

TEACHER PERCEPTIONS OF LEADER BEHAVIOR OF
PRINCIPALS AND SCIENCE DEPARTMENT HEADS
IN SELECTED SECONDARY SCHOOLS OF
MANITOBA AND SASKATCHEWAN

A Thesis
Presented to the
Faculty of Graduate Studies and Research
The University of Manitoba

In Partial Fulfilment
of the Requirements for the Degree
Master of Education

by
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March, 1973



ACKNOWLEDGMENTS

Sincere thanks are extended to the following people:

Dr. P. J. Husby for assistance and counsel.

Dr. J. W. Peach and Dr. R. L. Hedley for encouragement and patience.

Mr. M. Yakamishyn, Dr. P. Taylor, Dr. F. Chebib, and Dr. T. Major for suggestions on experimental design.

Mrs. A. Phillips for preparation of format and final typing of thesis.

Grace et al. for many sacrifices.

ABSTRACT

The purpose of this study was to secure teacher perceptions of leader behavior of principals and science department heads in collegiates of Manitoba and Saskatchewan. These teacher perceptions were analyzed to determine whether a typical principal leader and typical science department head leader were evident. The study compared leaders from school to school and leader combinations within the school. A study of the relationships between various leader, respondent, and environmental characteristics and teacher perceptions of leader behavior of both principal and science department head was conducted.

This study was undertaken because it was accepted that leadership was a most significant function of the administrator. Improvement in leadership functioning is more certain if action taken is based upon a sound theory of leadership. Such theory is evolving but empirical evidence will assist in this development. The LBDQ-12 has been used to supply some such evidence but certain areas have been neglected. The present study was undertaken to replicate portions of former studies and supply some new evidence.

Nineteen collegiates in the three principal cities of Manitoba and Saskatchewan were surveyed. Analysis of the survey results indicated that a "system" oriented principal and "person" oriented science department head were perceived by teachers in the "average" collegiate. Individual principal and science department head profiles were "person," "system" or "transactional". Within a school the principal-science department head combinations displayed either supplementary or complementary

leadership characteristics.

Five leader characteristics and their relationships to teacher perceptions of leader behavior were analyzed. Experience prior to appointment was not related to teacher perceptions for either leader. Teacher perceptions of leader behavior were significantly related to tenure as leader for both principal and science department head. Age of leader was not related to teacher perceptions of leader behavior of principals but was significantly related to such perceptions of science department heads. For years of training and experience in the present school, the principal was the leader whose teacher perceptions had significance.

No relationship was found between respondent characteristics and teacher perceptions of leader behavior of either leader.

Three environmental variables were studied in relation to teacher perceptions of leader behavior. Teacher perceptions of leader behavior of science department head were related neither to the city in which the collegiate was located nor to size and type of school. Teacher perceptions of leader behavior of principals, though not related to the city in which the collegiate was located were significantly related to both the size and the type of school.

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CHAPTER I

THE PROBLEM

I. INTRODUCTION

But whatever the ambiguity surrounding the notion of leadership, the emphasis it has received from practitioner and researcher alike has served to consolidate firmly one simple yet fundamental point: the primary task of the administrator lies in leadership.¹

For two decades other writers, too, have recognized leadership as a vital but enigmatic sphere in the field of educational administration.² The Ohio State Leadership Studies and research efforts since have failed to produce a definitive theory of leadership. The empirical evidence which has been gathered as a result of these research efforts does suggest the probable nature of the emergent theory. The interaction of the various school personnel--superintendent, curriculum supervisor, principal, vice-principal, department head, teacher, student, parent--with one another and with the school and surrounding community will be the framework for leadership acts.

One tool that has been developed to assist in the study of leadership is the Leadership Behavior Description Questionnaire-Form XII,

¹Barry D. Anderson and Alan F. Brown, "Who's a Good Principal?" The Canadian Administrator, VI (December, 1966), 9.

²Terrence R. McKague, "Leadership in Schools," The Canadian Administrator, VII (May, 1968), 36; Warren G. Bennis, "Leadership Theory and Administrative Behavior: The Problem of Authority," Administrative Science Quarterly, IV (December, 1959), 259; E. Miklos, "Dilemmas in Providing Educational Leadership," The C.S.A. Bulletin, V (May, 1966), 26.

henceforth to be referred to as LBDQ-12. This instrument has been widely used and is generally recognized as a reliable means of measuring perceptions of leader behavior.³ Studies have been undertaken to relate profiles as measured by this instrument and various situational factors.⁴ Profiles have been collected, as measured by LBDQ-12, of various leaders--ministers, community leaders, corporation presidents, labor presidents, college presidents, and school leaders.⁵

Studies of the role of the department head in the secondary school indicate an expansion of the role in the past decade.⁶ In several comprehensive studies the scope and function of the department head were elaborated upon but the leadership function was not a primary concern.⁷

³Its reliability is discussed later in the present chapter. The extent of its use is discussed in detail in Chapter II.

⁴Alan F. Brown, "Reactions to Leadership," Educational Administration Quarterly, III (Winter, 1967) 71-72; Joseph Mikael Mansour, "Leadership Behavior and Principal-Teacher Interpersonal Relations," Dissertation Abstracts, XXX (August, 1969), 526A.

⁵Ralph M. Stogdill, Manual for the Leader Behavior Description Questionnaire-Form XII (Columbus: Bureau of Business Research, Ohio State University, 1963), pp. 8-10; Brown, op. cit., 66.

⁶Fred M. King and James V. Moon, "The Department Head in the Public Secondary School," The Bulletin of the National Association of Secondary School Principals (March, 1960), 23; Reho F. Thorum, "The Department Head in the Large Senior High School," The Educational Digest, XXXIV (March, 1969), 13.

⁷Kenneth Easterday, "The Department Chairman: What are His Duties and Qualifications?", The Bulletin of the National Association of Secondary School Principals, XLIV (October, 1965), 77-85; Donald C. Manlove and Robert Buser, "The Department Head: Myths and Reality," The Bulletin of the National Association of Secondary School Principals, L (November, 1966), 99-107; J. R. Hurnard, "The Scope of the Position of Department Head in Selected Saskatchewan Collegiates" (unpublished Master's dissertation, The University of Saskatchewan, Saskatoon, 1969), p. 81.

Relationships between perceived behavior of principal and department head and certain situational factors of both teachers and these teacher leaders--principal and science department head--may be significant in the development of leadership theory. None of the studies cited has measured these variables at one time. The present study is proposed for that purpose.

II. STATEMENT OF THE PROBLEM

Experience as a teacher and science department head as well as information from the literature on leadership theory and the role of the science department head led to the formulation of the following hypotheses:

1. Teacher perceptions of leader behavior of the science department head will differ from teacher perceptions of leader behavior of the principal.
2. Teacher perceptions of leader behavior of principal or science department head will be conditioned by biographical and situational factors of the leaders but will not be conditioned by biographical factors of the teachers.

Two general problems were formulated from these hypotheses.

General Problems

1. Are there significant relationships between teacher perceptions of leader behavior of principals and teacher perceptions of leader

behavior of science department heads?

2. Are the teacher perceptions of leader behavior of principals and science department heads related to biographical and situational factors of principals, science department heads and teachers?

Additional hypotheses were proposed from the review of studies on leadership. They were as follows:

1. Teacher perceptions of leader behavior, principal and science department head, will vary from school to school.
2. Within a school teacher perceptions of leader behavior of a principal will differ from teacher perceptions of leader behavior of a science department head.

From the entire set of hypotheses six sub-problems were formulated.

Sub-Problems

1. Are the teacher perceptions of leader behavior of the science department heads, as measured by the LBDQ-12, significantly different from teacher perceptions of leader behavior of the principals, as measured by the LBDQ-12?
2. Are the teacher perceptions of leader behavior, principal and science department head, as measured by the LBDQ-12, significantly different from one school to another?
3. Within a school are the teacher perceptions of science department head leadership, as measured by the LBDQ-12, significantly different from the teacher perceptions of principal leadership as measured

- by the same instrument?
4. Are there significant correlations between teacher perceptions of leader behavior, as measured by the LBDQ-12, of (a) principal (b) science department head and leader biographical factors--age, teaching experience before appointment, administrative experience as principal or science department head, experience in the present school, and years of training?
 5. Are there significant correlations between teacher perceptions of leader behavior, as measured by the LBDQ-12, of (a) principal (b) science department head and respondent biographical factors--age, experience, experience in present school, years of training, and sex?
 6. Are there significant correlations between teacher perceptions of leader behavior, as measured by the LBDQ-12, of (a) principal (b) science department head and situational factors--city, type of school, and size of school?

III. SIGNIFICANCE OF THE STUDY

The development of a definitive theory of leadership is dependent upon empirical evidence. There appear to be no references which indicate the analysis of the leadership role of the department head with the LBDQ-12 as a measuring device. Kitchen suggested that such investigations would be profitable.⁸ Since there are significant profiles for

⁸H. W. Kitchen, "Recent Studies Relating to Leadership," Leadership, Robert B. Carson, editor (Seminar Series for School Administrators, Volume 1. Calgary: Department of Educational Administration, University of Calgary, 1968), 26.

other leaders one would anticipate a particular profile for the science department head.

Kerlinger has emphasized the necessity of replication in leadership research.⁹ The profiles of perceived principal leader behavior and the relationships between that behavior and biographical and situational factors represent replications of several studies already mentioned. Thus the findings of the present thesis provide both original and replicative evidence.

Practical implications may be evident from the analysis of the data. A comparison of the profiles of science department head and principal may indicate whether the position of department head is a training position for the principalship. The study of the relationship between biographical or situational factors and perceived leadership behavior may produce implications of interest to those responsible for appointments.

IV. ASSUMPTIONS AND DEFINITIONS

The assumptions are associated with the respondents and the measuring instrument.

Assumptions

It is assumed that a teacher who spends at least fifty per cent of his teaching time engaged in science teaching will perceive leadership

⁹Fred N. Kerlinger, "Research in Education," Encyclopedia of Educational Research (4th ed.) (London: The MacMillan Company, 1969), 1135.

in common with full-time science teachers. It is assumed too that science teachers in a single school are similar enough that their perceptions of leadership would be common.

The final assumption is that the LBDQ-12 is a reliable and valid measure of teacher perceptions of leader behavior. The reliability coefficients prepared by Stogdill establish the former characteristic.¹⁰ The validity of the LBDQ-12 will be considered in the review of the literature.

Several terms require definition to establish the context of this study.

Definitions

Teacher Perceptions. Teacher perceptions are ". . . judgments concerning the observed behavior of a position incumbent in the performance of his role."¹¹

Leader Behavior. Leader behavior is the profile of a principal or science department head determined when the LBDQ-12 is administered to teachers in the science department.

Profile. The profile is the leader's mean score on each of the twelve subscales of the LBDQ-12.

Secondary School. A secondary school is one in which the primary

¹⁰Stogdill, op. cit., p. 11; David J. Fox, The Research Process in Education (New York: Holt, Rinehart and Winston, Inc., 1969), p. 362.

¹¹Harry G. Sherk, "The Expectations and Perceptions of Principals for the Role of the Provincially Appointed Superintendents of Schools in Alberta" (unpublished Master's Thesis, University of Alberta, Edmonton, 1964), p. 7.

function is the offering of grades seven to twelve, grades eight to twelve, grades nine to twelve, or grades ten to twelve.

Science Department. The science department is an instructional unit in the school comprised of those teachers teaching one or more of the natural sciences fifty per cent or more of the time.

Department Head. "This is a faculty member who, in addition to performing the usual duties of teaching in a department, has some responsibility for administering the affairs of the department. . . ." ¹²

Science Teacher. The science teacher will be one who spends fifty per cent or more of his teaching time in teaching one or more of the natural sciences.

V. DELIMITATIONS AND LIMITATIONS

The study was delimited with respect to locale, respondents, time of collection of data, and biographical and situational factors.

Delimitations

A survey of public high schools in Manitoba and Saskatchewan was conducted. ¹³ The results of this survey are summarized in Table I. Only 54 per cent of public high schools with four or more science teachers outside metropolitan Winnipeg, Saskatoon, and Regina had science department heads. Ninety-five per cent of such high schools in those three cities had science department heads. The study was limited to

¹² James L. Kidd, "The Department Headship and the Supervisory Role," The Bulletin of the National Association of Secondary School Principals, XLIX (October, 1965), 70-71.

¹³ A copy of the letter sent to all high schools outside the three major cities is included in Appendix A.

TABLE I

NUMBER OF SCIENCE DEPARTMENT HEADS IN PUBLIC HIGH SCHOOLS WITH FOUR OR MORE
SCIENCE TEACHERS - MANITOBA AND SASKATCHEWAN

| Number of Teachers | Saskatchewan | | | | | | | | Manitoba | | | | | | Grand Total | |
|-----------------------|--------------|--------|-----------|------|---------|------|-------|------|----------|------|---------|------|-------|----|----------------|------|
| | Regina | | Saskatoon | | Balance | | Total | | Metro | | Balance | | Total | | S | D.H. |
| | S* | D.H.** | S | D.H. | S | D.H. | S | D.H. | S | D.H. | S | D.H. | | | | |
| Under 30 | 1 | 1 | 1 | 1 | 6 | 2 | 8 | 4 | 2 | 0 | 8 | 2 | 10 | 2 | 18 | 6*** |
| 30 - 39 | 3 | 3 | 2 | 2 | 10 | 8 | 15 | 13 | 4 | 4 | 8 | 3 | 12 | 7 | 27 | 20 |
| 40 - 49 | 2 | 2 | 1 | 1 | 2 | 2 | 5 | 5 | 5 | 5 | 1 | 1 | 6 | 6 | 11 | 11 |
| 50 - 59 | - | - | 3 | 3 | 1 | - | 4 | 3 | 3 | 3 | - | - | 3 | 3 | 7 | 6 |
| 60 - 69 | - | - | - | - | 1 | 1 | 1 | 1 | 5 | 5 | - | - | 5 | 5 | 6 | 6 |
| 70 - 79 | 2 | 2 | - | - | 1 | 1 | 3 | 3 | 2 | 2 | 1 | 1 | 3 | 3 | 6 | 6 |
| 80 - 89 | 1 | 1 | 2 | 2 | - | - | 3 | 3 | 4 | 4 | - | - | 4 | 4 | 7 | 7 |
| 90 - 99 | - | - | - | - | - | - | 0 | 0 | 1 | 1 | - | - | 1 | 1 | 1 | 1 |
| Total | 9 | 9 | 9 | 9 | 21 | 14 | 39 | 32 | 26 | 24 | 18 | 7 | 44 | 31 | 83 | 63 |
| Percentage | 100 | | 100 | | 67 | | 82 | | 92 | | 39 | | 70 | | 76 | |

*** Table I is read as follows: Of 18 public high schools with under 30 teachers and four or more science teachers, 6 have science department heads.

* School

** Science Department Head

those three cities.

Respondents were limited to the principal, science department head, and teachers of the science department in collegiates where permission of the principal to conduct the survey had been granted. To maintain a study of reasonable magnitude, in schools with more than six teachers in the science department, five teachers were chosen by random selection to complete the LBDQ-12 questionnaires.

Data were collected in the month of June, 1970.

Because this study is to emphasize perceptions of principal leader behavior and perceptions of science department head leader behavior, schools were selected where such perceptions would be reasonably stable. Within the senior and regular public high schools of Manitoba and Saskatchewan schools were selected where the office of science department head had been established for a period of three years or more.

The biographical factors of principal and science department head were limited to five--age, teaching experience before appointment, administrative experience, experience in the present school, and years of training. The biographical factors of respondents were limited to age, experience, experience in present school, years of training, and sex. Situational factors were limited to size of school, type of school, and city.

Limitations

Several limitations became evident as the study developed. The absence from the sample of collegiates from the largest division in

metropolitan Winnipeg left a particular area of schools unrepresented.¹⁴ The inclusion of three schools where only three teacher respondents were available may have weakened the validity of perceptions in those collegiates. The administration of the questionnaires in the month of June when teachers are distracted by "end-of-year" routine weakened the perceptions.

VI. ORGANIZATION OF THE STUDY

The review of the related literature comprises Chapter II. Several areas are explored. Selected theoretical and research material is reviewed to indicate the current state of leadership theory. The literature and research material on the department head is reviewed with emphasis on the leadership function. The development of the LBDQ-12 is outlined, its use in research to date is surveyed, criticisms of the instrument are discussed, and justification for its use in the present study is presented.

Study design is outlined in Chapter III. The questions from the LBDQ-12 are categorized in the twelve components of leadership. The methodology employed in gathering the data is outlined. Finally the statistical treatment applied to the data is summarized.

The analysis of the data is outlined in Chapter IV. A Two-Way Analysis of Variance (Repeated Measures Design) was used to test for significant relationships between teacher perceptions of leader behavior of principals and science department heads. The same design was employed to test for significant relationships between teacher

¹⁴Infra, p. 55.

perceptions of leader behavior of principals and science department heads and some biographical as well as situational factors. Where significance was established two steps were used to evaluate the significance--profiles of the data, and Scheffe tests. The Phi coefficient was used to investigate correlation relationships with one biographical factor--sex. The hypothesis related to relationship between perceived leader behaviors between schools and within schools was tested by comparing individual scores in relation to the standard error of the mean for the group. Profiles were constructed for each principal/department head combination.

The final chapter recapitulates the entire study. A statement of the major findings of the study follows the recapitulation. Answers to the questions presented in this chapter represent the general conclusions. The study concludes with a discussion of implications of the study.

CHAPTER II

REVIEW OF THE LITERATURE

I. INTRODUCTION

The review of the literature which follows is presented in three sections. First, theoretical studies in leadership are reviewed and supplemented by findings from research which have special relevance for the present study. Second, the department head's role as a leader is surveyed by reference to both literature and research material. Finally, the history of the development and use of the LBDQ-12 is followed by a brief critique of the instrument.

II. LEADERSHIP THEORY AND RESEARCH

This brief resume of the theory and research on leadership focuses on the Ohio State Leadership Studies.

Trait Theory

Though leadership has been a topic for consideration since antiquity,¹ the scientific management school of the pre-World War I era will serve as a useful base from which to initiate the review of leadership theory. The scientific management school considered the industrial worker so inadequate in his own right that a structured plan was a necessity for efficient operation.² This emphasis increased so

¹Chester M. Nolte, An Introduction to School Administration (New York: The MacMillan Company, 1966), Chapter I.

²Warren G. Bennis, "Leadership Theory and Administrative Behavior: The Problem of Authority," Administrative Science Quarterly, IV (December, 1959), 263.

leadership in the twenties became the worship of the organization chart.

Perhaps as a reaction to this impersonal mechanistic approach 'human relations' became the vogue of the thirties. The work of Moreno, Mayo, Roethlisberger, Lippitt and White--to name but a few--was based upon the supposition that the motivation for work arose from socio-psychological needs. Leaders, then, were those who helped followers meet these needs.³

But what manner of leader would help followers meet needs? One early concept of leadership is often described as the 'great man' theory.⁴ If the great man controlled the destiny of the nation why was he capable of so doing? Characteristic traits must be evident if one were to observe such a leader. As observation proceeded the list of traits grew.

In the early development heredity was hypothesized as the source of the traits. Later environment was acknowledged as the developer of latent traits. However, traits so numerous could scarcely be equivalent, yet attempts at ranking failed. Overlapping of traits was another weakness of this theory.

Situationist Theory

Brown's laws of leadership signalled a shift from the trait

³Ibid., 266.

⁴Abraham Zaleznik, Human Dilemmas of Leadership (New York: Harper and Row, 1966), p. 160.

theory.⁵ Brown's leader possessed 'membership-character' in a 'social field.' He had to recognize the present structure and the long term trends of this field. In this field he could only increase his leadership strength by a corresponding reduction in his freedom. Situation, then, was significant in leadership acts.

Barnard continued the destruction of the trait approach.⁶ He was the first of many writers to recognize the necessity for theory and his writings ". . . contain more insights into the nature of administration than any produced before or since. . . ." ⁷

Barnard stated that cooperation was the basis of all executive functions. Cooperation consisted of synthesizing in action the physical, biological and social factors. The strategic factor in cooperation was leadership. Leadership would concern itself with the effectiveness and efficiency of the group. Effectiveness was the degree to which the group realized its objectives. But the group had to be maintained if it were to function and efficiency was the measure of group maintenance.

Barnard extracted these conclusions from personal observations during a career as an extraordinarily successful business executive.

