of computer cards.

The seventy-four elementary schools co-operating in the study have been allocated code numbers and these are listed in the attached rating sheets. The names to which the code numbers refer are listed on tear-off strips, each name alongside the rating scale for its code number. Indicate your ratings by circling one of six possible ratings for each school. When you have completed your ratings, please tear off and destroy the code key strips in order to protect the security of your ratings.

Thank you for your assistance.

Vincent McNamara

* The effectiveness criterion required is defined and illustrated in the Appendix to this letter.

APPENDIX D1b)

APPENDIX TO REQUEST FOR RATINGSThe Effectiveness Criterion Required

As the theoretical framework of the study refers to a specific kind of effectiveness, it is important that you rate effectiveness with respect to the criterion being used in the study. Effectiveness is therefore defined for this particular study as the overall effectiveness of the professional personnel of the school in achieving their educational goals with respect to their students. (By educational goals is meant more than the limited objectives measured by formal testing programs. What is required is an estimate of the effectiveness of the professional personnel of the school in promoting the personal growth and development of the students for whom they are responsible.)

The theoretical model and the instruments being used in the study have previously been used in connection with an independent measure of the product achieved by the joint efforts of task groups -- for example, proportion of games won by basketball teams, profits of small companies, target attainment scores of aircraft bombing crews. In order that the model may be given a fair trial in schools, you are asked to evaluate the total output of principal and staff as a team. This is an approach to a "score" of each school staff in meeting the educational needs of its students. Of course, the educational product is a far more complex outcome than a team score. However, it is felt that the opinions of experienced judges will provide as accurate an index as may be obtained for comparing schools in order to determine whether the theoretical model being applied is in fact valid for elementary schools.

It is important that you make an evaluation of the overall educational product of the professional personnel of each school. While you will not be able to estimate the product of the school without reference to the educational and administrative processes, view process favourably only where you consider it is making a real contribut-

ion to the attainment of worthwhile educational goals. As you know, it is possible to identify schools managed in a smooth and orderly fashion, but in which the "administration" has little impact on an uninspired instructional routine.

In assessing the effectiveness of each school staff with respect to its students, take account of environmental factors which are likely to make the task of one school staff more difficult than that of another. Examples of such factors would be the ability, attitudes, and socio-economic background of the student body as a group.

APPENDIX D1c

<u>SIX-POINT RATING SHEET</u>	
SCHOOL CODE NUMBER AND RATING SCALE	TEAR-OFF CODE KEY
21455 Outstanding Very good Slightly above average Slightly below average Poor Very Poor	(Name of school)
23420 Outstanding Very good Slightly above average Slightly below average Poor Very poor	(Name of school)
23421 Outstanding Very good Slightly above average Slightly below average Poor Very poor	(Name of school)

APPENDIX D2a

REQUEST FOR THREE-POINT EFFECTIVENESS RATINGS

Dear _____:

I refer to my earlier letter to you (May 5th.) in which I outlined a research project, requested permission to approach the principals and staffs of schools in your district, and sought your assistance with ratings of selected schools.

On receipt of your note granting me permission to proceed, I approached the principals of a number of schools under your supervision and asked them to complete Questionnaire A. At a later stage the staffs of selected schools were asked to complete Questionnaire B.

On the basis of responses to the questionnaires a limited number of schools have been selected as being at representative levels on the variables being studied. Of the schools selected, several are in your district, and these are listed in Appendix A (attached). It would be appreciated if you could divide these schools among three rating categories by the method outlined in Appendix A.

To ensure the security of your ratings in transmission through the mails, return only the coded rating sheet (Appendix B) to this department. Attached please find a stamped addressed envelope for your convenience in returning the ratings.

As mentioned in my letter of May 5th, the present study seeks to investigate further some factors found to be significant in an earlier study of Alberta schools. The findings of the earlier study are reported in a printed article which throws some light on the purposes of the present study. The article describing the earlier study is available and a copy will be mailed to you on request. If you are inter-

please continue

ested in receiving a copy of the report on the earlier study, pencil a note to that effect at the top of Appendix C.

Thank you for your assistance, and for permitting the principals of your schools to participate in the study.

Yours sincerely,

Vincent McNamara

APPENDIX D2b

REQUEST FOR RATINGS OF ELEMENTARY SCHOOLS

Sample II consists of Elementary schools with a professional staff of seven or more persons.

District
Division # _____
County

SCHOOL CODE KEY

(Names and code numbers of particular schools).

SPECIALIZED SCHOOL EFFECTIVENESS RATINGS
(Study of Factors in School Supervision)

As the theoretical framework of the study refers to a specific kind of effectiveness, it is important that you rate effectiveness with respect to the criterion being used in the study.

Since the factors under study are being investigated in schools throughout Alberta, it is important that the method of rating be standardized, so that schools from different parts of the province may be compared on the same basis.

Effectiveness and the method of rating are therefore specified for this particular study as:

1. Effectiveness: You are asked to rate in each case the overall effectiveness of the professional personnel of the school in achieving their educational goals with respect to their students.

The theoretical model and the instruments being used in the study have been previously used in connection with an objective measure of the product achieved by the joint efforts of task groups -- for example, proportion of games won by basketball teams, profits of small companies, achievement scores of aircraft bombing crews. In order that the model may be given a fair trial in schools, you are asked to evaluate the total output of principal and staff as a team.

please continue

This is an approach to a "score" of each school in meeting the educational needs of its students. In assessing the effectiveness of a school staff with respect to its pupils, take account of environmental factors which are likely to make the task of one school staff more difficult than that of another. Examples of such factors would be the ability, attitudes, and socio-economic background of the student body as a group.