⁵ John K. Hemphill, Situational Factors in Leadership (Columbus: The Ohio State University, 1949), pp. 7-8.

⁶ Chester I. Barnard, The Functions of the Executive (Cambridge, Mass.: Harvard University Press, 1938), Chapters 2, 16.

⁷ Daniel E. Griffiths, "Some Attempts at Theorizing in Administration," Educational Administration: Selected Readings, Walter G. Hack, et al., editors (Boston: Allyn and Bacon, Inc., 1965), p. 117.

To this extent his theory was based upon empirical findings.

Barnard then became the creative artist in his theory development. Leadership was more than group efficiency and effectiveness. It was an art whose dynamic expression was moral creativeness--an art whose purpose was to combine individual development and cooperation to the maximum benefit of both. This task, Barnard felt, was not in the province of science but of philosophy and religion.

The demise of the trait approach was evident ten years later when Stogdill completed his survey of leadership literature. "This study was the single most important factor in swinging research in leadership away from the trait approach."⁸

Stogdill analyzed 120 of 124 studies in which an attempt had been made to determine traits and characteristics of leaders.⁹ He found that six methods, including the listing of traits considered essential to leadership, were used to study leaders.

The attributes most often associated with successful leadership were as follows:

- (a) Capacity for ready communication.
- (b) Specialized knowledge or scholarship.
- (c) Ability to get things done.
- (d) Alertness to the surrounding environment.
- (e) Understanding of situations.
- (f) Intelligence.
- (g) Originality.

⁸Daniel E. Griffiths, "Research and Theory in Education Administration," Perspectives on Educational Administration and the Behavioral Sciences, W. W. Charters, et al., (Eugene: University of Oregon, 1965), p. 47.

⁹Ralph M. Stogdill, "Personal Factors Associated With Leadership: A Survey of the Literature," The Journal of Psychology, XXV (1948), 35-71.

- (h) Application and industry.
- (i) Know what they want to accomplish.
- (j) Not likely to be swayed from their convictions.
- (k) High in confidence and self-esteem.
- (l) Physical activity and mobility.¹⁰
- (m) Able to work for group welfare.

Stogdill stressed that many of these relationships were not well understood and required further study. Five general factors emerged from his survey of personal leadership--capacity, achievement, responsibility, participation, and status. The survey indicated that these factors were modified by the situation in which the leader functioned.

The findings suggest that leadership is not a matter of passive status, or of mere possession of some combination of traits. It appears rather to be a working relationship among members of a group, in which the leader acquires status through active participation and demonstration of his capacity for carrying cooperative tasks through to completion.¹¹

Stogdill's survey was part of a general mobilization of forces to study the leadership problem. The Ohio State Leadership Studies were begun in 1945. The National Council of Professors of Educational Administration (NCPEA) was formed in 1947. This group initiated the Cooperative Program in Educational Administration (CPEA) in 1950. The University Council for Education Administration (UCEA) was formed in 1956. The work sponsored by these organizations and some individual theorists represents an elaboration and refinement of the ideas presented for consideration by Stogdill.

¹⁰ Ibid., 44-60.

¹¹ Ibid., 66.

Structural-Functionalist Theory

The investigators of the Ohio Leadership studies recognized that relationships should be established empirically before theory formulation. However empirical research should be systematic and structured designs were necessary to systematize the search. The initial design which was based upon a study of literature to that date, 1945, decided on the necessity for measures or categorizations of the following variables:

- (a) Group structure and functional differentiation.
- (b) Responsibility, authority and delegation.
- (c) Individual work performance.
- (d) Member role behavior, including leader role behavior.
- (e) The structure of working interactions.
- (f) The structure of informal interactions.
- (g) Member expectations and satisfactions.
- (h) Group outputs, including productive effectiveness.

The following two variables were to be added:

- (i) Personality.
- (j) Individual's system of values in terms of which he evaluates issues and events.

The following two variables were recognized but not included because it was felt necessary to limit the work to manageable proportions:

- (k) Ecological and environmental factors.
- (l) Intergroup relations.¹²

Hemphill's doctoral dissertation outlines the direction taken by many subsequent research studies.¹³ By the use of the situational

¹²Ralph M. Stogdill, "Intragroup-Intergroup Theory and Research," Intergroup Relations and Leadership Approaches and Research in Industrial, Ethic, Cultural, and Political Areas, Muzafer Sherif, ed. (A Publication of The Institute of Group Relations, The University of Oklahoma. New York: John Wiley and Sons, Inc., 1962), pp. 49-50.

¹³John K. Hemphill, Situational Factors in Leadership (Columbus: The Ohio State University, 1949), Chapter 5.

approach combined with a system of group dimensions and facilitated by a questionnaire as a research tool he formulated a number of hypotheses for further testing. For example, Hemphill concluded that the leader's most important function was likely "maintaining group membership as a satisfying experience."¹⁴ Two other most significant general conclusions were stated. Every leadership situation was not unique. One would not have to be satisfied with broad generalities to describe the qualities of all leaders in all situations.

Cartwright and Zander in a review of the theory of leadership and group performance hypothesized that two group objectives were goal achievement and maintenance of the group.¹⁵ They supported their hypothesis by reference to several researchers. Katz and Kahn delineated effective groups by nine supervisory actions which kept the group working but maintained cohesiveness. Lickert found the good leader was one who secured participation for specific goals. Fiedler stressed performance of needed functions. Cattell suggested that any action that contributed to the group was a leadership action. Shartle noted that leadership behavior that was high in consideration and initiation of structure tended to increase group effectiveness.

Stogdill, Shartle, and associates of Ohio Leadership Studies

¹⁴ Ibid., p. 100.

¹⁵ Dorwin Cartwright and Alvin Zander, Group Dynamics Research and Theory, 2nd edition (New York: Harper and Row, Publishers, 1960), chapter 25.

conducted a study to analyze performance of leaders.¹⁶ Two hypotheses were formulated to guide empirical work. Leader behavior was multi-dimensional but the dimensions were finite and could be measured. The pattern of leadership behavior would be determined by position and type of organization.

Analysis revealed eight independent dimensions which accounted for sixty per cent of the variability in job performance. This was accepted as verification of the first hypothesis. Factor profiles indicated that for a given position there were common profiles. Sometimes this was a single factor but most often two or more factors were common. Finally, for five of the twenty-seven specialties identified, sub-group profiles indicated the organization determined within job specialization. This served as verification of the second hypothesis.

In the performance studies an attempt was made to measure leadership using five categories: (1) communication; (2) organization; (3) integration; (4) representation; and (5) behavior in relation to juniors. Two major components--consideration and structuring interaction--emerged from the analysis. Production emphasis and social sensitivity appeared as minor components of leadership. The small number of items precluded high reliabilities in this experiment.

In the series of studies carried out by the Ohio Leadership researchers, the second study of interest looked at the interaction

¹⁶Ralph M. Stogdill, Carroll L. Shartle and Associates, Patterns of Administrative Performance (Bureau of Business Research, Monograph No. R-81. Columbus: The Ohio State University, 1956). Selected material was abstracted from each chapter of the monograph.

aspect of the leadership function.¹⁷ The early Ohio studies revealed that the number of variables that determined interaction was larger than had been anticipated. However, it was still felt that classification would be possible and classification would make understanding more likely.

Sociometric studies were used to initiate the classification process. The reliability of the various measures was tested and a conclusion reached that a realistic description of an organization's structure and operations was possible. The most pertinent conclusions follow. Some working relations were conditioned by the formal structure while others were conditioned by factors specific to each separate organization. Subordinates tended to prefer as leaders those who interact with subordinates. A member's pattern of working relationships was related in some degree to his leader's behavior, as perceived by those above and below the leader.

This study established too that responsibility and authority may be closely related to personal interaction structures. "Authority" described relationships among members and between each member's responsibilities and the freedom he was allowed in making decisions and carrying out decisions. The failure of the organization to specify clearly lines and limits of authority and the restriction or expansion of authority by other members or the individual represented the problem areas. The following relationships were discovered. When leaders delegate more

¹⁷Ralph M. Stogdill, Leadership and Structures of Personal Interaction (Bureau of Business Research Monograph No. R-84. Columbus: The Ohio State University, 1957). Selected material was abstracted from each chapter of the monograph.

responsibilities subordinates regard them as better leaders and rate themselves higher on responsibility and authority, and delegate more responsibilities in turn. When the leader has a high degree of authority the responsibility of the subordinate is reduced and he delegates less. Delegation was most affected by an immediate superior but authority was most conditioned by a remote superior. The responsibility scores of leaders and subordinates was positively correlated in large organizations but negatively correlated in small organizations. Finally the conclusion was reached that the leadership process was more smoothly maintained in a stratified organization.

A third group of studies were directed at roles in organizations. Getzels and Guba pictured the function of administration as the allocating and integrating of roles and facilities to achieve goals of the social system.¹⁸ Any social system demonstrates two classes of phenomena. One class, the nomothetic, dealt with roles and expectations that will fulfil the goals of the system. The idiographic class dealt with individuals and their personalities and need dispositions. But personality and role were independent and the interaction of the two would produce conflict. In addition there would be conflict within each of the classes.

Empirical studies of these relationships were conducted by

¹⁸ Jacob W. Getzels, "Administration as a Social Process," Administrative Theory in Education, Andrew W. Halpin, editor (New York: The Macmillan Company, 1958), Chapter 7.

Gross, Stogdill, and others.¹⁹ These studies verified the existence of conflicts hypothesized by Getzels and Guba. The studies also indicated the theory could be refined somewhat. For example, as Getzels and Guba had hypothesized, when leader and subordinate agreed on expectations, role conflict was not present but it was found that performance was often not very obvious. Subordinates did tend, as hypothesized by Ohio researchers, to supplement leader activities but to such an extent that this represented a tendency to maintain the 'status quo' in organizations, a result not hypothesized.

These people had recognized the resolution of role conflict as a major task of leadership behavior and had suggested this would be accomplished by reducing incongruities between expectations and performance and by resolving inconsistencies among expectations. Argyris suggested that incongruence of the individual and organization is inevitable.²⁰ He suggested that when authenticity is restored to the interpersonal relations in the organization the growth of both the individual and organization is possible and some resultant conflict will produce a healthy atmosphere.

¹⁹ Neal Gross, Ward S. Mason and Andrew W. McEachern, Explorations in Role Analysis: Studies of the School Superintendency Role (New York: John Wiley and Sons, Inc., 1958) Chapter 17; Ralph M. Stogdill, Ellis L. Scott and William E. Jaynes, Leadership and Role Expectations (Bureau of Business Research Monograph No. R-86. Columbus: The Ohio State University, 1956), p. 130; Elmer Ferneau and Donald C. Moyer, cited by Getzels, op. cit., p. 160.

²⁰ Chris Argyris, Integrating the Individual and the Organization (New York: John Wiley and Sons, Inc., 1964).

Andrews noted, late in the fifties, that leadership theory had moved in a single decade from 'traits theory' to 'situationist theory' to 'structural-functionalist theory.'²¹ Several attempts have been made to synthesize a comprehensive leadership theory from these research findings. Two of these attempts are significant to the present study.

The Hemphill Theory

Hemphill proposed the following theory of administration as problem solving.²² A problem was a state of affairs perceived with dissatisfaction. Problems might be solved by chance, by conforming to pre-established structures-in-interaction, or by displaying leadership. Whether the leadership act was undertaken was dependent on the leader's dissatisfaction with the situation, the strength of his 'social-need disposition' and his expectation about the possible consequences of the act.

The purpose of the leadership act was to produce 'structure-in-interaction.' If 'structure-in-interaction' resulted the leadership act was successful. If the 'structure-in-interaction' also contributed to the solution of the problem, the leadership act that initiated it was effective. Success was dependent upon the satisfaction group members anticipated from the interaction and the individual's perception of his freedom to accept or reject the suggested interaction. Effectiveness

²¹J. H. M. Andrews, "Recent Research in Leadership," Canadian Education, XIII (September, 1958), 15-24.

²²John K. Hemphill, "Administration as Problem-Solving," Administrative Theory in Education, Andrew W. Halpin, editor (New York: The Macmillan Company, 1958), Chapter 5.

was dependent on a variety of variables such as novelty of solution, size of group, spatial and temporal relations of acts to be coordinated, and ability of group members.

Since much energy of the group is devoted to maintenance of the group the leader in his interactions must avoid acts that would threaten this need satisfying potential of the group.

The Stogdill Theory

Stogdill proposed that three input variables--performance, interactions, and expectations--represented aspects of behavior that were necessary for a description of group behavior.²³ Performance was any action of any individual which gave his group identity; interactions were actions and reactions within the group; expectation was readiness for reinforcement. As a result of group structure and operations, that is freedom of action by members and performances of members alone or in interaction, the input variables were transformed into the achievements of the group. These achievements were analyzed in terms of productivity, integration, and morale.

"The leadership potential of position may be defined as the degree of freedom it provides for the initiation and maintenance of structure in expectations and interaction."²⁴ Role differentiation would occur as members acted alone or in interaction but in the context

²³Ralph M. Stogdill, Individual Behavior and Group Achievement A Theory The Experimental Evidence (New York: Oxford University Press, 1959), Chapter 1.

²⁴Ibid., p. 126.

of a defined role structure. Group productivity then would be supported by a type of leadership that provided role structure and freedom of action but at the same time considered and reinforced the expectations of group members. This theory was the conceptual basis for the LBDQ-12 questionnaire.

III. THE SCIENCE DEPARTMENT HEAD AND LEADERSHIP

The survey in this section concentrates on those portions of research and theory that are related to department head leader behavior.

Early Research

The early literature on the position of department head was very limited. Foster, in 1928, described him as one who possessed expertise in his field and so was capable of supervising instruction and directing his department.²⁵ Appointments were made on the basis of superior teaching ability, administrative ability, or length of service in that order of preference. As well as handling departmental routine, he had to exercise leadership by a variety of assignments. For example, Koos summarized a study that revealed that in fifty per cent of schools surveyed the department head recommended texts, visited classrooms for supervisory purposes, held conferences with groups of teachers and with individuals, prepared illustrative lesson plans, prepared courses of study, rated teachers, and recommended teachers for appointment.²⁶

²⁵ Herbert H. Foster, High School Administration (New York: The Century Company, 1928), pp. 109-10.

²⁶ Leonard V. Koos, et al., Administering the Secondary School (New York: American Book Company, 1940), p. 480.

During the forties the emphasis seemed to shift to stress on classroom visitation and improvement of instruction. Newson, for example, suggested that, "In his capacity of supervisor he is not only the alter ego of the principal but a supervisor in his own right."²⁷

Many writers of this period noted weakness in department head leadership and suggested solutions. McNerney felt the department head could do an effective job of supervision if he possessed the personal attributes and was given time and training.²⁸ Some writers expected the principal's supervision could be improved if he utilized department head potential more effectively.²⁹ Others recognized the strength of department head leadership was the result of his position as 'one of the teachers.'³⁰ They suggested a clear definition of duties would solve many problems. Lack of time and lack of supervisory training were the problems to be solved according to Gwynn.³¹

Gwynn noted too, in 1961, that the duties specified for department heads in a study of 1948 were very similar to those listed in a study of 1930. Kidd elaborated upon this and cited still another study

²⁷William N. Newson, Administrative Practices in Large High Schools (New York: American Book Company, 1940), p. 314.

²⁸Chester T. McNerney, Educational Supervision (New York: McGraw-Hill Book Company, Inc., 1951), pp. 33-34.

²⁹J. B. Edmonson, Joseph Roemer and Francis L. Bacin, The Administrator of the Modern Secondary School, fourth edition (New York: The MacMillan Company, 1953), p. 101.

³⁰Robert C. Hammock and Ralph S. Owings, Supervising Instruction in Secondary Schools (New York: McGraw Hill Book Company Inc., 1955), p. 81.

³¹Minor J. Gwynn, Theory and Practice of Supervision (New York: Dodd, Mead and Company, 1961), pp. 232-35.

in 1959 which indicated little change.³² This prompted Kidd to suggest that this was evidence that the potential of the position had not been tapped. To tap this potential was the aim of a series of studies that appeared in the early sixties.

Current Research

Three qualifications were most important in selecting a successful department head.³³ The department head should have considerable teaching experience before appointment, should be able to work with people, and should be recognized as a leader. Duties should focus on three main areas--improvement of instruction, development of curriculum, and fostering of communication within the department, with other departments, and with administrators.³⁴

Failure of the department head to fulfil successfully the duties outlined was attributed to failure to provide him with adequate training in supervision or with failure to allow him sufficient time to use the abilities he did possess.³⁵ In addition to more time and training

³² Jim L. Kidd, "The Department Headship and the Supervisory Role," The Bulletin of the National Association of Secondary School Principals, XLIX (October, 1965), 72.

³³ Kenneth Easterday, "The Department Chairman What are His Duties and Qualifications?" The Bulletin of the National Association of Secondary School Principals (October, 1965), 77-85.

³⁴ Claude E. Stephenson, "Department Organization for Better Instruction," The Bulletin of the National Association of Secondary School Principals, XLV (December, 1961), 11-12.

³⁵ Robert N. Bush and Dwight W. Allen, A New Design for High School Education Assuming a Flexible Schedule (New York: McGraw-Hill Book Company, 1964); Harl R. Douglass, Rudyard K. Bent and Charles W. Boardman, Democratic Supervision in Secondary Schools (Boston: Houghton Mifflin Company, 1961), pp. 28-29; Gwynn, op. cit., p. 233.

to improve the department head functioning, experimentation should be fostered by the department head as an avenue of improvement.³⁶ Ultimately his success would depend upon the attitude of the school administrator.³⁷

Studies of the late sixties reaffirmed the findings noted above but a shift in emphasis was evident. The qualification that the department head be recognized as a leader was given increased attention.³⁸ The authors of several studies still agreed that lack of training and lack of time to implement measures were the major causes of the failure of the department heads to be effective leaders.³⁹ But the summary of three companion studies by Buser, Brenner, and Ciminillo presents evidence that other problems exist that hamper the department head in his attempts to be effective. "More than one-third of the principals, teachers, and heads of departments surveyed agreed that it is the least understood position in the secondary school."⁴⁰ It is least understood because some functions that are considered essential

³⁶Harl R. Douglass, Modern Administration of Secondary Schools, second edition (New York: Blaisdell Publishing Company, 1963), p. 29; Ross L. Neagley and N. Dean Evans, Handbook For Effective Supervision of Instruction (Englewood Cliffs, N.J.: Prentice-Hall Inc., 1964), pp. 106-7.

³⁷Kidd, op. cit., p. 73.

³⁸Donald C. Manlove and Robert Buser, "The Department Head: Myths And Reality," The Bulletin of the National Association of Secondary School Principals, L (November, 1966), 100; Reho F. Thorum, "The Department Head in the Large High School," The Education Digest, XXXIV (March, 1969), 12.

³⁹Manlove and Buser, op. cit., 106; Thorum, op. cit., 13.

⁴⁰Manlove and Buser, op. cit., 102.

for effective supervision: preparing demonstration lessons, supervising teachers through classroom visits and observations--were either not assigned as functions by principals or department heads did not understand that these duties had been assigned. It is the least understood that these duties had been assigned. It is the least understood position because principals envisioned the actual department head's performance as the ideal performance but teachers seldom agreed with this perception.⁴¹ Least understood because only forty-eight per cent of teachers felt that the most qualified person in the department was department head. Satlow detailed some of the evidence presented by teachers to justify this conclusion.⁴²

A study reported in 1966 will serve as an effective summary of findings cited to 1966 with respect to Department Head leadership.⁴³ Stern studied the role of the secondary school department head in the improvement of instruction by the critical incident technique. In his survey, 674 teachers and department heads reported 674 effective and 519 ineffective incidents. The incidents were categorized as follows:

- (a) Maintaining organization communication.
- (b) Securing essential services from individuals.
- (c) Formulating purposes and objectives.
- (d) Managing. ⁴⁴
- (e) Scheduling.

⁴¹Manlove and Buser, op. cit., 103-4.

⁴²I. David Satlow, "Common Gripes of Teachers About Their Chairmen," Journal of Business Education, XLIV (December, 1968), 108-110.

⁴³Hans George Stern, "The Role of the Secondary School Department Head in the Improvement of Instruction" (unpublished Doctoral thesis, University of California, Los Angeles, 1966).

⁴⁴Ibid., p. 2.