It is recognized that the educational product is a far more complex outcome than a team score. However, it is felt that the opinions of experienced judges will provide a reasonably reliable index for comparing schools in order to determine whether the theoretical model as applied is in fact valid for schools.

Would you therefore categorize as average, above average, or below average, the total educational achievement during 1966-67 of the professional staffs of the schools listed below.

2. Method of Rating: In order to test the theory adequately for schools, it is necessary to divide each sample of schools into three categories, so discriminating broadly between schools on the effectiveness criterion. The three categories should include approximately equal numbers of schools throughout the province (though not necessarily equal numbers within each district). That is, it is hoped that when all superintendents' ratings have been received, the elementary schools rated will fall into three approximately equal categories, ideally:

e.g. SAMPLE II (63 schools)

I (Above average):	21 schools
II (Average)	: 21 schools
III (Below average):	21 schools

To enable your ratings to fit into such a province-wide distribution, it is requested that you adopt the following rating procedure:

1. Consider a representative group of twenty or more elementary schools with a professional staff of at least seven persons. This group should include those of your schools which are listed on the front of

please continue

this sheet. You will need to think of schools outside your present district and to draw on your past experience in order to consider a representative sample of twenty such schools.

2. Rank the schools in order from best to worst* in terms of the effectiveness criterion defined on the front of this sheet.
3. Rate the top third I (above average), the middle third II (average), and the bottom third III (below average).
4. On the basis of this rating of twenty such elementary schools circle I, II, or III alongside each of your schools listed below.
5. Transfer your ratings to Appendix B.
6. When you have completed Appendix B, please destroy this sheet since it contains the code key.
7. Return Appendix B to V. McNamara, Department of Educational Administration, University of Alberta, Edmonton.

* "Worst" is used strictly in its relative sense. The worst school on your list may still be a good school, making a valuable contribution to its community.

(Names and numbers of
particular schools)

THANK YOU FOR YOUR ASSISTANCE

APPENDIX D2b

CODED RATING SHEETAPPENDIX B

I = Above Average
II = Average
III = Below Average

for method of rating
see Appendix A

INDICATE RATING BY CIRCLING I,II,or III IN EACH CASE

Upon completing the ratings, please return this
sheet to:

V. McNamara
Department of Educational Administration,
University of Alberta,
EDMONTON.

APPENDIX D2b

REQUEST FOR RATINGS OF JUNIOR HIGH SCHOOLS

APPENDIX A (SAMPLE III)

SAMPLE III consists of Junior High Schools.

District
Division # _____
County

SCHOOL CODE KEY

SPECIALIZED SCHOOL EFFECTIVENESS RATINGS
(Study of Factors in School Supervision)

(as for elementary schools.)

In evaluating achievement of educational goals please think in terms broader than the limited objectives measured by formal examination results. What is required is an estimate of the effectiveness of the professional personnel of the school in promoting the personal growth and development of the students for whom they are responsible.

APPENDIX D2b

REQUEST FOR RATINGS ON ELEMENTARY-JUNIOR HIGH SCHOOLS

APPENDIX A [SAMPLE IV]

Sample IV consists of elementary-junior high schools with a professional staff of thirteen or more persons

(The first part of the request is identical with that for elementary schools)

2. Method of Rating: In order to test the theory adequately for schools, it is necessary to divide each sample of schools into three categories, so discriminating broadly between schools on the effectiveness criterion. The three categories should include approximately equal numbers of schools throughout the province (though not necessarily equal numbers within each district). That is, it is hoped that when all superintendents' ratings have been received, the Elementary-Junior High Schools rated will fall into three approximately equal categories, ideally:

I (Above average): 11 schools
II (Average) : 11 schools
III (Below average): 11 schools

To enable your ratings to fit into such a province-wide distribution, it is requested that you adopt the following rating procedure:

1. Consider the effectiveness of the schools listed on this sheet in relation to that of other Elementary-Junior High Schools with which you are or have been acquainted. Make a comparison with as many Elementary-Junior High Schools as you can, if possible as many as twenty.
2. Rank the comparison group you are considering in order from best to worst* in terms of the effectiveness criterion defined on the front of this sheet.

3. Rate the top third I (above average), the middle third II (average), and the bottom third III (below average).
4. On the basis of this rating of a representative sample of Elementary-Junior High Schools, circle I, II, or III alongside the name(s) of your school(s) listed below.
5. Transfer your ratings to Appendix B.
6. When you have completed Appendix B, please destroy this sheet (since it contains the code key).
7. Return Appendix B to V. McNamara, Department of Educational Administration, University of Alberta, Edmonton.

* "Worst" is used in a strictly comparative sense. The worst school on your list may still be a good school, making a valuable contribution to its community.

(Names and code numbers of schools.
Alongside each name was placed the
three possible rating categories)

THANK YOU FOR YOUR ASSISTANCE

APPENDIX E1

GA FORM 1966Principals' Questionnaire, Part A.

STAFF CLIMATE RATINGS

Use each of the following scales to rate your staff as a group. Put a circle around the number indicating your rating of the relative position of your staff on each scale.