The first three of these categories Stern named leadership activities and the last two were specialized in secondary schools. Stern found that activities (a) to (c) inclusive occurred significantly more often than activities (d) and (e). He concluded the department head acted more often as a leader than as a manager and scheduling person. Stern suggested the secondary school department head requires abilities beyond those expected of classroom teachers, especially in the areas of human relations, group leadership, and knowledge of curriculum. The supervisory nature of the position should be recognized by a reduced work load, and since "often, the department head's lack of group or individual communication skill appeared to prevent him from sharing the knowledge he had"⁴⁵ Stern recommended education in human relations and group leadership for department heads.

To complete this summary of department head leadership theory and research, a recent study completed in the United States, current policy in Manitoba and Saskatchewan, and a current Saskatchewan study are compared.

The following sixteen duties were chosen by seventy-five per-cent of the department chairmen and administrators in Easterday's study:

- (1) Calls meetings of the department.
- (2) Organizes and plans meetings.
- (3) Inventories and requisitions materials.
- (4) Aids principal in scheduling.

⁴⁵ Ibid., p. 102.

- (5) Aids in selection or selects new teachers.
- (6) Forms committees to review and select tests and supplementary materials.
- (7) Advises principal on problems in the department.
- (8) Forms committees to prepare, evaluate and maintain a course of study.
- (9) Acts as a liaison agent between department and administration.
- (10) Coordinates program with other schools and departments in the system.
- (11) Evaluates the department program.
- (12) Assists substitute teachers.
- (13) Is responsible for orienting new teachers.
- (14) Develops short and long range goals of the courses in the department.
- (15) Performs normal teaching duties.
- (16) Participates actively in state and national subject matter organizations.⁴⁶

These duties were placed in the upper fifty per cent in terms of current importance and desired importance by both department chairmen and administrators with three exceptions--items one, five, and ten.

Current Policy

The policy statements to be used for comparison with this list of duties were extracted from statements of duties of department heads from two school districts in Saskatchewan and one school division in in Manitoba.⁴⁷ As might be expected the policy statements were not

⁴⁶ Kenneth Easterday, "The Department Chairman What are His Duties and Qualifications?", The Bulletin of the National Association of Secondary School Principals, XLIX (October, 1965), 82.

⁴⁷ The Boards of Education for the Regina Separate School Board, "Regina Roman Catholic Separate High School District Department Heads" (Regina: Boards of Education for the Regina Separate Schools, n.d.) (Mimeographed); The Board of Education for the Regina Public School District No. 4 of Saskatchewan and the Regina Collegiate Institute, "Duties of Heads of Department" (Regina: Board of Education for Regina Public Schools, n.d.) (Mimeographed); Winnipeg School Division No. 1 "Duties of Department Heads" (Winnipeg: Winnipeg School Division No. 1, n.d.) (Mimeographed).

as specific as the list of duties outlined.

The policy statements stressed that leadership by the department head was the important function. This leadership was to result in improvement of instruction. One jurisdiction stated that all other duties were to be subsidiary to this purpose. These policy bulletins were unanimous in suggesting that the maintenance of uniform standards within the department was necessary and two of three stated that classroom visitation, especially for non-tenure teachers, was essential.

There was agreement in the statements that the department head should assist the principal in the "general organization and management" of the school. The preparation of the budget was one of the management functions that was specifically listed along with the inventories and requisitions noted in Easterday's list. The planning and conduct of department meetings, advising the principal on problems in the department, and orienting new teachers were other specific management items enumerated.

Finally two of the three policy statements made reference to two other desirable outcomes of department head leadership. Curriculum development and the growth of professional knowledge by both department head and teachers were to be fostered.

Though not specifically listed many of the items in Easterday's list--aids principal in scheduling, acts as a liaison agent between department and administration, evaluates the department program, develops short and long range goals of the courses in the department--

are doubtless assumed to be included in the general statements noted. It would appear then that the literature on the department head and policy statements of school systems in Manitoba and Saskatchewan differ only in stress. The survey by Hurnard provides some opportunity to see how closely theory and policy concur with practice.⁴⁸

Current Practice

Hurnard's survey studied the scope of the position of the department head in twelve collegiates in Regina and Saskatoon. As a result of interviews with superintendents in Saskatchewan and following a review of the related literature, Hurnard developed a thirty item questionnaire to measure three concepts--interaction, supervision and administration. The instrument sought to measure present practice and ideal practice on each of thirty items. The respondents were principals, department heads and teachers of English, mathematics, social studies, and science departments.

From eighty to ninety per cent of the respondents placed ordering materials, and eliciting suggestions from teachers for new texts or library books, as "a function," "an important function," or "a very important function" on present practice scores.⁴⁹ The following five functions were rated in the same three categories by seventy to eighty per cent of the respondents:

⁴⁸J. R. Hurnard, "The Scope of the Position of Department Head in Selected Saskatchewan Collegiates" (unpublished Master's thesis, The University of Saskatchewan, Saskatoon, 1969).

⁴⁹Ibid., p. 99.

- (1) Making sure that the individual teacher has a fair work load.
- (2) Acting as a two-way channel of communication between the principal and the teachers of the department.
- (3) Ensuring the prestige of his subject in the school by outstanding personal teaching.
- (4) Introducing new teachers to the operation of the school and of the department.
- (5) Chairing meetings at which the departmental budget is drawn up.

From fifty to seventy per cent of respondents placed the following functions in the "an important function" to "a very important function" categories:

- (1) Introducing procedures to ensure that the individual teacher's contribution to the school is recognized.
- (2) Encouraging development of and participation in program of professional growth.
- (3) Authorizing teachers to exercise autonomy in deciding what material to teach.
- (4) Advising the principal on the selection of new staff for the department.
- (5) Interpreting to teachers the objectives being sought in teaching the subjects of the department.
- (6) Informing teachers about research and new ideas in their subject area.
- (7) Developing new ways of evaluating and reporting achievement that are more meaningful for students.

All of the items enumerated were rated "a function," "an important function," or "a very important function" by seventy-five per cent or more of the respondents when they stated their expectations under ideal conditions.⁵⁰

⁵⁰Ibid., p. 98.

Three other functions were added in the ideal situation scores:

- (1) Gaining the confidence of the teachers of the department in developing procedures for evaluating teaching in the department.
- (2) Convincing the members of the department that they should develop experimental programs.
- (3) Adapting the timetable in order to meet the needs of the subjects taught in the department.

It is informative to compare the findings of Hurnard's study to the policy statements. Six questions in Hurnard's study are related to the desire for improved instruction. The respondents did not consider the following practices were assisting in improving instruction:

- (1) Encouraging teachers to visit his classroom to watch his teaching.
- (2) Controlling the content and marking of examinations in the department.
- (3) Analyzing and discussing with the individual teacher his teaching performance, after observing his teaching.

They did consider the following practices were improving instruction:

- (1) Ensuring the prestige of his subject in the school by outstanding personal teaching.
- (2) Developing new ways of evaluating and reporting achievement that are more meaningful for students.

They felt too, that in an ideal situation, the department head would be "gaining the confidence of the teachers of the department in developing procedures for evaluating teaching in the department."⁵¹

The respondents felt the general organization and management of the school was being assisted by the department head ordering

⁵¹Ibid.

materials, advising the principal on selection of new staff for the department, and by his chairing meetings at which the budget was determined.

Curriculum development was encouraged by the department head interpreting to teachers objectives being sought in teaching the subjects of the department, informing teachers about research and new ideas in their subject area, and eliciting suggestions from teachers for new text and library books.

Professional growth was occurring because the department head was encouraging the development of and participation in such programs and was authorizing teachers to exercise autonomy in deciding what material to teach. Ideally, the respondents pictured the department head convincing the members of the department that they should develop experimental programs.

The responsibilities of the department head have expanded during the past decade. In theory, policy, and practice the expansion in responsibility has brought an emphasis on the department head as a leader.

IV. LBDQ-12

In this section, the subscales of the original LBDQ and the LBDQ-12 are explained. The early use of the LBDQ-12 is summarized. Some of the chief criticisms of the LBDQ-12 are reviewed. Finally evidence that supports the use of LBDQ-12 is presented.

LBDQ - The Original

The study which analyzed performance had sought unsuccessfully to construct an instrument to measure leadership. Stogdill, Coons and others subsequently attacked this problem.⁵² Their study began by tentatively designating the following dimensions to leader behavior:

- (a) Integration
- (b) Communication
- (c) Production Emphasis
- (d) Representation
- (e) Fraternization
- (f) Organization
- (g) Evaluation
- (h) Initiation
- (i) Domination

Specific items were collected for each of these areas. A preliminary questionnaire was constructed, tested, and analyzed. The questionnaire was revised and the Leader Behavior Description Questionnaire (LBDQ) resulted. Factor analysis completed during the pre-test revealed three major ways of accomplishing the leadership job:

- (a) A leader may stress being a socially acceptable individual in his interactions with other group members.
- (b) A leader may stress "getting the job done." This would involve emphasis upon group production and concern with problems relative to obtaining the group's objectives.
- (c) A leader may stress making it possible for members of a group or organization to work together. Emphasis would be on the leader's job as one of a "group catalyst."⁵³

⁵²Ralph M. Stogdill and Alvin E. Coons, Leader Behavior: Its Description and Measurement (Bureau of Business Research Monograph Number 88. Columbus: The Ohio State University, 1957), pp. 8-9.

⁵³Ibid., p. 37.

Subsequent factor analysis by Halpin and Winer produced four factors:

- (a) Consideration
- (b) Initiating Structure
- (c) Production Emphasis
- (d) Sensitivity (Social Awareness).⁵⁴

Eighty-three per cent of the common variance was attributed to the first two factors and attempts to increase the latter two by more items in the questionnaire were not fruitful. So the LBDQ measured these two factors only. Early studies indicated that leaders who were judged successful by both subordinates and superiors were high on both factors.⁵⁵

As the Ohio workers hypothesized that there were either no general leadership traits or if they existed they could not be described in 'known terms,' this instrument did not purport to measure traits of leadership. The instrument identified consideration and initiating structure as two characteristics of the behavior of the leader as he was perceived in a given situation. It was not an attempt to measure any intrinsic capacity for leadership.⁵⁶

LBDQ-12

Since the original LBDQ had emerged as an objective and reliable method of describing leader behavior any modification of this measuring instrument would likely retain the factors--initiating structure and consideration--as significant features. However the

⁵⁴Ibid., p. 41

⁵⁵Ibid., pp. 64-85.

⁵⁶Andrew W. Halpin, Theory and Research on Administration (Toronto: Collier MacMillan, 1966), Chapter 3.

apparent oversimplification inherent in a two component leadership measurement prompted Stogdill to attempt a more complex model. From the original Hemphill model, Stogdill proposed that the role differentiation that occurred as the group functioned indicated that demand reconciliation, tolerance of uncertainty, persuasiveness, tolerance of freedom, predictive accuracy, and integration were important leader characteristics.⁵⁷ Earlier research had indicated representation, role assumption, production emphasis, and superior orientation as factors of note. So the new behavior measure, the LBDQ-12, focused upon the following twelve components:

- (1) Representation--speaks and acts as the representative of the group.
- (2) Demand Reconciliation--reconciles conflicting demands and reduces disorder to system.
- (3) Tolerance of Uncertainty--is able to tolerate uncertainty and postponement without anxiety or upset.
- (4) Persuasiveness--uses persuasion and argument effectively; exhibits strong convictions.
- (5) Initiation of Structure--clearly defines own role, and lets followers know what is expected.
- (6) Tolerance of Freedom--allows followers scope for initiative, decision, and action.
- (7) Role Assumption--actively exercises the leadership role rather than surrendering leadership to others.
- (8) Consideration--regards the comfort, well being, status, and contributions of followers.
- (9) Production Emphasis--applies pressure for productive output.

⁵⁷ Ralph M. Stogdill, Individual Behavior and Group Achievement: The Experimental Evidence (New York: Oxford University Press, 1959), Chapter 1.

- (10) Predictive Accuracy--exhibits foresight and ability to predict outcomes accurately.
- (11) Integration--maintains a closely knit organization; resolves inter-member conflicts.
- (12) Superior Orientation--maintains cordial relations with superiors; has influence with them; is striving for higher status.⁵⁸

Early Use

How effective was this new measuring device? Day used an experimental version and recorded significantly different scores for different departments and different levels within a department.⁵⁹ During 1962, Stogdill used ten of the subscales to measure leadership qualities of ministers.⁶⁰ Upon analysis he found "sizeable inter-dimensional correlations" and factor analysis revealed the presence of a general factor, several sub-general factors and several specific factors. A subsequent study with community leaders revealed similar results.⁶¹ Representation, initiation of structure, and predictive accuracy were the same specific factors in both groups. However, the general factor, sub-general factors, and several other specific factors

⁵⁸Ralph M. Stogdill, Manual for the Leader Behavior Description Questionnaire-Form XII (Columbus: Bureau of Business Research, Ohio State University, 1963), p. 3.

⁵⁹D. R. Day, Basic Dimensions of Leadership in a Selected Industrial Organization. Unpublished doctoral thesis. Cited by H. W. Kitchen, "Recent Studies Relating to Leadership" in Leadership (Calgary: University of Calgary, 1968), p. 25.

⁶⁰R. M. Stogdill, O. S. Goode and D. R. Day, "New Leader Behavior Description Subscale," Journal of Psychology, LIV (1962), 261.

⁶¹Ibid., 264.

were quite different. Further studies in 1963 supported these findings.⁶² A contemporary study by Schmidt found significant variations on subscales but high correlations between subscales.⁶³ This led Kitchen to suggest that for comparative studies, the identity of the separate subscales should be retained but some attempt should be made to strengthen the identity of each.⁶⁴

The LBDQ-12 was used along with a number of other measuring instruments to study the operation of twenty-seven organizations.⁶⁵ Among the many conclusions of this study were those attempting to relate leadership scores to output. The study indicated, for example, that consideration and delegation did not lead to high group productivity. The study indicated too that supervisory leadership was "more highly related to employee satisfaction of expectations than to group performance."⁶⁶

Kitchen suggested four areas that required further study with the LBDQ-12.⁶⁷ Scores should be related to effectiveness of the organization. The hypothesis that patterns of leadership are related to

⁶²R. M. Stogdill, O. S. Goode and D. R. Day, "The Leader Behavior of United States Senators," Journal of Psychology LVI (1963) 3-8; R. M. Stogdill, O. S. Goode and D. R. Day, "The Leader Behavior of Corporation Presidents," Personnel Psychology, XVI (1963), 127-132.

⁶³W. G. Schmidt, "Organizational Climate and Leader Behavior," The CSA Bulletin, IV (July, 1965), 40-63.

⁶⁴H. W. Kitchen, "Recent Studies Relating to Leadership," Leadership, Robert B. Carson, editor (Seminar Series for School Administrators, Volume 1. Calgary: Department of Educational Administration, University of Calgary, 1968), p. 25.

⁶⁵Ralph M. Stogdill, Managers, Employees, Organizations (Columbus: The Ohio State University, Bureau of Business Research, 1965).

⁶⁶Ibid., p. 47.

⁶⁷Kitchen, op. cit., pp. 26-27.

value orientations should be checked. He proposed too that the extent of diffusion of leadership within a school be measured. Finally, he suggested that profiles of leadership would be a valuable adjunct to the LBDQ-12.

Styles of Leadership

In 1966 the C.S.A. Leadership Seminar was jointly sponsored by the Council of School Administration and the University of Calgary.⁶⁸ It was a combined research-and-development project in which 1551 Alberta teachers described 170 administrators, largely school principals, by means of LBDQ-12 and a questionnaire concerning school situation and morale. The administrators answered a brief questionnaire regarding staff morale, situation and biographical characteristics.

The subscale scores indicated that the principal was a different leader than the minister or university president. However, factor analysis of the responses revealed that seventy-six per cent of the variation could be attributed to two factors. Rather than challenge the number of subscales Brown proposed that each subscale would contribute to a certain type of leadership. Brown proposed a circumplex model in which three types of effective principals were recognized by subscale scores.

There were principals who responded chiefly to system needs; they had high subscale scores on initiation of structure, production

⁶⁸ Alan F. Brown, "Reactions to Leadership," Educational Administration Quarterly, II (Winter, 1967), 66.

emphasis, and representation. A second group of effective principals responded chiefly to idiosyncratic needs of staff; these leaders had high subscale scores on tolerance of freedom, tolerance of uncertainty, and consideration. Finally a third group of principals responded chiefly to the need for an effective transaction between institution and person; these principals have high subscale scores on predictive accuracy, integration and superior orientation. The remaining three subscales displayed dual loadings of a slightly different nature. Persuasion and role assumption were weighted .73 and .77 respectively on "system" and .42 and .41 respectively on "person." Demand reconciliation weightings were .53 and .73 respectively.

Similar results were obtained by Punch.⁶⁹ However, the factor loadings of persuasion, role assumption, and demand reconciliation varied from the Brown study. Punch found persuasion and role assumption more heavily weighted to "system" and found demand reconciliation weightings the converse of those found by Brown. These results were used as the basis for distribution of subscales on factor areas. This distribution is outlined in Chapter III.

⁶⁹"Bureaucratic Structure of Schools and Its Relationship to Leader Behavior," Unpublished paper (Toronto: Ontario Institute for Studies on Education, 1967), cited by T. B. Greenfield, "Research on the Behavior of Educational Leaders," Alberta Journal of Educational Research, XIV (March, 1968), 62.

The instrument, LBDQ-12, had replaced the original LBDQ in many studies by this time. To illustrate the variety of studies for which it was used during the period 1966-68, four studies are cited from Dissertation Abstracts. Larsen used it to study the relationship between formal and informal structure in decision-making and the type of leadership displayed.⁷⁰ In his study he confirmed some earlier finds that new principals tended to score high on the consideration subscale while veteran principals scored high on the representation subscale. Cave used LBDQ-12 to study the conflicts in Michigan school districts with the introduction of collective negotiations between school board and teachers' unions.⁷¹ Tarallo used the instrument to study the effect of pre-principalship activities on future leadership behavior.⁷² In-service training and some university classes contributed to more effective leadership. Garrison studied innovation and its

⁷⁰ Jack Lyle Larsen, "A Study of the Decision-Making Process in the High School and the Leader-Behavior Role of the Principal in the Process," Dissertation Abstracts, XXVII (April, 1967), 3265-A.

⁷¹ David Raymond Cave, "A Critical Study of the Leader Behavior of School Administrators in Conflict with Teachers' Unions," Dissertation Abstracts, XXVIII (September, 1967), 895-6A.

⁷² Joseph John Tarallo, "The Relationships Between Pre-Principalship Activities of Secondary Principals and Teacher Perceptions of Principals' Leadership Behavior," Dissertation Abstracts, XIX (February, 1969), 2500A.

relationship to scores on LBDQ-12.⁷³ This study produced evidence to support an earlier finding of Brown that frequency of leadership is an important determinant of successful leadership.

Critique

The LBDQ and LBDQ-12 have not been accepted without reservation. Charters attempted replication of an LBDQ study and found no relationship between the original study and the replication.⁷⁴ He then reinspected Halpin's work on the validity of LBDQ and discounted Halpin's reliance on significant between-system differences as shown in analysis of variance. Charters suggested these between-system differences might have been attributed to respondent groups as readily as to the administrator.

Charters recognized no firm evidence concerning the construct validity of LBDQ. He felt the occasional relationships found between questionnaire dimensions and other variables were only a measure of rater variability. Charters contended that if the LBDQ were reliable there should be greater agreement among respondents closer to a leader than those most distant; he attempted a study and found no such results.

These weaknesses were associated, according to Charters, with what he called "institutionalized leadership." Functions that in small

⁷³ Joe MacGarrison, "The Leader Behavior of Oklahoma Secondary School Principals," Dissertation Abstracts, XIX (July, 1968), 88A.

⁷⁴ W. W. Charters, Teacher Perceptions of Administrative Behavior, U.S. Department of Health, Education and Welfare, Office of Education, Research Project No. 929. (St. Louis: Washington University, 1964), cited by Donald A. Erickson, "The School Administrator," Review of Educational Research, XXXVII (March, 1967), 417-18.

groups would be associated with the leader become "impersonal mechanisms" in the bureaucracy of the school. So the respondent is describing the organization and not the leader.

Stogdill, Goode, and Day in a study of perceptions of leader behavior of corporation presidents presented evidence to support the validity of the LBDQ-12 subscales as measures of "clearly differentiated factors."⁷⁵ Approximately 150 corporation presidents who were recognized as highly competent were chosen as the potential population. From this group a "highly differentiated" sample of 55 leaders became the sample.