As an example, the relative levels of friendliness may be expressed in words, as follows:

----8---:---7---:---6---:---5---:---4---:
 Extremely Very Quite More More
 friendly/friendly/friendly/friendly/unfriendly/
 than than
 unfriendly friendly

---3---: ---2---: ---1---

Quite very Extremely
 unfriendly unfriendly unfriendly

Now rate your staff on the ten scales below. Do not bother to do more than circle the appropriate number on each scale.

e.g. Friendly -8-:-(7)-:6-:-5-:-4-:-3-:-2-:-1-Unfriendly

School Code Number _____

Helpful -8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-Unhelpful

Enthusiastic -8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-Unthusiastic

Hostile -1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-Supportive

Co-operative -8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-Un-co-oper-
 ative

please continue

Distant	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-Close
Cold	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-Warm
Quarrelsome	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-Harmonious
Self-assured	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-Hesitant
Interesting	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-Boring
Gloomy	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-Cheerful

APPENDIX E2

LPC FORM 1966

Principals' Questionnaire, Part B.

LEAST PREFERRED CO-WORKER RATINGS

Think of, but do not name, the person on your staff with whom you can work least well. Rate him/her on the following scales by circling the scale values in exactly the same way as you rated staff climate.

School Code Number _____

Quits easily-1--2--3--4--5--6--7--8-Keeps trying
 Energetic -8--7--6--5--4--3--2--1-Tired
 Casual -1--2--3--4--5--6--7--8-Dedicated
 Practical -8--7--6--5--4--3--2--1-Impractical
 Intelligent -8--7--6--5--4--3--2--1-Unintelligent
 Calm -8--7--6--5--4--3--2--1-Upset
 Confident -8--7--6--5--4--3--2--1-Unsure
 Stable -8--7--6--5--4--3--2--1-Unstable
 Softhearted -8--7--6--5--4--3--2--1-Hardhearted
 Meek -1--2--3--4--5--6--7--8-Forceful
 Responsible -8--7--6--5--4--3--2--1-Undependable
 Immature -1--2--3--4--5--6--7--8-Mature
 Bold -8--7--6--5--4--3--2--1-Timid

please continue

APPENDIX E3

PAIRED LPC RATINGS 1966/1967

<u>1966</u>	<u>1967</u>
90	59
93	133
128	108
81	100
75	90
112	129
109	122
85	78
111	107
89	84
113	100
110	147
90	82
80	79
88	65
106	108
112	104
120	127
82	116
131	139
80	95
101	105
84	99
115	119
82	116
104	97
81	86
97	120
100	80
59	133
94	95
76	98

APPENDIX E4

REQUEST FOR RETEST LPC RATINGS

Dear _____:

In June 1966 you were kind enough to assist me with ratings for a research study which was reported in my M. Ed. thesis. The results of the study proved relevant to the development of theory in educational administration. It has therefore been decided to carry on with the same research program in the hope that it will provide information of value to practising school administrators. I am therefore approaching you a second time, again with the approval of the Edmonton Public School Board.

The additional data required will make no demands on your staff and very little on you. On the other hand, if you could spare five minutes to assist the present research, you would contribute valuable information which can only be provided by those administrators who assisted the initial piece of research. We are anxious to know how consistent are the variables studied, given both the changes in the composition of school staffs as between June 1966 and November 1967, and the differences in staff climate which may or may not occur as between the early and the late parts of the school year. As one of the aims of the present project is to use the same raters as in 1966, I would very much appreciate it if you could complete the attached rating sheets with reference to your present staff.

Although you now have a considerably changed, if not completely new staff, you do have two months acquaintance with your present staff, in some cases much more. Please do not regard brevity of acquaintance as a bar to making the ratings requested. While you would no doubt feel more confidence in ratings based on longer acquaintance, experience with the attached rating

please continue

sheets has indicated that useful results are obtained even when the raters have had only brief acquaintance with the groups and persons rated.

Enclosed please find a stamped addressed envelope to enable you to return your ratings with minimum inconvenience. You will note that, as in 1966, the security of ratings is protected by a coded identification of the rating sheets.

The results of the study which you assisted in 1966 have been summarized in a brief printed article, copies of which are obtainable from this office. If you are interested in receiving a copy of the article on the original study, please pencil a note to that effect on your rating sheet.

Yours sincerely,

Vincent McNamara

APPENDIX E5

GA FORM 1967

I. STAFF CLIMATE RATINGS

Use each of the following scales to rate your staff as a group. Put a circle around the number indicating your rating of the relative position of your staff on each scale.

As an example, the relative levels of warmth may be expressed in words as follows:

----8----:--7--:--6---:--5--:--4--:--3--:--2--:----1----

Extremely	Very	Quite	More	More	Quite	Very	Extremely
warm	warm	warm	warm	cold	cold	cold	cold
			than	than			
			cold	warm			

SCHOOL CODE NUMBER _____

PLEASANT	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-	UNPLEASANT
PRODUCTIVE	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-	UNPRODUCTIVE
FRIENDLY	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-	UNFRIENDLY
TENSE	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-	RELAXED
OPTIMISTIC	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-	PESSIMISTIC
FRUSTRATING	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-	SATISFYING
AGREEABLE	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-	DISAGREEABLE
FRAGMENTED	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-	UNITED
RECEPTIVE	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-	SUSPICIOUS
ENTHUSIASTIC	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-	BORED

APPENDIX E6

LPC FORM 1967

II. LEAST PREFERRED CO-WORKER RATINGS

Think of, but do not name, the person on your staff with whom you can work least well. Rate him/her on the following scales by circling the scale values in exactly the same way as you rated staff climate.

SCHOOL CODE NUMBER _____

COMPETENT	-8--7--6--5--4--3--2--1-HELPLESS
UNDERSTANDING	-8--7--6--5--4--3--2--1-CRITICAL
UNPREDICTABLE	-1--2--3--4--5--6--7--8-PREDICTABLE
VALUABLE	-8--7--6--5--4--3--2--1-WORTHLESS
CASUAL	-1--2--3--4--5--6--7--8-BUSINESS-LIKE
COMPLACENT	-1--2--3--4--5--6--7--8-AMBITIOUS
GUARDED	-1--2--3--4--5--6--7--8-OPEN
COMMITTED	-8--7--6--5--4--3--2--1-DISINTERESTED
EFFICIENT	-8--7--6--5--4--3--2--1-INEFFICIENT
DEVIOUS	-1--2--3--4--5--6--7--8-DIRECT
PERSUASIVE	-8--7--6--5--4--3--2--1-UNCONVINCING
TRUSTWORTHY	-8--7--6--5--4--3--2--1-UNRELIABLE
CONSISTENT	-8--7--6--5--4--3--2--1-ERRATIC

please continue

ACCEPTING	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-REJECTING
APATHETIC	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-VIGOROUS
CONSIDERATE	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-TACTLESS
IRRESOLUTE	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-DECISIVE
SUCCESSFUL	-8-:-7-:-6-:-5-:-4-:-3-:-2-:-1-UNSUCCESSFUL
OBSTRUCTIVE	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-HELPFUL
IMPETUOUS	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-DELIBERATE

THANK YOU FOR YOUR ASSISTANCE

APPENDIX F1

DEFINITIONS OF LEADER POSITION POWERANDTASK STRUCTURE

The heading of this sheet refers to two dimensions helping to define the favourability to leaders of the situations in which they function. It is hoped you will be able to assist a research project by making judgements concerning the degree of power held by leaders of some typical workaday groups and the complexity of the tasks faced by their groups. In order that you may make the judgements in terms of criteria used in comparable studies, you are asked to give preliminary consideration to the following definitions and examples:

By position power we mean here the degree to which the position itself enables the leader to get his group members to comply with and accept his direction and leadership. Position power is, therefore, highly related to French and Raven's concepts of legitimate power and reward-and-punishment power. It is thus the potential power which the organization provides for the leader's use.

Position power can be readily measured or scaled in most situation. It is usually quite clear whether the leader has the authority to hire and fire, whether he can give raises in rank and pay, whether he has an official title indicating his position, and whether he can be readily recognized by some signs or insignia of rank. These external signs may be formal and traditional as the mace and chain of the lord mayor's office or the gold braid and brass indicating military rank, or they may be as informal as a micrometer and calipers carried only by foremen in a particular plant or workshop. Other symbols may be the number of square feet of office space, the number of secretaries and

please continue

telephones, the size of the desk, or the name on the door and the rug on the floor.

...position power ... must clearly affect the role relationship between leader and members. It also will affect the compliance which the leader can demand from his group members.

Task Structure ... describes the nature of the task in terms of its clarity or ambiguity. Although it is not generally thought of in this manner, the assigned task in effect constitutes an order "from above". This order might be highly programmed, such as drilling "by the numbers", assembling a rifle, or operating a simple machine; or, it may be a very unstructured, vague order, such as to develop a policy which will maximize the profits of a company. The leader's job will be considerably easier if the job is highly structured than if it is vague and unspecific. This can be readily seen by noting, for example, that enlisted men frequently serve as instructors in officer training courses in which the material can be programmed, viz., in assembling and handling of weapons, in map reading, or in close order drill. The authority of the higher command is implicit in such highly structured tasks and the leader serves primarily to supervise the implementation of the task order.

In contrast, when a committee is given an unprogrammed task such as planning an annual picnic, the leader knows no more than do his members, and he cannot readily order anyone to execute such a task in a specific manner. This holds even in situations in which the leader has considerable formal power, e.g. a professor working with his assistants on a research plan, or an army officer working with enlisted specialists who are experts in their fields.

please continue

On Friday I would like to present to you two scales for applying these dimensions to some typical work groups and their leaders. Before doing so, we could discuss any queries you have concerning these criteria.

Thank you for considering this request.

Yours sincerely,

Vincent McNamara

APPENDIX F2

LPP AND TS DESCRIPTIONS FOR SET A

SET A

Three real-life workaday groups are described below. After reading the descriptions, would you rate each of the groups on the dimensions of Leader Position Power and Task Structure.

GROUP NO.	MEMBERSHIP	TASK	LEADER POSITION
I	Aircraft bomber crews	Deliver bombs on target	Crew commander is an officer senior in rank to all crew members
II	Groups of Mental Health leadership trainees	Each group had to present a case for justifying the use of elementary schools for approved research in mental health.	One member of each group was appointed group chairman.
III	Naval Reserve Officer Training Corps cadet groups. Group members were freshmen and sophomore cadets	Groups were assigned the task of developing arguments pro and con tough military training.	Group leaders were senior midshipmen appointed to supervise the freshmen and sophomore cadets. The leaders were not permitted to contribute to task solutions, but could suggest procedures and veto ideas.

APPENDIX F3

LEADER POSITION POWER CHECKLIST

Please evaluate each of the three groups with respect to the seventeen items in the checklist which follows.

The items are intended to index the power of the position, irrespective of the personal abilities to influence others of the individual occupying the position. At one extreme of leader position power would be a position where power was exercised at the absolute discretion of the incumbent. At the other extreme would be a position such as that of the elected chairmen of a committee of volunteers.