When factor analysis was applied to the LBDQ-12 means each subscale was strongly weighted on a separate factor, and other subscales produced only low loadings of the factor. The only exception was factor one which had heavy loadings on both production emphasis and initiation of structure. Three had loadings of .21 to .48 on three or four factors in addition to the main one; the rest had only one factor larger than .25 in addition to the main one.

Stogdill and associates' extensive study of 27 organizations supplied data which demonstrated the validity of the LBDQ-12.⁷⁶ Factor analyses were carried out which related the subscale scores of LBDQ-12 to a variety of variables such as employee satisfaction, group drive and enthusiasm, group cohesiveness, and quality of output for separate

⁷⁵Stogdill, Goode and Day, op. cit., p. 131.

⁷⁶Ralph M. Stogdill, et al., Managers, Employees, Organizations (Columbus; Ohio: Ohio State University, 1965).

organizations and types of organizations. Throughout the study leader consideration and structuring often loaded on the same factor. It became apparent from the study though that these two patterns of supervisory behavior served different functions. Though the LBDQ-12 subscales did not relate to productivity in these studies, they did have what Stogdill called "primary impact on employee attitudes" to group morale and cohesiveness, the other two output variables Stogdill had proposed.⁷⁷

Brown's criticism, if it may be so labelled, was directed at the nomenclature of the instrument.⁷⁸ Brown contended that leadership is a transaction. If this is so, then the nature of the leadership is measured by the quality of transactions between leader and follower. One measure of the quality of transactions is the perceptions of such transactions by the follower. Brown argued that the LBDQ-12 was a valid measure of "leadership" though it was not a measure of leader behavior.

Greenfield's chief criticism centered about the failure of the LBDQ-12 researchers to pay sufficient attention to the early theory that had produced the LBDQ-12.⁷⁹ The early Ohio researchers looked at dynamics of leadership interaction and the necessity for a study in context. They would have agreed, Greenfield assumed, that leadership

⁷⁷ Ibid., p. 48.

⁷⁸ Alan F. Brown, "Reactions To Leadership," Educational Administration Quarterly, II (Winter, 1967), 62-3.

⁷⁹ Greenfield, op. cit., 56-7.

phenomena were explainable on the basis of systems and role theory. But the early success of LBDQ diverted this interest with resulting weaknesses in experimental design. So many items on LBDQ though they may represent role are easy to visualize as attributes of the individual. "It describes neither changing leadership patterns, the sequence of them, the kind of group in which the patterns were found, nor their relationship to the environment."⁸⁰

In spite of these weaknesses in usage, Greenfield conceded the construct validity of the LBDQ-12.⁸¹ Though Greenfield recognized that there was still merit in the twelve subscales, he proposed that the resolution on two factors accomplished by both Brown and Punch indicated that determinate factor scores might be used as a measure of leader behavior in future experiments.⁸²

Greenfield felt there was a tendency to confuse patterns of behavior described by LBDQ with theoretical formulations about the nature of leadership. Finally, he insisted that if process was to be investigated, repeated observations using the LBDQ in the same organization should be a minimum requirement.

In a research study outlined in Dissertation Abstracts, Mansour proposed that since respondent characteristics were found to be related to perceptions of principal leader behavior the validity of the LBDQ was open to question.⁸³

⁸⁰Greenfield, op. cit., 57. ⁸¹Ibid., 69. ⁸²Ibid., 63.

⁸³Joseph Mikael Mansour, "Leadership Behavior and Principal-Teacher Interpersonal Relations," Dissertation Abstracts, XXX (August, 1969), 526A.

In summary, critics of the LBDQ and LBDQ-12 have questioned the validity of the instrument, the ability of the instrument to measure leader behavior as its name implies, and the limited usefulness of a static measuring device in the study of a dynamic concept. Evidence from Stogdill and associates has been presented to demonstrate the claim to validity and Greenfield has accepted this claim.

Three ideas have been surveyed in this chapter. The literature on leadership theory and research has been outlined briefly; the position of the department head as leader has been reviewed from a theoretical and research viewpoint; the development and use of the LBDQ-12 has been outlined.

CHAPTER III

DESIGN OF THE STUDY

I. INTRODUCTION

The design of the study which follows is presented in three sections. First the content of the questions in the LBDQ-12 is related to the twelve components of leadership of the LBDQ-12 and the three styles of leadership of the present study. Second, the procedure adopted for gathering data is outlined in detail. Finally, a summary of the statistical treatment applied to the data is explained.

II. INSTRUMENTATION

The Leader Behavior Description Questionnaire - Form XII (LBDQ-12)

This instrument provides a measure of a follower's perception of twelve components of leader behavior.¹ The twelve components are described under one of the leadership styles chosen for this study. The leadership styles were determined by a weighted average based upon the variation of each factor on the Brown and Punch studies. One hundred items on the questionnaire are assigned so that eight of the twelve components have ten questions each, and the remaining four components have five questions each. The answers to these questions provided by the followers yield scores for the leaders on each subscale.²

The first five subscales are those that are classified in this

¹Appendix B contains a copy of the LBDQ-12.

²Ralph M. Stogdill, Manual for the Leader Behavior Description Questionnaire - Form XII (Columbus, Ohio: Ohio State University, 1963).

study as "system" oriented leader behavior.

1. Representation. This subscale measures the extent to which the leader speaks and acts as a representative of the group. The leader would publicize the activities of the group, represent the group when visitors were present, and be a spokesman for the group at outside meetings.

2. Persuasiveness. This leader is a "missionary." From his own sincere convictions he is able to inspire enthusiastic support for programs.

3. Initiation of Structure. The leader who displays this component to a marked degree defines the role of both his followers and himself. He may try his ideas on the group but having reached his decision he indicates not only how the job is to be done but why it is done in that manner. He is convinced that following standardized procedures will enable the group to meet schedules he has outlined and maintain proper standards.

4. Role Assumption. As leader, he can be recognized because he will not allow his leadership to be challenged; he will not allow followers to take advantage of him; he takes the initiative in instituting actions at all times.

5. Production Emphasis. Production is the reason for the existence of the group in the eyes of this leader. In order to surpass the other groups and the group's own previous record, the group must work to capacity at all times.

The next three subscales are classified as "person" oriented

leader behavior:

6. Tolerance of Uncertainty. Delay, uncertainty and even defeat is tolerated without undue alarm.

7. Tolerance of Freedom. This leader assigns the task to the people in whom he has complete trust so he respects their right to decide how and how fast the job will be done.

8. Consideration. This leader treats followers as equals. He is aware of the personal welfare of each member of the group; he consults members about possible actions, may accept suggestions for revision of these actions and explains fully why the resultant action is taken.

The final four subscales are classified as "transaction" oriented leader behavior:

9. Demand Reconciliation. The leader is capable of dealing with small details as well as complex problems without being overwhelmed by either.

10. Predictive Accuracy. Able to predict outcomes, he anticipates problems and makes plans to deal with them.

11. Integration. The aim of this leader is to maintain a "closely-knit organization;" to do this the leader finds it necessary to resolve conflicts among members of the group.

12. Superior Orientation. Though pleased with the privileges he enjoys in his present position this leader is "on the way up." He is able to keep both his group and himself in good standing with superiors and superiors often act upon suggestions he has made.

Biographical and Situational Questionnaires

Each respondent completed a biographical questionnaire. The principal and science department head questionnaires contained five biographical questions--experience as leader, tenure in present school, experience prior to appointment as leader, years of training, and age.³ The principal questionnaire contained two additional situational questions--grades in school, and number of teachers in school.⁴ The science teacher biographical questionnaire contained five questions--tenure in present school, age, sex, teaching experience, and years of training.⁵

III. METHODOLOGY

Intended Sample

The population consisted of the science teachers, science department head and principal in each of forty-two public secondary schools located in Regina, Saskatoon, and metropolitan Winnipeg. Some resistance from administrators was anticipated. They were concerned about the frequency with which staff members were being asked to engage in research projects. They were concerned too about surveys conducted late in the school year when staff members are very busy. A random sample selection was an unlikely possibility. The original proposal provided for thirty schools. Four describers would be required for

³Appendix C contains the department head questionnaire.

⁴Appendix D contains the principal questionnaire.

⁵Appendix E contains the science teacher questionnaire.

each leader description and where more than five describers were available, five would be chosen, by random selection, to make the description.

Final Sample

Telephone interviews were conducted with the superintendent or superintendent's secondary department in each of the four school districts in Saskatchewan.

The superintendent, superintendent's secondary department, or assistant superintendent was contacted and a personal interview was arranged for each metropolitan Winnipeg division. After outlining the study, permission to visit appropriate schools in the division or school district was requested.⁶ Of the thirteen potential divisions or districts in the selected area, permission was refused in the largest division; the collegiate in one area was found to be inappropriate for the study; permission to survey a limited number of collegiates was granted in three areas; and permission to visit all appropriate collegiates was granted in eight areas. The potential number of collegiates had been reduced from forty-two to twenty-four (eleven in Manitoba and thirteen in Saskatchewan).

The superintendent or superintendent's secondary department of each of the four school districts in Regina and Saskatoon explained the purpose of the study to the selected principals in their respective districts. To explain the purpose of the study, personal interviews

⁶Appendix F contains a copy of an introductory letter presented to superintendents and principals.

were held with each of the eleven principals in the approved collegiates of metropolitan Winnipeg divisions.

Of the eleven collegiates in Manitoba: one principal refused permission to conduct the study in his collegiate; teachers in two collegiates were unwilling to assist with the study; the remaining eight collegiates were surveyed during the month of June, 1970. Of the thirteen collegiates in Saskatchewan: one collegiate administrator found it impossible to complete the survey at that time of the school year; the remaining twelve collegiates were surveyed during the month of June, 1970. Data from one of these twelve collegiates were found to be inappropriate for the study.

Respondents

In each collegiate, each member of the science department, to a total of five, was asked to complete the following items: a LBDQ-12 questionnaire on his principal, a LBDQ-12 questionnaire on his department head, and a set of five biographical questions. Where there were more than five members in the science department, five were chosen, by random selection, to complete the questionnaires. In each of ten collegiates there were five describers; in each of six collegiates there were four describers, and in each of three collegiates there were three describers.

Each science department head was asked five biographical questions. Each principal was asked five biographical and two situational questions.

Data Collection

When approval had been obtained from the principal of a collegiate a kit was delivered to him. This kit was developed when principals suggested the necessity of a method that allowed the staff to select the appropriate time for completion of the questionnaire.

The kit included a "Note to Principal" which reviewed the purpose of the study and assured the principal that the anonymity of all responses would be respected.⁷ The questionnaires to be completed by science teachers, science department head and principal were noted. The procedure to be carried out by the principal for selection of five describers, if the science department had more than five teachers, was outlined in an attached memo.⁸ The principal was asked to place his completed questionnaire in an accompanying envelope on which he was to indicate the name and address of the school. Finally the principal was promised a summary of the findings.

The "Note to Department Head" contained similar information to that of the note to principal but random selection procedures were deleted.⁹ An envelope was provided for his completed questionnaire.

The "Note To Teacher" reviewed the purpose of the study and assured the teacher that his descriptions would not be seen by any of the persons he was asked to describe.¹⁰ The teacher was then asked

⁷ Appendix G contains a copy of the Note to Principal.

⁸ Appendix H contains a copy of random selection procedures.

⁹ Appendix I contains a copy of the Note to Department Head.

¹⁰ Appendix J contains a copy of Note to Teacher.

to complete a LBDQ-12 which was labelled "Principal" and a LBDQ-12 which was marked "Department Head." He was informed that "all that is required is for you to describe your (principal's) leader behavior as accurately as possible."¹¹ He was then asked to complete the five question biographical questionnaire and indicate on that questionnaire the percentage of time devoted to science teaching if that percentage was less than fifty. The three questionnaires were to be placed in a sealed envelope with name and address of the school indicated.

All questionnaires were returned to the collegiate office. In Regina and Saskatoon the questionnaires were forwarded to the school district office where the writer took delivery of them. In Winnipeg the writer visited each collegiate to pick up the questionnaires.

IV. STATISTICAL TREATMENT OF THE DATA

Raw Data Treatment

Individual respondent scores on each item of both principal LBDQ-12 and science department head LBDQ-12 questionnaires were transferred to computer cards as were respondent biographical data. Each of the eighty-three sets of individual data was coded for city, school, and individual.

These individual scores were then used as the data for a computer program which provided subscale scores for each individual, mean subscale scores for each science department head and principal

¹¹Ralph M. Stogdill, Manual for the Leader Behavior Description Questionnaire - Form XII: An Experimental Revision (Columbus, Ohio: The Ohio State University, 1963), p. 12.

and standardized scores for each subscale for each leader.¹² Four subscales were weighted with only five questions while all others had a ten question loading. Those four sets of means were doubled in the data before any analysis was attempted.¹³

The Sample

A series of chi square tests were run on the data. The first of these tests compared the sample to the population with respect to school size.

The remaining chi square tests compared leader biographical data and situational data for the provinces of Manitoba and Saskatchewan. In these chi square tests the basis of grouping used in all examples was that grouping which would be closest to the median in all distributions.¹⁴ In each instance at least one expected frequency was below five; Yates' correction for continuity was applied to each of these calculations.¹⁵

The Questions

Each question posed in Chapter I, sub-problems, was analyzed by means of one of two experimental designs.

¹²Appendix K contains means for each of the twelve subscales for each principal in the nineteen schools. Appendix L contains the same data for the science department head.

¹³Allan F. Brown, "Reactions to Leadership," Educational Administration Quarterly, II (Winter, 1967), 66. Brown adapted data from Stogdill by doubling the same subscales.

¹⁴George A. Ferguson, Statistical Analysis in Psychology and Education, second edition (New York: McGraw Hill Book Company, 1966), p. 213.

¹⁵Ibid., p. 207.

For the relationship between teacher perceptions of leader behavior of principal and science department head as measured by the LBDQ-12, a two factor experiment with repeated measures on one factor was employed. This same design was used to test the relationship between perceptions of leader behavior of principal and science department head and biographical and situational factors. Where homogeneity of variance was in doubt, Hartley's test was employed.¹⁶ In no case was homogeneity of variance lacking.

This analysis of variance program yielded three F values--one value for each of the main effects tested and an interaction effect. A significance level of $\alpha = .05$ was set as the standard for this study except as noted for Scheffé tests. If significant values of F-test were evident on any one or more of the main effects or interaction effect, a figure was constructed indicating qualitatively the relationships. These relationships were analyzed qualitatively. A significant F-test on either of the main effects would normally call for a test on main effects overall. Overall scores on the LBDQ-12 have no significance. This step in the analysis was omitted.

A Scheffé test was used to study significant differences in individual subscale means. The Scheffé test is more rigorous than other tests used to compare means and will lead to fewer significant results. For this reason $\alpha = .10$ is often recommended as the level

¹⁶B. J. Winer, Statistical Principles in Experimental Design (New York: McGraw-Hill Book Company, 1962), p. 93.

of significance.¹⁷ This level, $\alpha = .10$, is used for the Scheffé test in this study.

The Phi coefficient was used to study the relationships between leader behavior and sex of respondent. Since the sample contained only seven female respondents, the validity of the Phi coefficient as a correlational measure for individual subscales might be questioned. To improve the validity, Yates correction for continuity was employed to calculate chi square for each subscale. The Phi coefficient was then calculated from the relationship $\phi = \sqrt{X^2/N}$.

To analyze the interschool and within school relationships two limitations were evident. With thirty-eight leaders and twelve subscales the use of a "t" test technique would lead to a large number of apparent tests of significance.¹⁸ When, in the present study, a "t" test was run on the comparison of combined means of principal and department head for each of the twelve subscales compared with every other subscale mean, of a potential 66 significantly different means, 64 were significantly different. To attempt an analysis of variance would require a design beyond the sophistication of this study. The standard score - standard error design provided a reasonable compromise. Profiles were constructed to picture standard scores of principals and science department heads on each of the LBDQ-12 subscales. One standard error above or below the mean, or one standard error between a principal and science department score--both were considered significant. The details on the analysis outlined are the subject matter of Chapter IV.

¹⁷Ferguson, op. cit., p. 297.

¹⁸B. J. Winer, Statistical Principles in Experimental Design (New York: McGraw-Hill Book Company, 1962), p. 69.

CHAPTER IV

ANALYSIS OF THE DATA

I. INTRODUCTION

This chapter includes a discussion of the characteristics of the sample. The sample was analyzed to indicate how representative it was in terms of school size. The biographical and situational data were compared by province. Then the data were analyzed in detail using each of the six sub-problems as the framework for the analysis. These sub-problems questioned the relationships between perceptions of leadership behavior of principal and science department head. In addition they questioned the relationship between leadership behavior of principal and science department head and biographical factors of leaders or respondents, and situational factors.

II. GENERAL CHARACTERISTICS OF THE SAMPLE

Though no attempt was made to choose a random sample, a comparison of the sample and the population is worthwhile. Table II shows the distribution of schools by number of teachers in the sample and population for each of the three areas and in total.

With respect to the whole sample of 19 schools out of a population of 42 the following observations arise. The average representation would be 45 per cent. Schools with under 30 teachers and schools with 90 to 99 teachers not represented in the sample. Schools with 40 to 49 teachers were over represented by approximately two schools while schools with 50 to 59 teachers were under represented by approximately two schools.

TABLE II
DISTRIBUTION OF SCHOOLS IN SAMPLE AND POPULATION
BY SIZE OF SCHOOL AND LOCALE

| No. of Teachers | REGINA | | SASKATOON | | Metro WINNIPEG | | TOTAL | |
|-----------------|--------|------|-----------|------|----------------|------|--------|------|
| | Sample | Pop. | Sample | Pop. | Sample | Pop. | Sample | Pop. |
| Under 30 | | 1 | | 1 | | | | 2 |
| 30 - 39 | 2 | 3 | 1 | 2 | 1 | 4 | 4 | 9 |
| 40 - 49 | 2 | 2 | 1 | 1 | 3 | 5 | 6 | 8 |
| 50 - 59 | | | | 3 | 1 | 3 | 1 | 6 |
| 60 - 69 | | | | | 3 | 5 | 3 | 5 |
| 70 - 79 | 2 | 2 | | | | 2 | 2 | 4 |
| 80 - 89 | 1 | 1 | 2 | 2 | | 4 | 3 | 7 |
| 90 - 99 | | | | | | 1 | | 1 |
| TOTAL | 7 | 9 | 4 | 9 | 8 | 24 | 19 | 42 |

To test the sample as a whole the actual sample was compared with a theoretical 45 per cent representative sample by means of a chi square test. The results are summarized in Table III.

It will be noted that some categories have been combined to increase the expected frequencies. Ferguson states that "an expectation of not less than two in each cell will permit the estimation of roughly approximate probabilities."¹ The chi square value was 3.17 while a $\chi^2 \geq 9.49$

¹George A. Ferguson, Statistical Analysis in Psychology and Education, second edition (New York: McGraw-Hill Book Company, 1966), p. 207.

TABLE III
 χ^2 TEST OF SAMPLE AND THEORETICAL REPRESENTATIVE
 SAMPLE BY SIZE OF SCHOOL

| No. of Teachers | Sample | Representative Sample |
|-----------------|-----------|--------------------------|
| Under 40 | 4 | 5.0 |
| 40 - 49 | 6 | 3.6 |
| 50 - 59 | 1 | 2.7 |
| 60 - 79 | 5 | 4.1 |
| 80 - 99 | 3 | 3.6 |
| TOTAL | 19 | 19.0 |

$$\alpha = .05, 4 \text{ df: } \chi^2 \geq 9.49 \quad \text{Calculated } \chi^2 = 3.17$$

($\alpha = .05$, 4 df) would have been required for significance. With the limitation indicated by Ferguson as a condition, it would be in order to state that the sample was not significantly different from a sample representative of the population with respect to size of schools.

A series of chi square tests was then carried out to compare leader characteristics or situational factors of the sample by province. Tables IV to XII summarize nine of these tests.