Note that the items within each set indicate progressively greater degrees of power, i.e.
e>d>c>b>a

For each item, place a mark in the appropriate cell if you consider the item applies to that group. Where you feel the item does not apply, leave the cell blank.

please continue

		GROUP		
ITEM		I	II	III
<u>LOW</u>	1a. Compliments from the leader are appreciated more than compliments from other group members.			
	1b. Compliments are highly valued, criticisms are considered damaging (when from the leader).			
	1c. Leader can recommend punishments and rewards.			
<u>HIGH</u>	1d. Leader can punish or reward members on his own accord.			
	1e. Leader can effect (or can recommend) promotion or demotion.			
<u>LOW</u>	3a. Leader chairs or co-ordinates group (i.e. is appointed or acknowledged chairman or leader) but his position does not necessarily carry other powers.			
	3b. Leader's opinion is accorded considerable respect and attention (by virtue of his position).			
	3c. Leader's special knowledge or information (and members' lack of it) permits leader to decide how task is to be done, or how group is to proceed.			
<u>HIGH</u>	3d. Leader cues members or instructs them on what to do.			
	3e. Leader tells or directs members on what to do or what to say.			

please continue

ITEM	GROUP		
	I	II	III
2a. Leader's position is dependent on members. Members can replace or depose leader.			
QUASI-DICHOTOMY-- NO INTERMEDIATE LEVELS SET			
2e. Leader enjoys special or official rank and status which normally sets him apart from (or above) group members, e.g. military rank, office in a company or organization.			
4a. Leader is expected to motivate group.			
4b. Leader is expected to suggest and evaluate the members' work.			
4c. Leader has superior, or special, knowledge about the job, or has special instructions, but requires members to do job.			
4d. Leader can supervise member's job and evaluate or correct it.			
4e. Leader knows own as well as member's job and could finish the work himself if necessary (e.g. writing a report for which all information is available).			

APPENDIX F⁴TASK STRUCTURE SCALES

The tasks faced by groups may range from clear to ambiguous, from highly structured to vague. The degree to which a group's task is structured may affect the difficulty experienced by the group in setting about the task and in co-ordinating member activities.

An example of a highly structured task is that of a sporting team (scale level 7 to 8), which wins by scoring more goals than the opposing team. An example of a task with low structure is that of telling stories about a picture (scale level 1 to 2).

Please circle the appropriate number on each scale below to indicate your assessment of the relative degree of structure in the task faced by each of the groups described. The scales refer to four dimensions of task structure, each dimension being defined in turn. Each scale ranges from 1, highly unstructured, to 8, highly structured.

Decision Verifiability

This is the degree to which the correctness of the solution or decision can be demonstrated, either by appeal to authority (e.g. quoting evidence from the census of 1960), by logical procedures (e.g. mathematical demonstration), or by feedback (e.g. examination of consequences of decision, as in action tasks).

	"Correctness of decision/solution....
Task of ..	Difficult to Easy to
	Verify verify

please continue

Task of .. Difficult to verify Easy to verify

Group I -1--2--3--4--5--6--7--8-

Group II -1--2--3--4--5--6--7--8-

Group III-1--2--3--4--5--6--7--8-

Goal Clarity

The degree to which the requirements of the task are clearly stated or known to group members.

Task of .. Vague Members perceive goals as
Clear

Group I -1--2--3--4--5--6--7--8-

Group II -1--2--3--4--5--6--7--8-

Group III-1--2--3--4--5--6--7--8-

Goal Path Multiplicity

The degree to which the task can be solved by a variety of procedures (number of different paths to the goal, number of alternatives for solution, number of different ways that the task can be completed).

Goal paths ...

Task of .. Numerous One only

Group I -1--2--3--4--5--6--7--8-

Group II -1--2--3--4--5--6--7--8-

Group III-1--2--3--4--5--6--7--8-

please continue

Solution Specificity

The degree to which there is more than one "correct" solution. (Some tasks, e.g. arithmetic problems, have only one solution that is acceptable; others have two or more, e.g. a sorting task where items to be sorted have several dimensions; and still others have almost an infinite number of possible solutions, e.g. human-relations problems or matters of opinion).

Solutions available ...

Task of ..	Numerous	One only
Group I	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-	
Group II	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-	
Group III	-1-:-2-:-3-:-4-:-5-:-6-:-7-:-8-	

APPENDIX F5

LPP AND TS DESCRIPTIONS -- SETS B AND C

TASK GROUPS BEING JUDGED

ON

LEADER POSITION POWER AND TASK STRUCTURE

SET B

GROUP NO.	MEMBERSHIP	TASK	LEADER POSITION
BI	Student surveying parties	To survey accurately assigned parcels of land	No formally appointed leader. Sociometrically most preferred team member is regarded by observers as "leader".
BII.	Staffs of service stations. Employees of company-owned gas stations in various communities.	Operating the service station. Company has detailed operating procedure for servicing, stock control, and reporting.	Manager of each service station is appointed by company.

please continue

GROUP NO.	MEMBERSHIP	TASK	LEADER POSITION
BIII.	<u>Ad hoc</u> three person discussion groups assembled during a church leadership convention.	Groups were told to prepare arguments to justify to children their position on reading prayers in school.	Leader of each group designated by experimenter.

SET C

GROUP NO.	MEMBERSHIP	TASK	LEADER POSITION
CI	The professional staffs of elementary schools.	Educate the students attending their schools.	The position of elementary school principal.
CII.	The professional staffs of junior and senior high schools.	Educate the students attending their schools.	The position of high school principal.

APPENDIX F6

REQUEST FOR JUDGEMENTS-- SETS B AND C

Dear _____:

As decided at our discussion in Wednesday's seminar, I am asking your further assistance in rating the Leader Position Power and Task Structure of different groups from those used for discussion purposes by members of your seminar group. You will recall we developed a plan to use the first three groups (Set A) for informal practice discussions, during which you could discuss with your confreres the application of the checklist and the scales to the three groups. This exercise was intended to develop your understanding of the criteria and your skill in applying them.