TABLE IV
 χ^2 TEST OF TENURE OF PRINCIPALS BY PROVINCE

| Principal Tenure | Manitoba | Saskatchewan | Total |
|-------------------|----------|--------------|-------|
| 1 - 6 years | 5 (4.2) | 5 (5.8) | 10 |
| More than 6 years | 3 (3.8) | 6 (5.2) | 9 |
| TOTAL | 8 | 11 | 19 |

$\mathcal{L} = .05, 1 \text{ df: } \chi^2 \geq 3.84 \quad \text{Calculated } \chi^2 = 0.073$

TABLE V
 χ^2 TEST OF YEARS IN PRESENT SCHOOL OF PRINCIPALS BY PROVINCE

| Principal Years in Present School | Manitoba | Saskatchewan | Total |
|-----------------------------------|----------|--------------|-------|
| 1 - 6 years | 5 | 5 | 10 |
| More than 6 years | 3 | 6 | 9 |
| TOTAL | 8 | 11 | 19 |

$\mathcal{L} = .05, 1 \text{ df: } \chi^2 \geq 3.84 \quad \text{Calculated } \chi^2 = 0.073$

TABLE VI
 χ^2 TEST OF YEARS OF TRAINING OF PRINCIPALS BY PROVINCE

| Principal Years of Training | Manitoba | Saskatchewan | Total |
|-----------------------------|----------|--------------|-------|
| 5 years | 2 | 4 | 6 |
| 6 or 7 years | 6 | 7 | 13 |
| TOTAL | 8 | 11 | 19 |

$\mathcal{L} = .05, 1 \text{ df: } \chi^2 \geq 3.84 \quad \text{Calculated } \chi^2 = 0.00070$

TABLE VII
 χ^2 TEST OF TENURE OF DEPARTMENT HEADS BY PROVINCE

| Department Head Tenure | Manitoba | Saskatchewan | Total |
|------------------------|----------|--------------|-------|
| 1 or 2 years | 2 | 4 | 6 |
| 3 - 6 years | 6 | 7 | 13 |
| TOTAL | 8 | 11 | 19 |

$\alpha = .05$, 1 df: $\chi^2 \geq 3.84$ Calculated $\chi^2 = 0.00070$

TABLE VIII
 χ^2 TEST OF YEARS IN PRESENT SCHOOL OF DEPARTMENT HEADS BY PROVINCE

| Department Head Years in Present School | Manitoba | Saskatchewan | Total |
|---|----------|--------------|-------|
| 1 - 6 years | 5 | 5 | 10 |
| More than 6 years | 3 | 6 | 9 |
| TOTAL | 8 | 11 | 19 |

$\alpha = .05$, 1 df: $\chi^2 \geq 3.84$ Calculated $\chi^2 = 0.073$

TABLE IX
 χ^2 TEST OF YEARS OF EXPERIENCE PRIOR TO APPOINTMENT OF DEPARTMENT HEADS BY PROVINCE

| Department Head Years of Experience Prior to Appointment | Manitoba | Saskatchewan | Total |
|--|----------|--------------|-------|
| 2 - 6 years | 5 | 6 | 11 |
| 7 years or more | 3 | 5 | 8 |
| TOTAL | 8 | 11 | 19 |

$\alpha = .05$, 1 df: $\chi^2 \geq 3.84$ Calculated $\chi^2 = 0.015$

TABLE X
 χ^2 TEST OF YEARS OF TRAINING OF DEPARTMENT HEADS BY PROVINCE

| Department Head Years of Training | Manitoba | Saskatchewan | Total |
|--------------------------------------|----------|--------------|-------|
| 4 or 5 years | 5 | 7 | 12 |
| 6 or 7 years | 3 | 4 | 7 |
| TOTAL | 8 | 11 | 19 |

$\alpha = .05$, 1 df: $\chi^2 \geq 3.84$ Calculated $\chi^2 = 0.19$

TABLE XI
 χ^2 TEST OF AGE OF DEPARTMENT HEADS BY PROVINCE

| Department Head Age | Manitoba | Saskatchewan | Total |
|------------------------|----------|--------------|-------|
| 25 - 34 years old | 5 | 7 | 12 |
| 35 - 54 years old | 3 | 4 | 7 |
| TOTAL | 8 | 11 | 19 |

$\alpha = .05$, 1 df: $\chi^2 \geq 3.84$ Calculated $\chi^2 = 0.19$

TABLE XII
 χ^2 TEST OF SAMPLE SIZE OF SCHOOL BY PROVINCE

| Size of School | Manitoba | Saskatchewan | Total |
|------------------|----------|--------------|-------|
| 30 - 49 teachers | 4 | 6 | 10 |
| 50 - 89 teachers | 4 | 5 | 9 |
| TOTAL | 8 | 11 | 19 |

$\alpha = .05$, 1 df: $\chi^2 \geq 3.84$ Calculated $\chi^2 = 0.073$

The length of time the principal had been principal, the principal's years in the present school, the principal's years of training, the department head's tenure, the department head's years in the present school, the department head's years of experience before appointment, the department head's years of training, the department head's age, and size of school--are not significantly different whether the school is in Manitoba or Saskatchewan.

Tables XIII, XIV and XV summarize the remaining three tests.

TABLE XIII
 χ^2 TEST OF AGE OF PRINCIPALS BY PROVINCE

| Principal Age | Manitoba | Saskatchewan | Total |
|-------------------|----------|--------------|-------|
| Under 50 years | 7 | 3 | 10 |
| 50 years and over | 1 | 8 | 9 |
| TOTAL | 8 | 11 | 19 |

$$\alpha = .05, \quad 1 \text{ df: } \chi^2 \geq 3.84 \quad \text{Calculated } \chi^2 = 4.54$$

TABLE XIV
 χ^2 TEST OF YEARS OF EXPERIENCE PRIOR TO APPOINTMENT OF
 PRINCIPALS BY PROVINCE

| Principal Years of Experience Prior to Appointment | Manitoba | Saskatchewan | Total |
|--|----------|--------------|-------|
| 1 - 15 years | 7 | 1 | 8 |
| More than 15 years | 1 | 10 | 11 |
| TOTAL | 8 | 11 | 19 |

$$\alpha = .05, \quad 1 \text{ df: } \chi^2 \geq 3.84 \quad \text{Calculated } \chi^2 = 8.40$$

TABLE XV
 χ^2 TEST OF GRADES IN SCHOOL BY PROVINCE

| Grades in School | Manitoba | Saskatchewan | Total |
|------------------|----------|--------------|-------|
| 7, 8, 9 to 12 | 2 | 11 | 13 |
| 10 - 12 | 6 | 0 | 6 |
| TOTAL | 8 | 11 | 19 |

$$\mathcal{L} = .05, \quad 1 \text{ df: } \chi^2 \geq 3.84 \quad \text{Calculated } \chi^2 = 8.84$$

The age of the principal is significantly different between Manitoba and Saskatchewan samples. A glance at Table XIII indicates that Saskatchewan principals are significantly older. Table XIV indicates that principal's years of experience prior to appointment is significantly different in Manitoba from that in Saskatchewan. Once again the Saskatchewan principal in the sample has significantly more experience prior to appointment. Both of these differences are likely a reflection of the absence from the Manitoba sample of the largest division with schools with principals of longer tenure. Nicholls noted this same trend in a thesis involving a study of Manitoba collegiates.²

The significant difference in grades in the high schools of Manitoba compared to the Saskatchewan high schools in the sample reflects the fact that more suburban Winnipeg high schools are senior high schools with Grades X to XII while ten of the eleven Saskatchewan

²Glenn H. Nicholls, "Organizational Climate and Principal Personality: A Study in Relationship" (unpublished Master's thesis, The University of Manitoba, Winnipeg, 1969), p. 36.

high schools in the sample are Grades IX to XII.

To summarize, the sample selected for study seems to be representative of the populations from which it was drawn in respect to school size. The schools selected in Saskatchewan tended to have older principals with longer experience prior to appointment than the schools selected in Manitoba. Manitoba schools were mainly Grades X to XII schools while Saskatchewan schools were mainly Grades IX to XII schools.

III. ANALYSIS OF THE DATA BY SUB-PROBLEMS

The six questions posed as sub-problems in Chapter I are analyzed in the following pages. These questions deal with the relationships of LBDQ-12 subscale means between leaders and between leader and respondent biographical factors as well as situational factors. The LBDQ-12 subscales focus on three areas of leadership behavior as follows:

1. "System" orientation - Subscales 1 (representation), 4 (persuasiveness), 5 (initiation of structure), 7 (role assumption), 9 (production emphasis).
2. "Person" orientation - Subscales 3 (tolerance of uncertainty), 6 (tolerance of freedom), 8 (consideration).
3. "Transactional" orientation - Subscales 2 (demand reconciliation), 10 (predictive accuracy), 11 (integration), 12 (superior orientation).

Leadership Behavior

To determine whether the teacher perceptions of leader behavior of the science department heads, as measured by the LBDQ-12, differed significantly from teacher perceptions of leader behavior of principals, as measured by the LBDQ-12 the repeated measures analysis of variance was run.

This experimental design tested whether the means of principals' LBDQ-12 subscale scores averaged over all subscales differed significantly from the means of department heads' LBDQ-12 subscale scores averaged over all subscales. The alternative hypotheses for this question would be as follows:

$$H_0: L_i = 0 \text{ for all } i$$

$$H_1: L_i \neq 0 \text{ for some } i$$

In words, acceptance of H_0 would indicate that principals do not differ significantly from science department heads on LBDQ-12 subscale means averaged over all subscales. Principals might then differ significantly from science department heads on some subscales.

The design tested two other sets of hypotheses at the same time. The second set of hypotheses was as follows:

$$H_0: \text{LBDQ } j = 0 \text{ for all } j$$

$$H_1: \text{LBDQ } j \neq 0 \text{ for some } j$$

This represented, then, a test of difference of means on each subscale of the LBDQ-12. If the twelve subscales are indeed independent to any extent, this null hypothesis will be rejected each time the design is used. This significant result did appear on every analysis in the study.

The final set of hypotheses tested by this analysis of variance is as follows:

$$H_0: L\text{-LBDQ } ij = 0 \text{ for all } ij$$

$$H_1: L\text{-LBDQ } ij \neq 0 \text{ for some } ij$$

This test analyzed the interaction of LBDQ-12 subscale scores for principal and science department head. Rejection of the null hypothesis for this set would indicate not only that principals did differ significantly from science department heads on some subscales on the LBDQ-12; it would also indicate that principals scored significantly higher on some subscales while science department heads scored significantly higher on other subscales.

So each analysis of variance using this experimental design will produce three F values for the three sets of hypotheses. The resultant analysis of variance for principals' LBDQ-12 subscale means and science department heads' LBDQ-12 subscale means is summarized in Table XVI.

The lack of a significant F value for the first hypothesis indicates that principals' LBDQ-12 subscale scores do not differ significantly from science department heads' LBDQ-12 subscale scores averaged over all subscales.

The significant "F" value for the second set of hypotheses confirms the independence of the subscales of the LBDQ-12.

The significant F value for the third set of hypotheses implies that there are some significant differences between perceptions of principals' leader behavior and perceptions of science department heads'

TABLE XVI

ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS OF PRINCIPALS AND
LBDQ-12 SUBSCALE MEANS OF SCIENCE DEPARTMENT HEADS

| Source of Variation | df | MS | |
|-----------------------------|-----|----------|---------|
| Principal - Department Head | 1 | 5.2958 | 0.067 |
| Between Subject Error | 36 | 78.5023 | |
| LBDQ-12 Subscales | 11 | 275.4968 | 43.864* |
| P.-D.H. - LBDQ-12 Subscales | 11 | 36.0488 | 5.740* |
| Within Subject Error | 396 | 6.2807 | |

* $\mathcal{L} = .01$ $F(11,396) \geq 2.29$

leader behavior on some subscales. To ascertain which of these interaction effects were significant two procedures were used.

First, Figure 1 was prepared. The LBDQ-12 subscale means for principals and science department heads were plotted for each subscale. This figure indicates that principals are higher on subscales 5 and 9 and science department heads are higher on subscales 6 and 8.

To determine if the statements made from observation of Figure 1 have statistical significance, a Scheffé test was run on individual subscale means for principal and science department head. The resulting Scheffé test is summarized in Table XVII.

The principals did score significantly different on subscales 5 and 9 at the $\mathcal{L} = .01$ level, and in addition they scored significantly higher on subscale 10 at the $\mathcal{L} = .10$ level. Science department heads

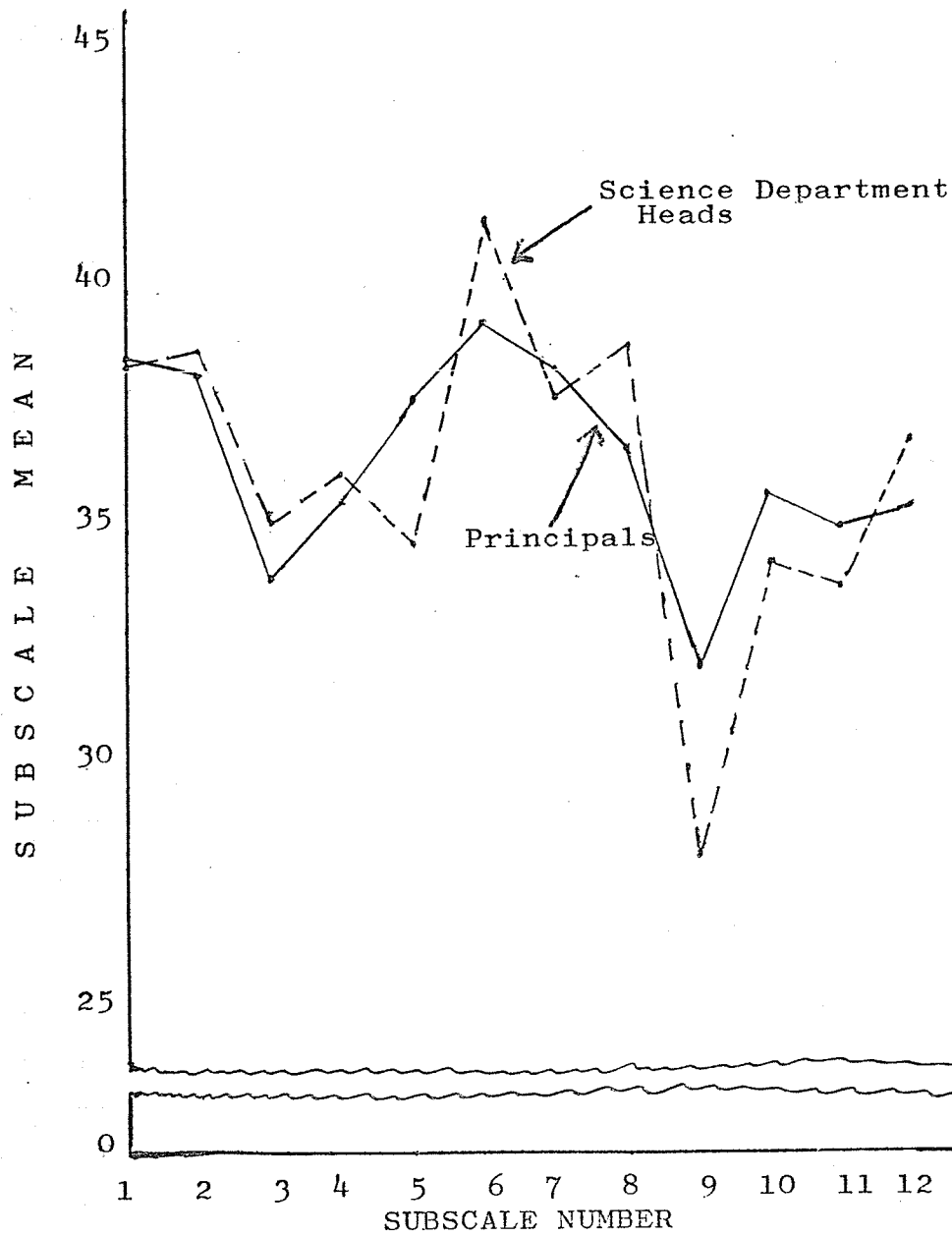


FIGURE 1

LBDQ-12 SUBSCALE MEANS OF PRINCIPALS AND SCIENCE DEPARTMENT HEADS

TABLE XVII
SCHEFFÉ TEST OF LBDQ-12 INDIVIDUAL SUBSCALE MEANS OF
PRINCIPALS AND SCIENCE DEPARTMENT HEADS

| Subscale Number | Principal/Science Department Head |
|-----------------|-----------------------------------|
| 5 | 13.87* |
| 6 | 6.97** |
| 8 | 6.34** |
| 9 | 22.43* |
| 10 | 3.50*** |

* $\alpha = .01$ $F(1,36) = 7.41$ $F^1 = (7.41)(1) = 7.41$

** $\alpha = .05$ $F(1,36) = 4.12$ $F^1 = (4.12)(1) = 4.12$

*** $\alpha = .10$ $F(1,36) = 2.86$ $F^1 = 2.86 (1) = 2.86$

scored significantly higher on subscales 6 and 8.

In summary, the entire principal group was not significantly different from the entire science department head group when averaged over all twelve subscales of the LBDQ-12. However, science department heads scored significantly higher on two "person" oriented factors-- tolerance of freedom and consideration. Principals scored significantly higher on two "system" oriented subscales--production emphasis and initiation of structure, and on one "transaction" oriented subscale-- predictive accuracy.

Interschool Comparisons

The question of variation in teacher perceptions of leader behavior, principal and science department head, from school to school was studied by means of the standard score - standard error program described earlier in the study. A statistical program which converted the means by each principal on each subscale to a standardized score with a mean of 50 and a standard error of 10 was employed. Variations from the mean by more than one standard error were considered significant. Figure 2 indicates the approximate standardized scores for principals A to S inclusive where such scores were more than one standard error from the mean.

Principal A is above the mean by one standard error or more on nine of twelve subscales. Of the three subscales which Brown found indicated a "person" oriented principal--consideration, tolerance of uncertainty, and tolerance of freedom--this principal has significantly higher scores on all. Of the five "system" oriented subscales, this principal scores high on four--representation, persuasiveness, role assumption, and initiation of structure. In addition he has scored high on two of the four subscales associated with "transactional" oriented leadership--integration, and superior orientation.

Principal L has scored one standard error above the mean on five subscales and one standard error below the mean on two subscales. His high subscale scores were concentrated on "system" orientation and both his low scores were on "person" oriented factors.

Principal F has scored one standard error above the mean on

| | | | | | | | | | | | | | |
|--------------------|------------------|--------------|-------------|----------|----------|-------------|----------|----------|----------|-----------------|--------------|-------------------|--------------|
| Standardized Score | 80 | | | | | | | | | | | | |
| | 70 | L A FI | A J F | L AF | A LBM | F A J | AO | AIO | | J | AIO | A LG | |
| | 60 | | | | | | | | | | | | |
| | 50 | | | | | | | | | | | | |
| | 40 | P M H | M E | CE DH | D EH | | MP L | SPH M | HLN M | S H | CS E H | H CD M E | H ES M |
| | 30 | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | |
| | Subscale Numbers | 1 | 4 | 5 | 7 | 9 | 3 | 6 | 8 | 2 | 10 | 11 | 12 |
| | Orientation | "System" | | | | | "Person" | | | "Transactional" | | | |

FIGURE 2

PRINCIPALS A to S LBDQ-12 STANDARDIZED SUBSCALE SCORES
OVER ONE STANDARD ERROR FROM THE MEAN

four subscales. Three of these scores focus on "system" and one on "person" orientations.

Principals I, J, and O each had three subscale scores one standard error above the mean. Principals I and J had one high score in each category; principal O had two high scores that emphasized "person" orientation and one in the "transactional" category.

Principals B and G each had one score one standard error above the mean. Principal B stressed production emphasis while principal G emphasized superior orientation.

Principals K, Q, and R had no scores that were more than one standard error away from the mean.

Principal N had one significantly low score on production emphasis.

Principals C, D, and P each had three significantly low scores. Principal C had two from the "transactional" leadership area and one from "system" area. Principal D had two low scores based on "system" and one based on "transactional" leadership. Principal P also had three significantly low scores--two from "person" and one from "system" orientation.

Principal S had four significantly low scores. Three of these scores focused on "transactional" leadership while one focused on "person" oriented leadership.

Principal M had one significantly high score and seven significantly low scores. This principal stressed production emphasis. Of the low scores three were "person" oriented, two were "transactional"

oriented and two were "system" oriented.

Principal E had seven significantly low scores. Three of these low scores were factors in "transactional" leadership and four were "system" factors.

Principal H had ten significantly low scores. All "transactional" factors were low and two of the three "person" and four of the five "system" factors were low.