However, it was felt that a different approach should be followed with respect to the work-groups now presented (Sets B & C). Would you refrain from discussing the application of the criteria to these particular groups? In this case it would be preferable if you could make your analysis in isolation, so avoiding the risk of being influenced by the judgements of others.

Attached please find checklists and scales for judging the groups in sets B & C. When you have completed recording your judgements, could you return them to me, some time before the seminar of Wednesday April 10th.

Thank you for your assistance.

Yours sincerely,

Vincent McNamara

APPENDIX F7

JUDGEMENTS OF SCHOOLS ON LPP AND TSNorms for Comparison

Ratings made by Fiedler's judges
covered the following ranges

	LPP	TS
High	9.0-18.5	5.6-8.0
Low	2.0- 7.0	1.7-4.7

TASK GROUP		R/C	F	Rater							
No.	Task			II	III	VI	I	IV	VII	V	VIII

Judgements on Leader Position Power

BI	Student survey	R	3.2	0	-1	-3	-2	-1	0	-4	3
		C	-	-	-	-	-	-	-	-	-
BII	Service station	R	17.0	15	16	19	14	18	20	16	16
		C	+	+	+	+	+	+	+	+	+
BIII	Discuss. groups	R	4.5	3	2	1	7	9	-2	-3	10
		C	-	-	-	-	-	+	-	-	+
CI	Element. staffs	R		16	16	19	14	16	16	*	15
		C		+	+	+	+	+	+	?	+
CII	Sec. staffs	R		15	16	19	12	16	16	*	8
		C		+	+	+	+	+	+	?	-

Judgements on Task Structure

BI	Student survey	R	7.3	7.0	7.75	7.5	7.0	6.0	6.0	?	7.5
		C	+	+	+	+	+	+	+	?	+
BII	Service station	R	5.8	6.5	6.0	7.5	7.0	3.0	3.5	7.0	6.25
		C	+	+	+	+	+	-	-	+	+
BIII	Discuss. groups	R	2.2	2.0	1.5	2.0	3.75	1.25	2.0	3.5	1.5
		C	-	-	-	-	-	-	-	-	-
CI	Element. staffs	R		3.0	3.25	3.5	3.0	2.5	1.5	2.0	1.25
		C		-	-	-	-	-	-	-	-
CII	Sec. staffs	R		1.5	3.25	2.0	3.25	2.5	1.25	2.0	1.75
		C		-	-	-	-	-	-	-	-

R=rating (score). C=category (high/low). F=Fiedler.

*Response too highly qualified to be scored. Rater V argued that the LPP of school principals varies in relation to whether he is exercising influence with respect to instructional or managerial tasks.

Observations

1. Complete accord on schools (but for Raters V and VIII) whether or not the raters conformed to the judgements of Fiedler's judges on Set B.
2. Little difference made between elementary and secondary schools on the two dimensions.
3. In two cases only did raters disagree with Fiedler's broad categories for particular groups:
Raters IV and VIII rated service station staffs low (2/8) on goal path multiplicity and solution specificity. Rater VII judged service station staffs low on decision verifiability also.
Raters IV and VIII rated designated leaders of ad hoc church discussion groups high on LPP, checking them as having special or official rank which normally sets them apart from others of their coworkers.
4. Rater VIII checked the following items only for the leader position power of the principals of secondary school staffs: 3b, 3c, 3d, and 2e only.

APPENDIX G1

FACTOR ANALYSES - 16 TRA ITEMS1966 ELEMENTARY

COMMUNALITIES	1	2	3	4	5	6	
1	0.394	0.498	0.068	-0.136	0.042	0.339	-0.081
2	0.664	0.808	-0.022	-0.075	0.042	-0.050	-0.026
3	0.600	0.731	0.078	-0.029	-0.097	-0.001	0.224
4	0.560	0.084	0.167	-0.721	-0.012	0.070	-0.013
5	0.607	0.152	-0.019	0.114	0.050	0.725	0.207
6	0.655	0.057	0.000	-0.771	0.014	-0.062	0.228
7	0.572	-0.030	0.660	-0.326	0.111	0.035	-0.125
8	0.558	0.085	0.700	-0.023	-0.063	-0.214	0.100
9	0.568	0.043	0.731	0.044	0.004	-0.089	0.150
10	0.522	0.305	-0.118	-0.462	0.108	-0.299	0.194
11	0.653	-0.024	0.047	-0.038	0.799	0.057	-0.083
12	0.590	-0.033	-0.019	-0.012	0.674	-0.142	0.338
13	0.603	0.110	0.302	0.052	0.087	-0.695	0.079
14	0.372	0.207	0.410	0.029	0.365	0.082	-0.143
15	0.648	-0.081	-0.008	-0.138	0.067	0.068	0.783
16	0.512	0.293	0.131	-0.101	0.008	0.031	0.630
	9.077	1.782	1.792	1.510	1.282	1.315	1.397

COMMUNALITIES	<u>1967 SECONDARY</u>						
1	0.410	0.130	-0.054	-0.190	-0.464	0.321	-0.190
2	0.669	-0.025	-0.044	0.167	-0.797	0.049	0.021
3	0.685	0.192	0.029	0.052	-0.797	-0.001	0.091
4	0.608	0.761	0.016	0.087	0.002	-0.142	0.033
5	0.643	-0.066	-0.018	-0.115	-0.016	0.028	-0.790
6	0.647	0.781	0.047	-0.026	-0.066	0.161	-0.058
7	0.584	0.127	0.739	0.081	0.003	-0.021	0.123
8	0.610	0.080	0.762	0.056	-0.055	-0.019	0.129
9	0.553	-0.025	0.732	0.001	0.085	0.085	-0.039
10	0.544	0.640	0.157	0.059	-0.237	0.221	0.015
11	0.552	-0.068	0.047	0.733	-0.055	-0.059	-0.029
12	0.607	0.090	0.009	0.766	0.013	0.034	-0.101
13	0.597	-0.089	0.182	0.118	-0.002	0.110	0.728
14	0.332	0.116	0.093	0.477	-0.102	0.181	0.198
15	0.634	0.006	0.087	-0.046	-0.077	0.785	-0.038
16	0.612	0.140	-0.047	0.204	-0.051	0.720	0.167
	9.287	1.735	1.750	1.511	1.580	1.394	1.317

APPENDIX G2

FACTOR ANALYSES - 10 TRA ITEMS1966 ELEMENTARY

COMMUNALITIES		1	2	3
1	0.409	0.638	0.051	0.004
2	0.652	0.797	0.024	0.126
3	0.582	0.725	0.003	0.237
4	0.474	0.058	-0.117	0.676
6	0.588	0.055	0.038	0.764
10	0.426	0.354	0.149	0.527
11	0.580	0.095	0.750	-0.090
12	0.586	-0.007	0.748	0.161
15	0.406	0.019	0.420	0.479
16	0.375	0.307	0.220	0.482
	5.076	1.804	1.387	1.886

1967 SECONDARY

COMMUNALITIES		1	2	3	4
1	0.381	0.117	-0.235	-0.489	0.270
2	0.679	-0.017	0.168	-0.805	0.055
3	0.671	0.200	0.053	-0.792	0.004
4	0.605	0.761	0.087	-0.010	-0.134
6	0.649	0.784	-0.061	-0.075	0.155
10	0.559	0.669	0.056	-0.227	0.236
11	0.622	-0.031	0.785	-0.071	-0.007
12	0.648	0.107	0.792	-0.004	0.096
15	0.640	0.027	-0.051	-0.085	0.793
16	0.606	0.120	0.158	-0.078	0.749
	6.060	1.724	1.372	1.590	1.373

APPENDIX H1

LPC X TIME INTERACTION AMONG ELEMENTARY SCHOOLS

Cell	N	Factor A (LPC)	Factor B (Yp)	Mean EFF(3)
1	29	High	Newly-appointed	1.86
2	29	Low	Newly-appointed	2.10 (least eff.)
3	34	High	Established	1.94
4	38	Low	Established	1.61 (most eff.)

Source of Variance	df	MS	F	p
Factor A	1	0.07	0.150	0.699
Factor B	1	1.08	2.243	0.137
Interaction	1	3.35	6.986	0.009
Error	126	0.48		

APPENDIX H2

LPC X TIME INTERACTION AMONG MULTISYSTEM ELEMENTARY
SCHOOLS

Cell	N	Factor A (LPC)	Factor B (Yp)	Mean EFF(3)
1	17	High	Newly-appointed	1.94
2	13	Low	Newly-appointed	2.00 (least eff.)
3	22	High	Established	1.95
4	19	Low	Established	1.47 (most eff.)

Source of Variance	df	MS	F	p
Factor A	1	1.14	2.487	0.119
Factor B	1	0.89	1.956	0.167
Interaction	1	1.25	2.724	0.104
Error	67	0.45		

APPENDIX H3

LPC X TIME INTERACTION AMONG MULTISYSTEM ELEMENTARY
SCHOOLS (EXCLUDING RURAL)

Cell	N	Factor A (LPC)	Factor B (Yp)	Mean EFF(3)
1	7	High	Newly-appointed	1.43
2	4	Low	Newly-appointed	2.00 (least eff.)
3	12	High	Established	1.92
4	14	Low	Established	1.29 (most eff.)

Source of Variance	df	MS	F	p
Factor A	1	0.76	2.655	0.113
Factor B	1	0.00	0.002	0.965
Interaction	1	2.64	9.182	0.005
Error	33	0.29		

APPENDIX H⁴

LPC X TIME INTERACTION AMONG CALGARY PUBLIC
ELEMENTARY SCHOOLS

Cell	N	Factor A (LPC)	Factor B (Yp)	Mean NS*
1	11	High	Newly-appointed	30.99
2	16	Low	Newly-appointed	24.87
3	12	High	Established	28.98
4	19	Low	Established	32.67

Source of Variance	df	MS*	F	p
Factor A	1	0.11	0.120	0.731
Factor B	1	2.14	2.246	0.140
Interaction	1	3.25	3.412	0.070
Error	54	0.95		

*For clarity, mean effectiveness is expressed in terms of normalized scores, though the Mean Squares for the F ratios were calculated on the basis of EFF(6)

APPENDIX H5a

LPC X TIME INTERACTION AMONG JUNIOR HIGH SCHOOLS
CRITERION--ATT(IX)

Cell	N	Factor A (LPC)	Factor B (Yp)	Mean ATT(IX)
1	3	High	Newly-appointed	32.23
2	7	Low	Newly-appointed	38.23
3	8	High	Established	31.58
4	8	Low	Established	24.16

Source of Variance	df	MS	F	p
Factor A	1	47.84	0.784	0.385
Factor B	1	492.28	8.069	0.010
Interaction	1	248.11	4.067	0.056
Error	22	61.01		

APPENDIX H5b

LPC X TIME INTERACTION AMONG JUNIOR HIGH SCHOOLS
CRITERION EFF(3)

Cell	N	Factor A (LPC)	Factor B (Yp)	Mean EFF(3)
1	5	High*	Newly-appointed	1.80
2	5	Low*	Newly-appointed	1.60 (most eff.)
3	8	High*	Established	1.75
4	2	Low*	Established	3.00 (least eff.)