It is possible to classify the principals in certain categories-- high scores in all three categories (A, I, J), on two categories (F, L, O), high scores focus on "system" (B), high scores focus on "transaction" (G), no high or low scores (K, Q, R, O), low scores focus on all areas (M, H), low scores on two categories (D, C, E, P, S), low scores on one category (N). Within each of these categories it is still possible with one exception, to differentiate a particular principal from others in the group. Using the definition of significance established for this analysis, the profiles of teacher perceptions of leader behavior, principal, are significantly different from one school to another.

A standard score - standard error program was used to prepare profiles for the science department heads. Figure 3 illustrates these profiles.

Department head A had six significantly high scores. These included all of the factors that weigh on "person" oriented leadership; one high score weighed on "transactional" leadership and two on "system" leadership.

Department head B had four scores significantly high; two were "transactional," and one each was "person" and "system" orientation.

| Subscale Numbers | Standardized Score | | | | | | | | | | | |
|------------------|--------------------|--------------|--------|--------|---------------|----|----|------------------|-----------------|-------------|--------|-----|
| | 1 | 4 | 5 | 7 | 9 | 3 | 6 | 8 | 2 | 10 | 11 | 12 |
| Orientation | "System" | | | | "Person" | | | | "Transactional" | | | |
| | | | | | | | | | | | | |
| 0 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 20 | 0 | 0 | | | | | | | 0 | 0 | | |
| 30 | | | 0 | 0 | 0 | 0 | | 0 | | s | 0 | |
| 40 | M | I | D | S | M | D | E | G | | | D | M |
| 50 | | | | | | NG | CP | S | | | M | |
| 60 | E F | D R EH | J A | F A | F B QHR | A | DN | I A N B | A J | J B H | B E | QGR |
| 70 | | | | | | M | | | | | | |
| 80 | | | | | | | A | | | | | |
| 90 | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | |

FIGURE 3

SCIENCE DEPARTMENT HEADS A to S LBDQ-12 STANDARDIZED SUBSCALE SCORES
OVER ONE STANDARD ERROR FROM THE MEAN

Three department heads had three significantly high scores. Department head F had all high scores based upon "system" leadership while department head J had two high scores from the "transactional" area and one from "system" area, and department head R had two high scores from "system" area and one from "transactional" area.

Two other department heads had three significantly high scores but each had one significantly low score too. Both had one high score in the "transactional" area and two in the "system" area. Department head E had his one low score in the "person" area while department head H had one low score in "transactional" area.

Two department heads, Q and N, had two scores significantly high. Department head Q had one high "system" score and one high "transactional" score. Department head N had both of his high scores focused on "person" but also had one significantly low score based on "person" orientation--tolerance of uncertainty.

Two department heads, K and L, had no scores significantly above or below the standard score.

Two department heads, C and P, had one score significantly low. These department heads lacked tolerance of freedom--a "person" oriented factor.

One department head, I, had two significantly low scores and one significantly high score. The low scores were one each of "transactional" and "system" origin while the high score was from "person" orientation.

Two department heads, G and S, had three significantly low scores.

Department head G had two low scores on "person" oriented factors and one low and one high score on "transactional" factors. Department head S had only three significantly low scores; one score was located in each category.

Department head D had four significantly low and two significantly high scores. Of his low scores two were "transactional" and one each was "system" and "person." One high score was "person" oriented and the other was "system" in nature.

Department head M had six significantly low scores and one significantly high score. Four factors which weigh on "system" and two factors of "transactional" nature were low scores. The one high score, tolerance of uncertainty, is a "person" oriented factor.

Department head O scored significantly low on all subscales except tolerance of freedom, a "person" oriented factor.

Department head profiles demonstrate an even larger degree of diversity than those of principals. The profiles of teacher perceptions of leader behavior of science department head are significantly different from one school to another.

Intraschool Comparisons

Teacher perceptions of leader behavior and variations in those perceptions from principal to science department head within a school were also analyzed by the standardized scores. A difference on any subscale, between principal and science department head within the same school, of more than one standard error was assumed to be significant. Figures 4, 5, and 6 were prepared by entering two categories

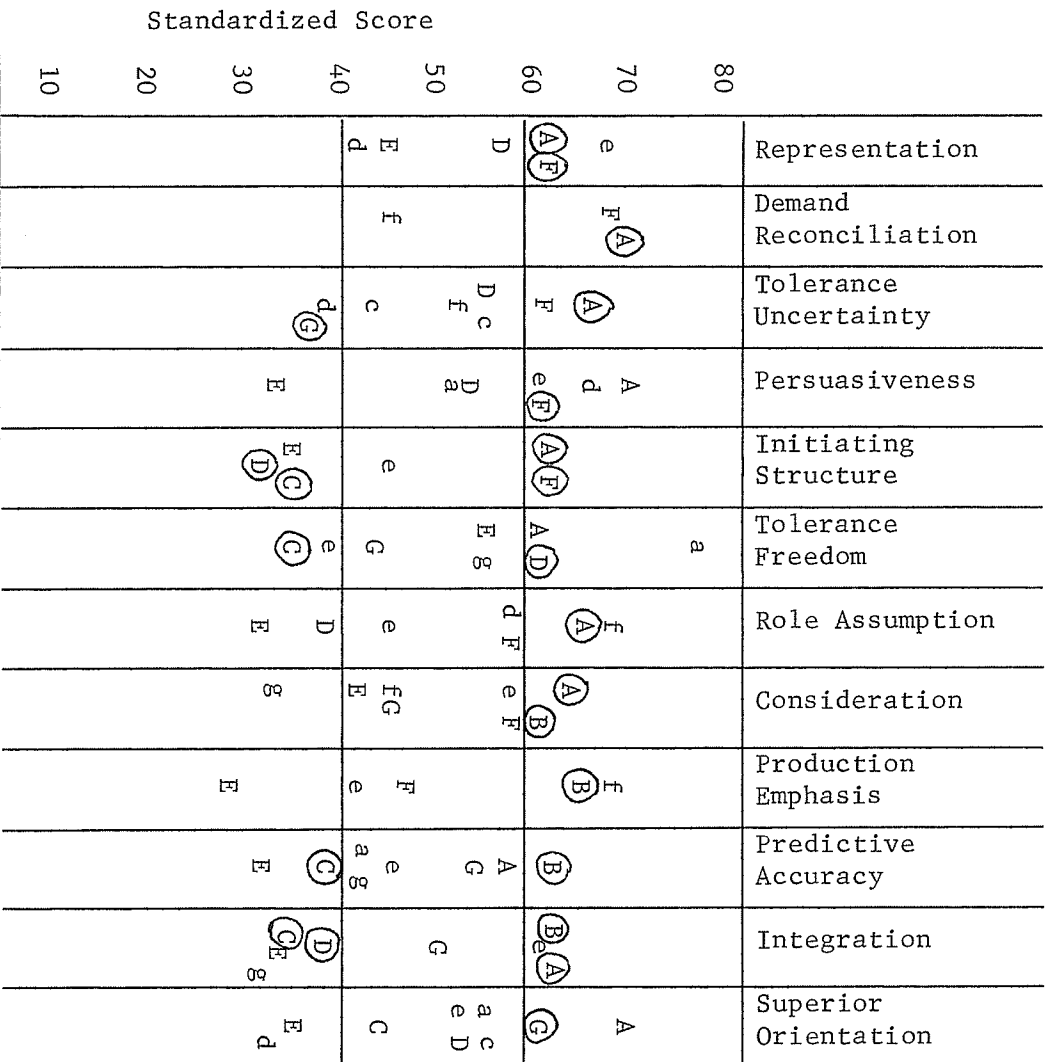


FIGURE 4

PRINCIPAL AND SCIENCE DEPARTMENT HEAD, SCHOOLS A TO G,
LBDQ-12 STANDARD SUBSCALE SCORES *

*Two categories of standardized subscale scores are entered in the figure:
 (1) If the principal and science department head differ in score by more than one standard error, the capital letter represents the approximate principal score and the lower case letter represents the approximate science department head score. (2) If either principal and/or science department head are above or below one standard error from the mean, but not one standard error apart, the circled capital letter represents the highest or lowest score.

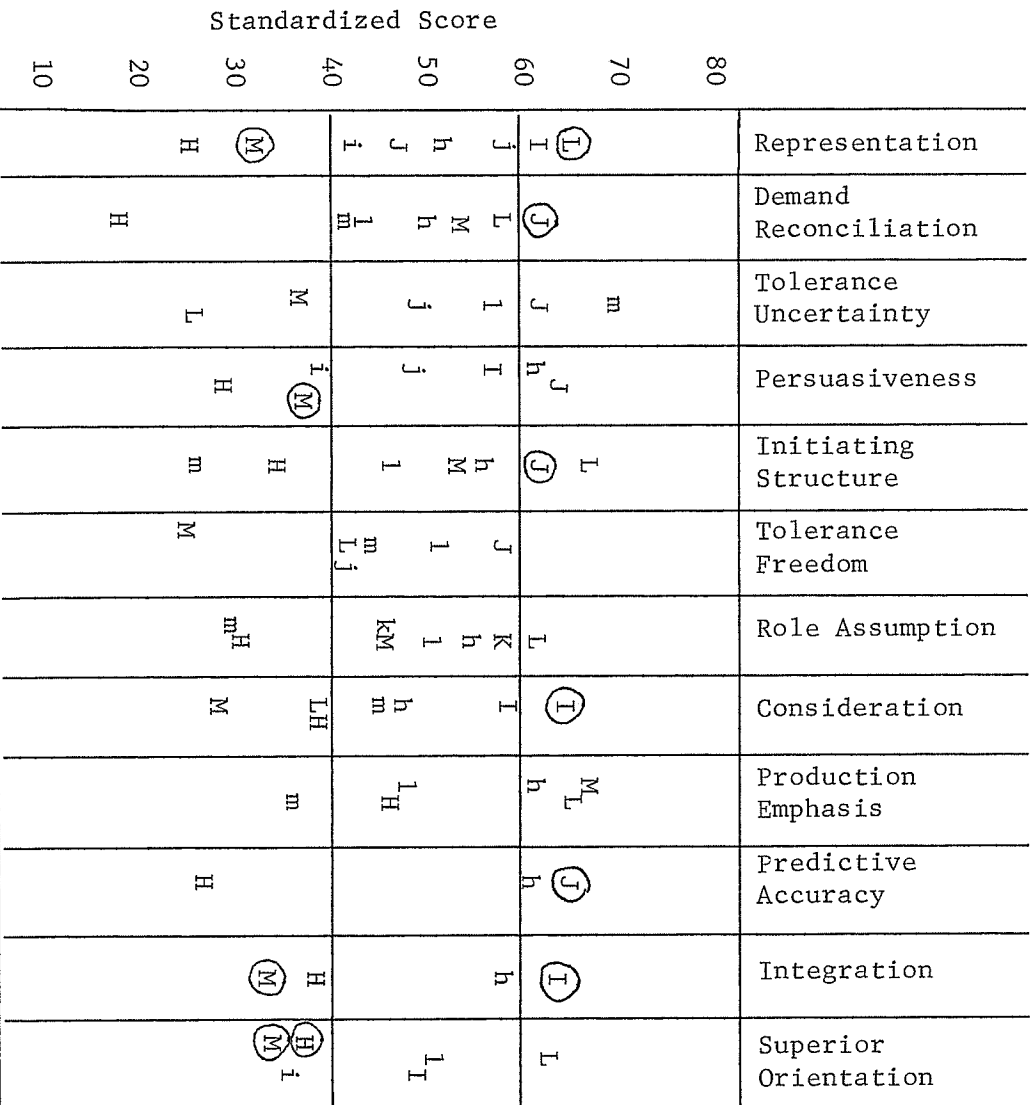


FIGURE 5

PRINCIPAL AND SCIENCE DEPARTMENT HEAD, SCHOOLS H to M,
LBDQ-12 STANDARD SUBSCALE SCORES*

*Two categories of standardized subscale scores are entered in the figure: (1) If the principal and science department head differ in score by more than one standard error, the capital letter represents the approximate principal score and the lower case letter represents the approximate science department head score. (2) If either principal and/or science department head are above or below one standard error from the mean, but not one standard error apart, the circled capital letter represents the highest or lowest score.

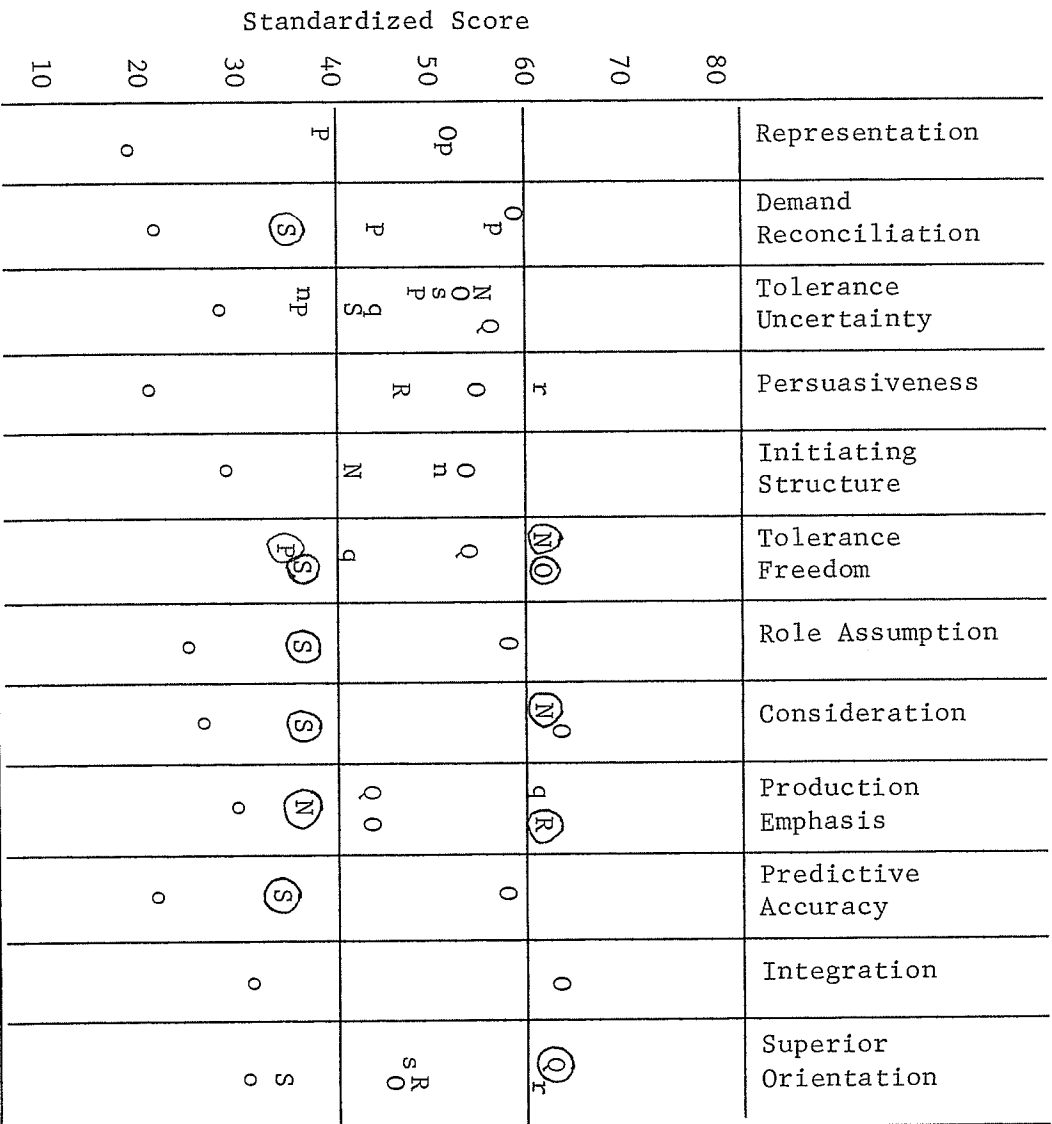


FIGURE 6

PRINCIPAL AND SCIENCE DEPARTMENT HEAD, SCHOOLS N to S,
 LBDQ-12 STANDARD SUBSCALE SCORES*

*Two categories of standardized subscale scores are entered in the figure: (1) If the principal and science department head differ in score by more than one standard error, the capital letter represents the approximate principal score and the lower case letter represents the approximate science department head score. (2) If either principal and/or science department head are above or below one standard error from the mean, but not one standard error apart, the circled capital letter represents the highest or lowest score.

as follows:

- (1) Those subscales on which the principal and science department head differed by more than one standard error.
- (2) Those subscales on which one or both principal and/or science department head were more than one standard error above or below the mean but not one standard error apart.

Only one principal-science department head combination, B, were within one standard error of one another on all twelve subscales. On four subscales this combination was one standard error above the mean.

School K had a principal who scored significantly higher than the department head on one subscale--role assumption. This combination remained within one standard error of the mean on all subscales.

Four schools (C, N, R, S), had principal-science department head differences greater than one standard error on two subscales. In schools C and S the principals scored significantly lower than science department heads on tolerance of uncertainty and superior orientation. School C combination had four (while school S combination had five) subscale scores one standard error below the mean. In school R, the principal scored significantly lower than the science department head in persuasiveness and superior orientation. This school combination had one score above the mean. In school N the principal scored significantly higher on tolerance of uncertainty but significantly lower on initiation of structure. This school combination had two subscale scores above the mean and one below.

Three schools, (I, P, Q), had principals whose subscale means were

significantly different on three subscales. In school I, the subscale means of the principal were significantly higher on representation, persuasion and superior orientation. This school combination was significantly above the mean on two subscales. In school P, the principal scored significantly lower on representation, demand reconciliation, and tolerance of uncertainty. School P had one combination one standard error below the mean. In school Q, the principal surpassed the department head in tolerance of uncertainty and tolerance of freedom but was significantly lower on production emphasis. School Q had one combination one standard error above the mean.

Two schools, A and J, exhibited four significant differences and in each instance the principal scored significantly higher on three subscales and significantly lower on one. In school A the principal scored significantly higher on two "transactional" factors and one "system" factor but lower on a "person" factor. The school A combination had seven subscales one standard error above the mean. In school J, the principal scored significantly higher on two "person" and one "system" factors but lower on a "system" factor. School J had three combinations one standard error above the mean.

Schools D, F, and G had five significant differences. In school D the principal scored significantly higher on representation, tolerance of uncertainty, and superior orientation, but significantly lower on persuasiveness and role assumption. The school D combination had one subscale one standard error above the mean and two subscales one standard error below the mean. In school F the principal was significantly higher

on two "person" and one "transactional" factors and significantly lower on two "system" factors. The school F combination had three subscales one standard error above the mean. In school G, the principal scored significantly higher in demand reconciliation, consideration, predictive accuracy, and integration but significantly lower on tolerance of freedom. The school G combination had one subscale above and one subscale below by one standard error.

The remaining five schools (E, H, L, M, O) displayed large numbers of significantly different subscale scores. Principal M scored significantly higher on four subscales, of which three were "system" orientation, and scored significantly lower on three subscales, all of which were "person" orientation. The school M combination had four subscales one standard error below the mean. Principal L scored significantly higher than his science department head on five subscales, of which three were "system" orientation and significantly lower on three subscales all of which were "person" orientation. School L combination had one subscale one standard error above the mean. Principal H scored significantly lower on nine subscales including all the "system" subscales, three "transactional" subscales, and one "person" subscale. School H combination had one subscale one standard error below the mean. Principal E scored significantly lower on nine subscales including all the "system" subscales, three "transactional" subscales and one "person" subscale, but was significantly higher on tolerance of freedom, another "person" subscale. Principal O scored significantly higher than the science department head on all subscales but tolerance of freedom.

School 0 combination had one subscale one standard error above the mean.

Of nineteen schools, the principal and science department head show no marked difference in leadership in one. In the remaining eighteen schools the significantly different subscale scores range in number from two to eleven. This would seem to demonstrate that within a school the profiles of teacher perceptions of science department head leadership, as measured by the LBDQ-12, are significantly different from the profiles of teacher perceptions of principal leadership as measured by the same instrument.

Leader Biographical Factors

The study of the relationships between perceptions of leader behavior and biographical factors employed the same mixed factorial design as previously used in question one. This design, as indicated in the analysis for question one, produced three F values on each occasion, as tests for the following sets of hypotheses:

$$H_0 : S.F.i = 0 \text{ for all } i$$

$$H_1 : S.F.i \neq 0 \text{ for some } i$$

$$H_0 : LBDQ j = 0 \text{ for all } j$$

$$H_1 : LBDQ j \neq 0 \text{ for some } j$$

$$H_0 : S.F.LBDQ ij = 0 \text{ for all } ij$$

$$H_1 : S.F.LBDQ ij \neq 0 \text{ for some } ij$$

The analysis of variance for age of principals and LBDQ-12 subscale scores is presented in Table XVIII.

TABLE XVIII
ANALYSIS OF VARIANCE OF AGE OF PRINCIPALS
AND LBDQ-12 SUBSCALE MEANS

| Source of Variation | df | MS | F |
|--|-----|----------|---------|
| Age of Principals | 2 | 88.1834 | 0.427 |
| Between Subject Error | 80 | 206.5814 | |
| LBDQ-12 Subscales | 11 | 383.2903 | 22.356* |
| Age of Principals - LBDQ-12 Subscales | 22 | 23.0015 | 1.342 |
| Within Subject Error | 880 | 17.1452 | |

* $\alpha = .01$ $F(11,880) = 2.26$

Table XIX reports the analysis of variance for experience of principals prior to appointment and LBDQ-12 subscale scores. The principal's experience prior to appointment and his means on the LBDQ-12 subscales are not significantly related.

The analysis of variance for principals' experience as principal and LBDQ-12 subscale means is presented in Table XX. This analysis indicates that the principal's years experience as a principal and the LBDQ-12 subscale scores are significantly related. The first significant F value indicates that there will be some significant difference between the averages of all LBDQ-12 subscale scores for principals with 1 to 4 years, 5 or 6 years, 7 or 8 years, or 9 to 15

TABLE XIX
ANALYSIS OF VARIANCE OF EXPERIENCE OF PRINCIPALS PRIOR TO
APPOINTMENT AND LBDQ-12 SUBSCALE MEANS

| Source of Variation | df | MS | F |
|---|-----|----------|---------|
| Experience Prior to Appointment of Principals | 2 | 413.0518 | 2.074 |
| Between Subject Error | 80 | 199.1134 | |
| LBDQ-12 Subscales | 11 | 385.3313 | 22.420* |
| Experience Prior to Appointment of Principals - LBDQ-12 Subscales | 22 | 21.9194 | 1.275 |
| Within Subject Error | 880 | 17.1870 | |

* $\mathcal{L} = .01$ $F(11,880) = 2.26$

TABLE XX
ANALYSIS OF VARIANCE OF EXPERIENCE AS PRINCIPAL OF PRINCIPALS
AND LBDQ-12 SUBSCALE MEANS

| Source of Variation | df | MS | F |
|---|-----|----------|----------|
| Years Experience as Principal | 3 | 669.2249 | 3.567* |
| Between Subject Error | 79 | 187.6409 | |
| LBDQ-12 Subscales | 11 | 407.3762 | 24.480** |
| Years Experience as Principal - LBDQ-12 Subscales | 33 | 33.2149 | 1.996*** |
| Within Subjects Error | 869 | 16.6410 | |

* $\mathcal{L} = .05$ $F(3,79) = 2.72$

** $\mathcal{L} = .01$ $F(11,869) = 2.26$

*** $\mathcal{L} = .01$ $F(33,869) = 1.68$

years experience as principal. The third significant F value (1.996) indicates that not only are the two variables significantly related but that an interaction between them exists. This implies that certain subscale scores will be significantly higher for principals with 1 to 4 years experience as principal while other subscale scores will be significantly higher for principals with 5 or 6 years, 7 or 8 years, or 9 to 15 years experience as principal.

To analyze this relationship and interaction, Figure 7 has been prepared. Principals with 9 to 15 years experience as principal apparently score on almost all subscales of the LBDQ-12 consistently higher scores than principals with less experience as principal. Principals with 7 or 8 years experience as principal have a very similar profile but lower scores. Principals with 1 to 4 years and 5 or 6 years experience as principal demonstrate some inconsistencies in their profiles. Principals with 1 to 4 years experience as principal have better superior orientation than principals with 5 to 8 years experience as principal. Principals with 7 or 8 years experience do not display consideration to as high a degree as the balance of the profile would indicate. Principals with less experience as principals, 1 to 6 years, have greater tolerance of freedom than those with 7 or 8 years experience as principal. With respect to both persuasiveness and tolerance of uncertainty, principals with 1 to 4 years experience as principals have higher subscale scores than those principals with 5 to 8 years experience as principal.

To test the statistical significance of the statements in the preceding paragraph, a Scheffé test was carried out on means of individual subscales. All possible pairs were checked. Only significant combinations are summarized in Table XXI.

This analysis reveals the following significant relationships.

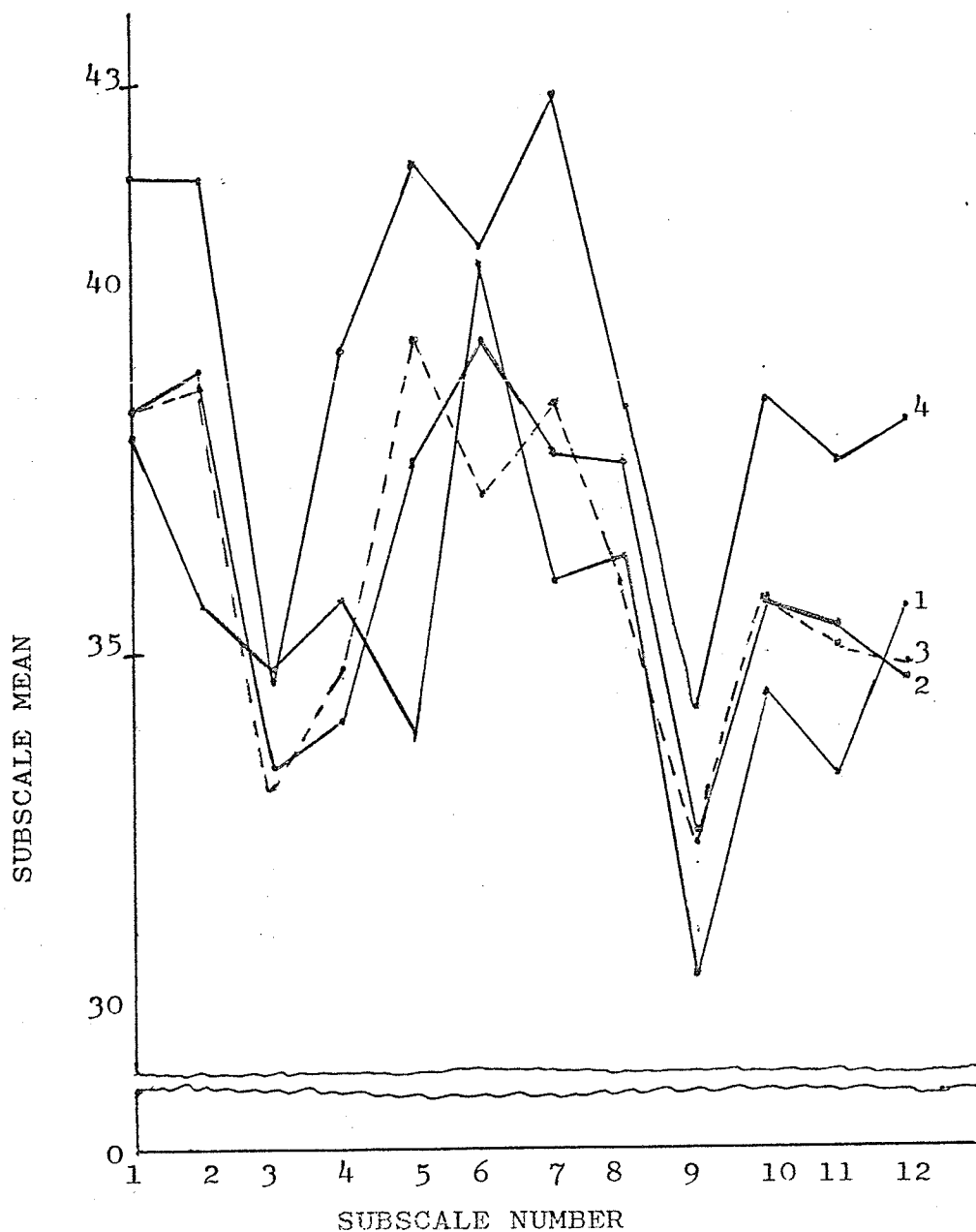


FIGURE 7

LBDQ-12 SUBSCALE MEANS OF PRINCIPALS WITH 1 to 15 YEARS EXPERIENCE AS PRINCIPAL:

- 1. Principal 1 to 4 years —
- 2. Principal 5 or 6 years - -
- 3. Principal 7 or 8 years - -
- 4. Principal 9 to 15 years —

TABLE XXI
SCHEFFÉ TEST OF EXPERIENCE AS PRINCIPAL OF PRINCIPALS AND
LBDQ-12 INDIVIDUAL SUBSCALE MEANS

| Subscale Number | Principals 1 - 4 yrs. | Principals 1 - 4 yrs. | Principals 1 - 4 yrs. | Principals 5 or 6 yrs. | Principals 7 or 8 yrs. |
|--------------------|---------------------------|---------------------------|--------------------------|---------------------------|---------------------------|
| | Principals 5 or 6 yrs. | Principals 7 or 8 yrs. | Principals 9-15 yrs. | Principals 9-15 years | Principals 9-15 years |
| 1 | | | 8.16*** | | 6.89*** |
| 2 | 7.52*** | 7.16*** | 23.24* | | |
| 3 | | | | | |
| 4 | | | 7.79*** | 15.16* | 12.63* |
| 5 | 8.89** | 20.41* | 38.60* | 9.82** | |
| 6 | | 7.95*** | | | 7.68*** |
| 7 | | | 28.33* | 13.84* | 33.42* |
| 8 | | | | | |
| 9 | | | 9.73** | | |
| 10 | | | 9.88** | | |
| 11 | | | 11.55** | | |
| 12 | | | | 6.75*** | 7.03*** |

* $\alpha = .01$ $F(3,79) = 4.07$ $F^1 = (4.07)(3) = 12.21$

** $\alpha = .05$ $F(3,79) = 2.73$ $F^1 = (2.73)(3) = 8.19$

*** $\alpha = .10$ $F(3,79) = 2.16$ $F^1 = (2.16)(3) = 6.48$

Principals with 9 to 15 years experience as principal are significantly higher than all other principals on mean subscale values for subscale 4 and 7 ("system" factors). They are also significantly higher than principals with 5 to 8 years experience as principal on subscale 12; they are significantly higher than principals with 1 to 6 years experience as principal on subscale 5 ("system" factor); they are significantly higher than principals with either 7 or 8 or 1 to 4 years experience as principal on subscale 1 ("system" factor); they are significantly higher than principals with 1 to 4 years experience as principal on subscales 2, 9, 10, 11 ("transactional" and "system" factors); they are significantly higher than principals with 5 or 6 years experience as principals on subscale 6.

Principals with 5 to 8 years experience as principal are significantly

higher than principals with 1 to 4 years experience as principal on subscale 2 and 5 ("transactional" and "system" factors). The only instance where a principal with less experience scores significantly higher finds principals with 1 to 4 years experience as principal score significantly higher than principals with 7 or 8 years experience as principal on subscale 6 ("person" factor). In summary, principals tend to become more "system" oriented as their tenure as principal increases.

Table XXII reports the analysis of variance for principals experience in the present school and LBDQ-12 subscale means. This analysis indicates that the principals experience in the present school and the LBDQ-12 subscale means are significantly related when the average overall is considered.

TABLE XXII
ANALYSIS OF VARIANCE OF EXPERIENCE IN PRESENT SCHOOL OF
PRINCIPALS AND LBDQ-12 SUBSCALE MEANS

| Source of Variation | df | MS | F |
|--|-----|----------|----------|
| Experience in Present School of Principal | 2 | 791.5146 | 4.160* |
| Between Subject Error | 80 | 190.2589 | |
| LBDQ-12 Subscales | 11 | 406.6399 | 23.363** |
| Experience in Present School of Principals - LBDQ-12 Subscales | 22 | 13.6640 | 0.785 |
| Within Subjects Error | 880 | 17.4053 | |

* $\alpha = .05$ $F(2,80) = 3.11$

** $\alpha = .01$ $F(11,880) = 2.26$

To analyze this significant relationship, Figure 8 was prepared.

It would appear that the profiles are very similar for each group of principals. Principals with 5 to 8 years experience in the present school

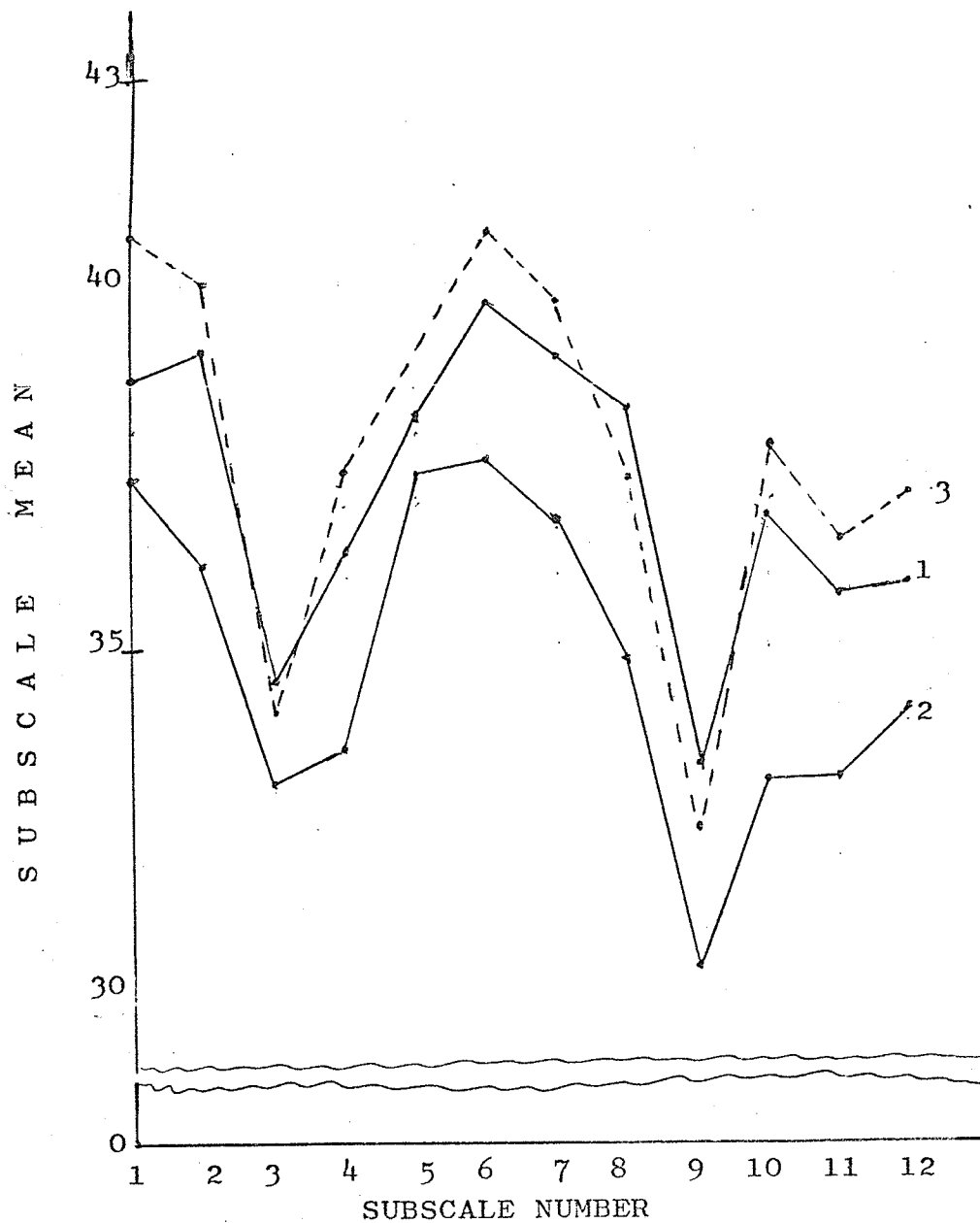


FIGURE 8

LBDQ-12 SUBSCALE MEANS OF YEARS IN PRESENT SCHOOL OF PRINCIPALS.

1. 1 to 4 years in present school.
2. 5 to 8 years in present school.
3. More than 8 years in present school.

appear to have significantly lower scores than principals with 1 to 4 or more than 8 years experience in the present school. To test the statistical significance of these suppositions a Scheffé test was carried out. The resulting analysis is summarized in Table XXIII.

TABLE XXIII
SCHEFFÉ TEST OF EXPERIENCE IN PRESENT SCHOOL OF PRINCIPALS AND
LBDQ-12 INDIVIDUAL SUBSCALE MEANS

| Subscale Number | Principals 1 - 4 years | Principals 5 - 8 years |
|-----------------|---------------------------|---------------------------------|
| | Principals 5 - 8 years | Principals More than 8 years |
| 1 | | 8.89** |
| 2 | 7.02** | 11.03* |
| 3 | | |
| 4 | 6.47** | 11.49* |
| 5 | | |
| 6 | | 7.54** |
| 7 | | |
| 8 | 10.32* | |
| 9 | 6.41** | |
| 10 | 11.36* | 15.99* |
| 11 | 5.36*** | 7.72** |
| 12 | | 6.63** |

* $\alpha = .01$ $F(2,80) = 4.92$ $F^1 = 2(4.92) = 9.84$
 ** $\alpha = .05$ $F(2,80) = 3.11$ $F^1 = 2(3.11) = 6.22$
 *** $\alpha = .10$ $F(2,80) = 2.38$ $F^1 = 2(2.38) = 4.76$

Principals with 1 to 4 or more than 8 years experience in the present school scored significantly higher than principals with 5 to 8 years in the present school on subscales 2, 4, 10 and 11 (three "transactional" and one "system" subscale). In addition, principals with 1 to 4 years experience

in the present school scored significantly higher than principals with 5 to 8 years experience in the present school on subscales 8 and 9; principals with more than 8 years experience in the present school scored significantly higher than principals with 5 to 8 years experience in the present school on subscales 1, 6, and 12. In summary, principals with 5 to 8 years experience in the present school scored significantly lower than principals with less or more experience in the present school on nine of the twelve subscales.

The analysis of variance for years of training of principal and LBDQ-12 subscale means is presented in Table XXIV.