Source of Variance	df	MS	F	p
Factor A	1	0.55	1.171	0.295
Factor B	1	0.76	1.614	0.222
Interaction	1	2.05	4.376	0.053
Error	16	0.47		

*Since EFF(3) ratings were available on so few JHS, it was necessary to conserve the n's in the cells by dividing principals into two LPC categories at the median LPC score, rather than, as in all other cases, into top and bottom thirds.

APPENDIX H6

LPC X TIME INTERACTION AMONG SENIOR HIGH SCHOOLS

As there were so few newly-appointed senior high school principals, it was not possible to implement an AN2 study of interaction effects. However, the correlations indicate that the directions of complementary LPC effects conform to the general pattern for secondary schools

LPC rho ATT:

Newly-appointed principals

-100 (4)

Established principals

33 (26) [$p < .05$, one tail]

APPENDIX H7

LPC X TIME INTERACTION AMONG MULTILEVEL SCHOOLS
CRITERION--EFF(3)

Cell	N	Factor A (LPC)	Factor B	Mean EFF(3)
1	5	High	Newly-appointed	1.80 (most eff.)
2	9	Low	Newly-appointed	1.90
3	12	High	Established	2.00
4	11	Low	Established	2.09 (least eff.)

Source of Variance	df	MS	F	p
Factor A	1	0.07	0.145	0.706
Factor B	1	0.34	0.682	0.415
Interaction	1	0.00	0.000	0.995
Error	33	0.50		

APPENDIX H8

LPC X TIME INTERACTION AMONG ELEMENTARY-JUNIOR HIGH SCHOOLS
CRITERION--ATT

Cell	N	Factor A (LPC)	Factor B (Yp)	Mean ATT(IX)
1	7	High	Newly-appointed	25.60
2	5	Low	Newly-appointed	28.51
3	5	High	Established	22.55
4	3	Low	Established	33.31

Source of Variance	df	MS	F	p
Factor A	1	171.74	1.224	0.285
Factor B	1	0.014	0.000	0.992
Interaction	1	70.38	0.502	0.489
Error	16	140.34		

APPENDIX H9

LPC X TIME INTERACTION AMONG ELEMENTARY-JUNIOR HIGH
SCHOOLS-CRITERION EFF(3)

Cell	N	Factor A (LPC)	Factor B (Yp)	Mean EFF(3)
1	5	High	Newly-appointed	1.80
2	2	Low	Newly-appointed	2.00
3	2	High	Established	1.50 (most eff.)
4	2	Low	Established	2.50 (Least eff.)

Source of variance	df	MS	F	p
Factor A	1	0.68	2.647	0.148
Factor B	1	0.00	0.008	0.930
Interaction	1	0.38	1.464	0.266
Error	7	0.26		

APPENDIX H 10-13

LPC X TIME INTERACTIONS AMONG HIGH SCHOOLS AND ALL-LEVEL SCHOOLS

AN2 was not possible for high schools because one cell was n=1 only; for all-level schools because one cell was a null set. The correlations are therefore reported:

	<u>Newly-appointed principals</u>	<u>Established principals</u>
<u>High Schools</u>		
LPC rho ATT	13 (7)	-08 (14)
LPC(3) r EFF(3)	-33 (4)	05 (7)
<u>All-level Schools</u>		
LPC rho ATT	-36 (12)	23 (23)
LPC(3) r EFF(3)	-40 (15)	-20 (22)

INDEX OF TABULATION CONVENTIONS

CODE	Referent	Page
AL	Subsample of all-level schools (gds. I-XII)	94
AN1	One-way analysis of variance	150
AN2	Two-way analysis of variance	146
ATT	Index of effectiveness by gd. IX/XII exam	119
AUT	Autonomy score based on 8 TRA items	136
CHprof	Staff pref. for princ. as professional comp.	133
CHsoc	Staff pref. for princ. as social companion	133
COH	Degree of mutual choice within a sch. staff	132
CONFL	Degree of interpersonal conflict within st.	132
CPEL	Subsample of Calgary Public elementary sch.	94
CPS	CPEL sch. returning sufficient sociom. qnrs.	108
CPT	CPEL sch. returning TRA instrument	108
EFF(3)	Three-point effectiveness measure	116
EFF(03)	Three-point integrated eff. measure--all sch.	130
EFF(6)	Six-point eff. index for CPEL	114
EL	Subsample of elementary schools	94
EL-JHS	Subsample of elementary-junior high sch. I-IX	94
FAV	Favorability of the situation to the leader	85
GA+/M/-	Levels on which GA categorized	98
GA(3)	Three-level GA index used with r	142
HS	Subsample of high schools (VII/VIII or IX-XII)	94
JHS	Subsample of junior high schools (VII-IX)	94
LPC+/M/-	Three levels on which LPC scores categorized	142
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LPCscore]	Raw scores on LPC used as ordinal data	112
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ML	Subsample of multilevel schools	94
MLT	ML sch. returning sufficient TRA quest/aires	108
MS	Subsample of sch. drawn from several systems	94
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rho	Spearman rank order correlation co-eff.	146
SAT	Staff satisfaction index by schools	135
SCAT	School and College Ability Tests	120
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SECT	Secondary schools returning TRA questionn/es	108
SHS	Subsample of senior high schools	94
TRA	Teacher Role Attitudes (instrument)	135
TRG	Index of staff training, by school means	139
TS	Task structure	73
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Ys	Years the staff had been at the school (mean)	138