TABLE XXIV
ANALYSIS OF VARIANCE FOR YEARS OF TRAINING OF PRINCIPALS
AND LBDQ-12 SUBSCALE MEANS

| Source of Variation | df | MS | F |
|--|-----|----------|----------|
| Years of Training of Principals | 2 | 619.5298 | 3.228* |
| Between Subject Error | 80 | 191.9177 | |
| LBDQ-12 Subscales | 11 | 405.3386 | 23.218** |
| Years of Training of Principals - LBDQ-12 Subscales | 22 | 14.4489 | 0.828 |
| Within Subjects Error | 880 | 17.4578 | |

* $\alpha = .05$ $F(2,80) = 3.11$

** $\alpha = .01$ $F(11,880) = 2.26$

This analysis indicates that years of training of principals and the LBDQ-12 subscale scores on the average are significantly related. To analyze this relationship Figure 9 was prepared. Principals with five years training appear to have an almost identical though larger profile

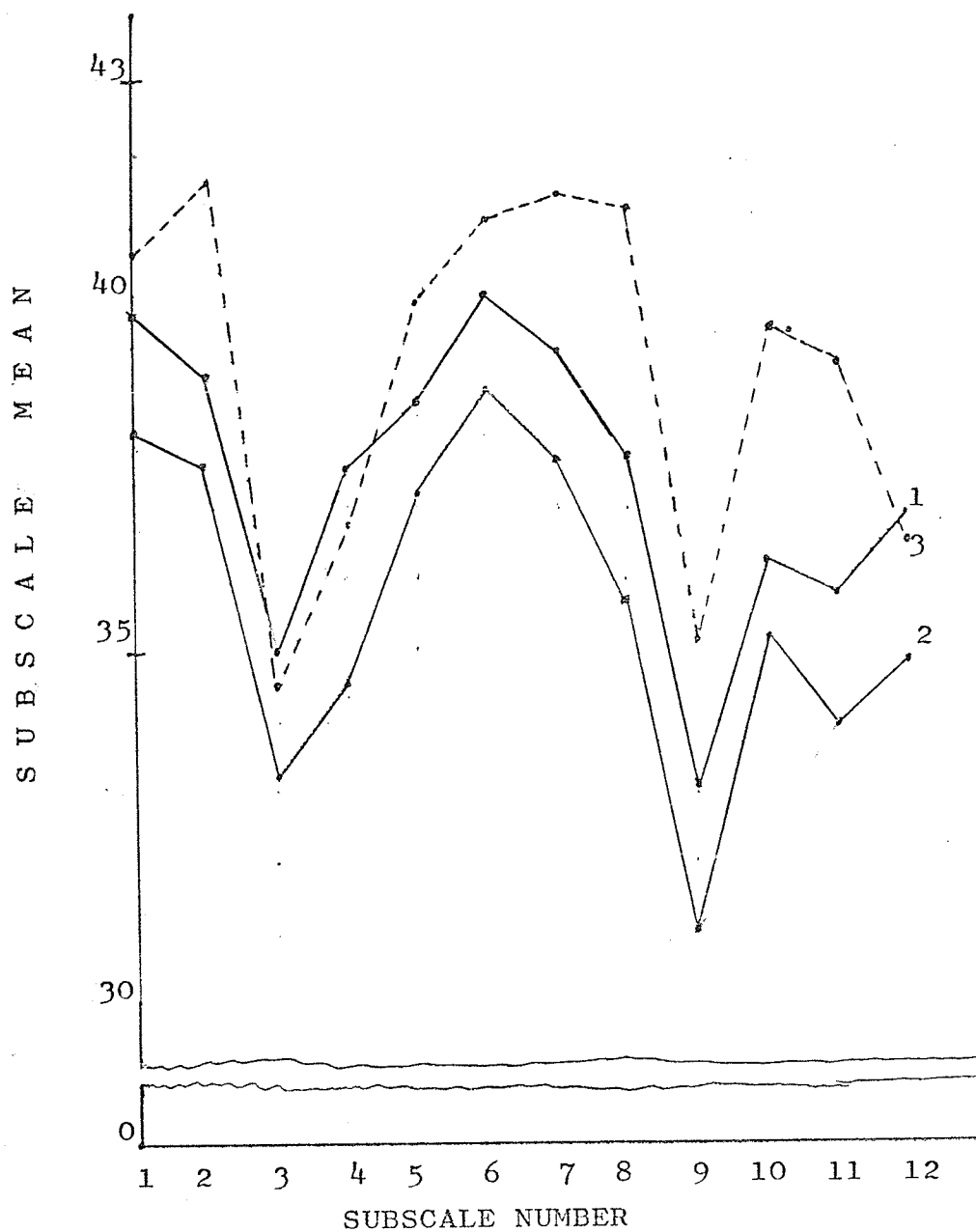


FIGURE 9

LBDQ-12 SUBSCALE MEANS OF PRINCIPALS WITH
5 TO 7 YEARS OF TRAINING.

1. 5 years of Training.
2. 6 years of Training.
3. 7 years of Training.

than the principals with six years of training. Principals with seven years of training have the highest scores on almost all subscales. The analysis of variance, Table XXIV, indicated that some of these scores were significantly higher.

To seek statistical confirmation of these statements a Scheffé test was performed. The resulting analysis is summarized in Table XXV.

TABLE XXV
SCHEFFÉ TEST OF YEARS OF TRAINING OF PRINCIPALS AND
LBDQ-12 INDIVIDUAL SUBSCALE MEANS

| Subscale Number | Principals 5 years | Principals 5 years | Principals 6 years |
|--------------------|-----------------------|-----------------------|-----------------------|
| | Principals 6 years | Principals 7 years | Principals 7 years |
| 1 | | | |
| 2 | | | 7.50** |
| 3 | | | |
| 4 | 8.84** | | |
| 5 | | | |
| 6 | | | |
| 7 | | | 6.77** |
| 8 | | 7.06** | 15.56* |
| 9 | | | 7.76** |
| 10 | | 5.84*** | 8.49** |
| 11 | | 5.89*** | 11.88* |
| 12 | | | |

* $\mathcal{L} = .01$ $F(2,80) = 4.92$ $F^1 = 2(4.92) = 9.84$

** $\mathcal{L} = .05$ $F(2,80) = 3.11$ $F^1 = 2(3.11) = 6.22$

*** $\mathcal{L} = .10$ $F(2,80) = 2.38$ $F^1 = 2(2.38) = 4.76$

This analysis indicates that principals with five years of training differ significantly from principals with six years of training on only one subscale. The former are significantly higher on persuasiveness. Principals with seven years of training score significantly higher than principals with five or six years of training on three subscale scores, subscales 8, 10, and 11. Principals with six years of training score significantly lower than principals with seven years of training on subscale scores for subscales 2, 7, and 9.

Table XXVI outlines the analysis of variance for age of department heads and LBDQ-12 subscale means.

TABLE XXVI
ANALYSIS OF VARIANCE OF AGE OF DEPARTMENT HEADS AND
LBDQ-12 SUBSCALE MEANS

| Source of Variation | df | MS | F |
|--|-----|-----------|---------|
| Age of Department Heads | 3 | 102.5440 | 0.483 |
| Between Subject Error | 79 | 212.3967 | |
| LBDQ-12 Subscales | 11 | 1038.8625 | 68.925* |
| Age of Department Heads - LBDQ-12 Subscales | 33 | 25.9631 | 1.723** |
| Within Subjects Error | 869 | 15.0724 | |

* $\alpha = .01$ $F(11,869) = 2.26$

** $\alpha = .01$ $F(33,869) = 1.68$

This analysis indicates that the department heads' age and overall average LBDQ-12 subscale scores are not significantly related. However, the significant relationship in the third F value indicates that an interaction factor exists, that is, the department heads' age and certain subscales are significantly related. To analyze this relationship, Figure 10 was prepared.

Scrutiny of Figure 10 indicates that there are probably few significant differences and they are likely to be found in subscales 1, 9, 11 and 12. A Scheffé test was used to compare selected mean differences. Table XXVII summarizes these results. Significant results are evident in subscales 11 and 12 only.

TABLE XXVII
SCHEFFÉ TEST OF AGE OF DEPARTMENT HEADS AND
LBDQ-12 INDIVIDUAL SUBSCALE MEANS

| Subscale Number | Age | Age | Age | Age | Age | Age |
|--------------------|---------|---------|---------|---------|---------|---------|
| | 25 - 29 | 25 - 29 | 25 - 29 | 30 - 34 | 30 - 34 | 35 - 44 |
| | Age | Age | Age | Age | Age | Age |
| | 30 - 34 | 35 - 44 | 45 - 54 | 35 - 44 | 45 - 54 | 45 - 54 |
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |
| 11 | | 12.22* | | | | |
| 12 | | | 11.47** | | 6.95*** | 9.35** |

* $\alpha = .01$ $F(3,79) = 4.07$ $F^1 = 3(4.07) = 12.21$
 ** $\alpha = .05$ $F(3,79) = 2.73$ $F^1 = 3(2.73) = 8.19$
 *** $\alpha = .10$ $F(3,79) = 2.16$ $F^1 = 3(2.16) = 6.48$

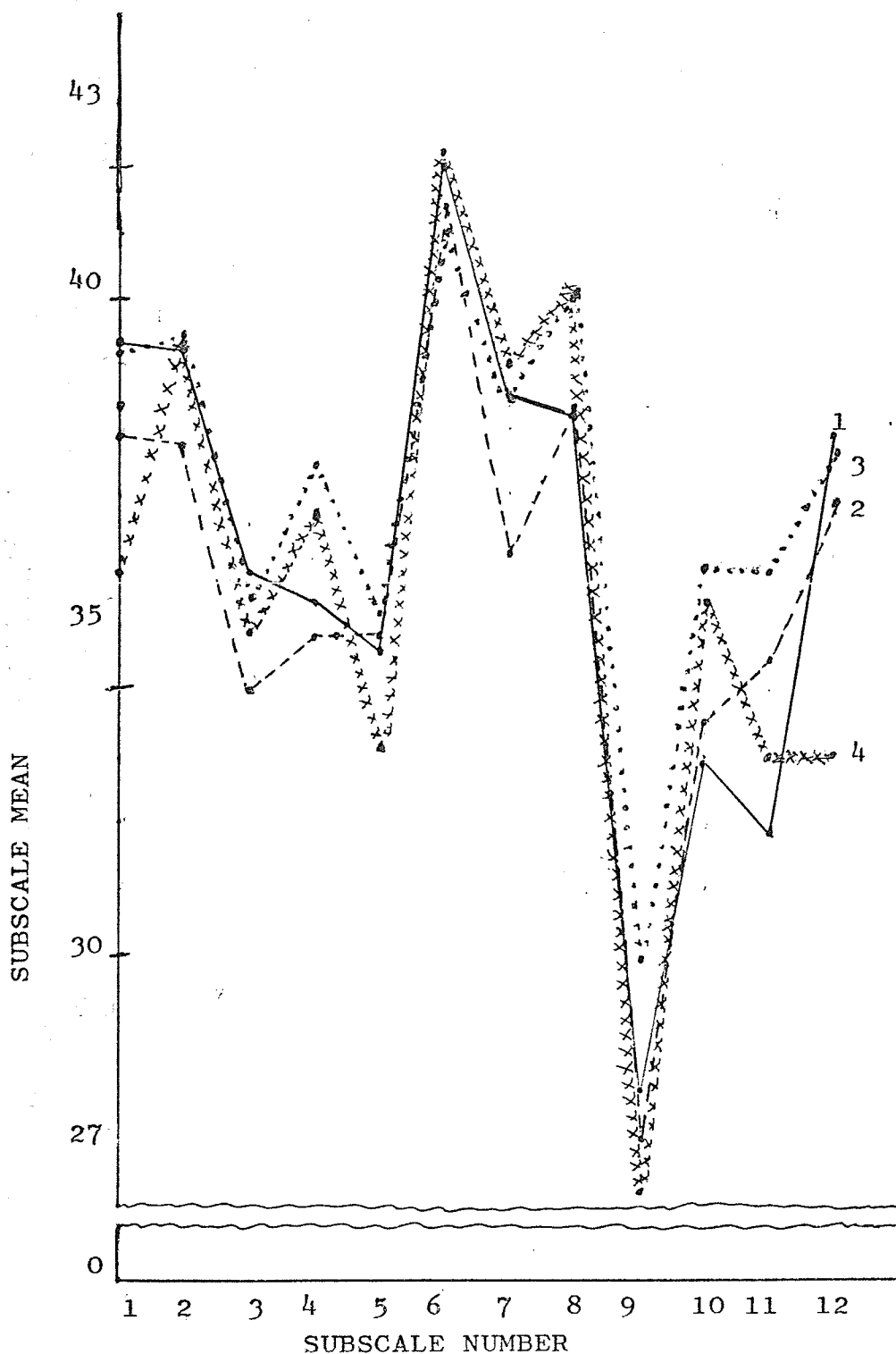


FIGURE 10

LBDQ-12 SUBSCALE MEANS OF SCIENCE DEPARTMENT HEADS BASED UPON AGE OF DEPARTMENT HEAD.

- 1. Age 25 to 29 ———
- 2. Age 30 to 34 - - - -
- 3. Age 35 to 44 ...
- 4. Age 45 to 54 xxx

Science department heads under 45 years of age scored significantly higher than science department heads 45-54 years of age on superior orientation. Science department heads 25-29 years of age scored significantly lower than science department heads 35-44 years of age on integration.

Table XXVIII reports the analysis of variance of experience prior to appointment of science department heads and LBDQ-12 subscale means.

TABLE XXVIII
ANALYSIS OF VARIANCE OF EXPERIENCE PRIOR TO APPOINTMENT OF
SCIENCE DEPARTMENT HEADS AND LBDQ-12 SUBSCALE MEANS

| Source of Variation | df | MS | F |
|---|-----|----------|---------|
| Experience of Science Department Heads Prior to Appointment | 3 | 63.1795 | 0.294 |
| Between Subject Error | 79 | 214.5771 | |
| LBDQ-12 Subscales | 11 | 951.3516 | 62.965* |
| Experience of Science Department Heads Prior to Appointment - LBDQ-12 Subscales | 33 | 24.5281 | 1.623 |
| Within Subjects Error | 869 | 15.1091 | |

* $\alpha = .01$ $F(11,869) = 2.26$

This analysis indicates that the science department heads experience prior to appointment and LBDQ-12 subscales means are not significantly related.

The analysis of variance of years as science department head and LBDQ-12 subscale means is presented in Table XXIX.

TABLE XXIX
ANALYSIS OF VARIANCE OF YEARS AS SCIENCE DEPARTMENT HEAD AND
LBDQ-12 SUBSCALE MEANS

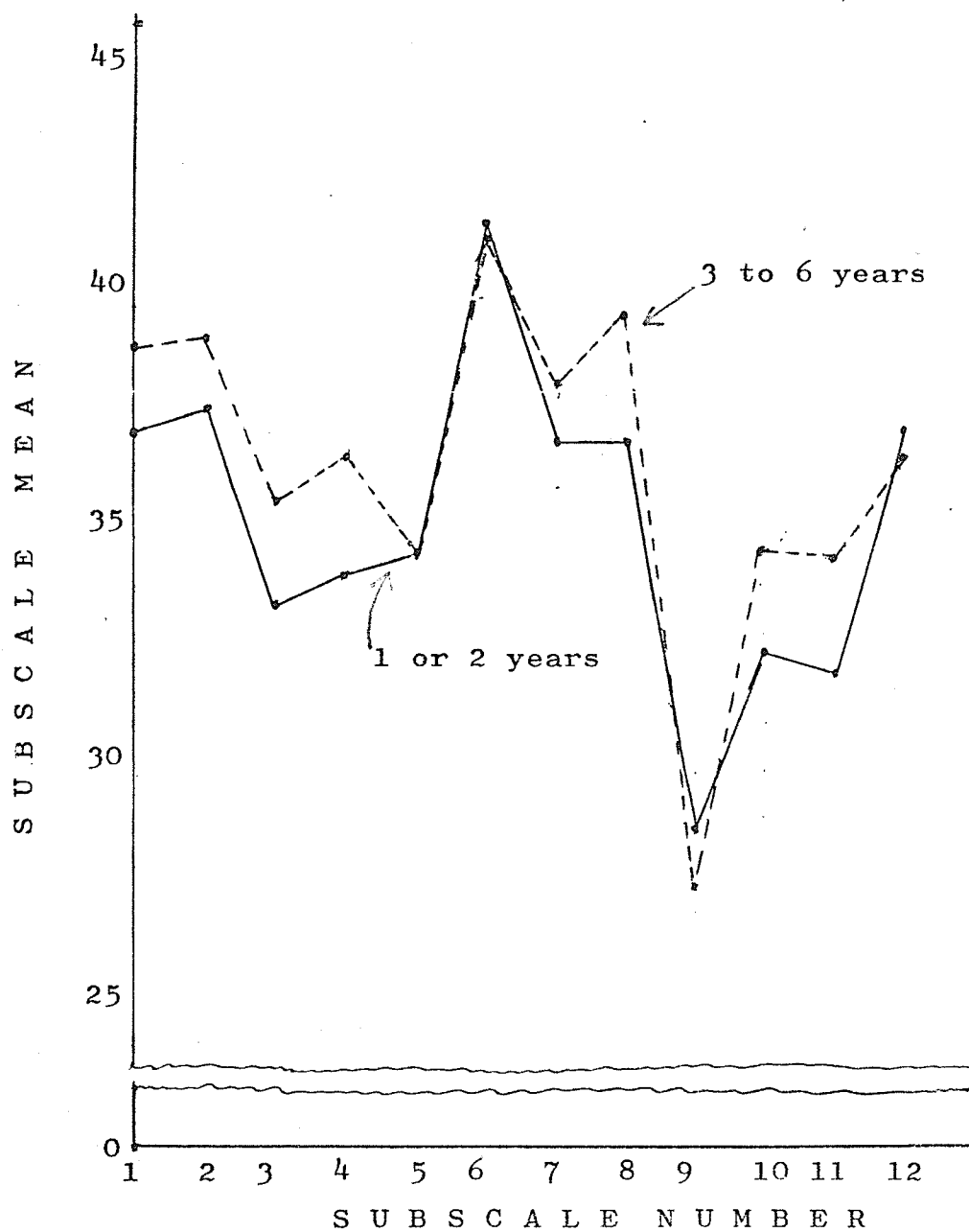
| Source of Variation | df | MS | F |
|---|-----|----------|---------|
| Years as Science Department Head | 1 | 321.7849 | 1.549 |
| Between Subject Error | 81 | 207.6772 | |
| LBDQ-12 Subscales | 11 | 971.8945 | 64.098* |
| Years as Science Department Head - LBDQ-12 Subscales | 11 | 35.7608 | 2.358* |
| Within Subjects Error | 891 | 15.1625 | |

* $\alpha = .01$ $F(11,891) = 2.26$

This table indicates that the science department head's years as a department head and overall average LBDQ-12 subscores are not significantly related. However, the significant interaction value indicates the department head's years as department head and some LBDQ-12 subscale means are significantly related.

To analyze this relationship, Figure 11 was prepared.

Science department heads who have been department heads for one or two years rate lower than department heads who have been department heads for three to six years on subscales 1, 3, 4, 8, 10 and 11. To check for significant subscale difference, the Scheffé test was employed.



LBDQ-12 SUBSCALE MEANS OF SCIENCE DEPARTMENT HEADS BASED UPON YEARS AS DEPARTMENT HEAD.

Table XXX reports the Scheffé test.

TABLE XXX
SCHEFFÉ TEST OF YEARS AS SCIENCE DEPARTMENT HEAD AND
LBDQ-12 INDIVIDUAL SUBSCALE MEANS

| Subscale Number | Department Head - 3-6 years |
|--------------------|-----------------------------|
| | Department Head - 1-2 years |
| 1 | 3.64*** |
| 3 | 5.56** |
| 4 | 9.00* |
| 8 | 9.75* |
| 10 | 6.03** |
| 11 | 6.63** |

* $\alpha = .01$ $F(1,81) = 7.01$ $F^1 = 1(7.01) = 7.01$

** $\alpha = .05$ $F(1,81) = 3.91$ $F^1 = 1(3.91) = 3.91$

*** $\alpha = .10$ $F(1,81) = 2.74$ $F^1 = 1(2.74) = 2.74$

Science department heads who have been department heads for three to six years are significantly higher than department heads who have been department heads for one or two years on subscale means for subscales 1, 3, 4, 8, 10 and 11. In summary, science department heads who have been department heads for three to six years score significantly higher on subscale scores from subscales in each leadership area.

The analysis of variance for department head's experience in present school and LBDQ-12 subscale scores is presented in Table XXXI.

This analysis indicates that the department heads experience in the present school and LBDQ-12 subscale means are not significantly related.

TABLE XXXI
ANALYSIS OF VARIANCE OF EXPERIENCE IN PRESENT SCHOOL OF
SCIENCE DEPARTMENT HEADS AND LBDQ-12 SUBSCALE MEANS

| Source of Variation | df | MS | F |
|--|-----|----------|---------|
| Experience in Present School of Science Department Heads | 3 | 70.1810 | 0.328 |
| Between Subject Error | 79 | 213.9870 | |
| LBDQ-12 Subscales | 11 | 998.0837 | 65.705* |
| Experience in Present School of Science Department Heads - LBDQ-12 Subscales | 33 | 21.4933 | 1.415 |
| Within Subjects Error | 869 | 15.1904 | |

* $\alpha = .01$ $F(11,869) = 2.26$

Table XXXII reports the analysis of variance for department heads years of training and LBDQ-12 subscale scores.

This analysis indicates that the department heads years of training and LBDQ-12 subscale scores are not significantly related.

The following significant relationships emerged from the study of the relationships between leader characteristics and perceptions of leadership as measured by the LBDQ-12.

The age of the principal and the experience of the principal prior to appointment were not significantly related to teacher perceptions of leader behavior of principals. The experience of the principal as principal, the experience of the principal in the present school, and the years of training of the principal were significantly related to

TABLE XXXII
ANALYSIS OF VARIANCE OF YEARS OF TRAINING OF SCIENCE
DEPARTMENT HEADS AND LBDQ-12 SUBSCALE MEANS

| Source of Variation | df | MS | F |
|---|-----|-----------|---------|
| Years of Training of Science Department Heads | 1 | 325.1816 | 1.566 |
| Between Subject Error | 81 | 207.6352 | |
| LBDQ-12 Subscales | 11 | 1016.8643 | 66.139* |
| Years of Training of Science Department Heads - LBDQ-12 Subscales | 11 | 18.5894 | 1.209 |
| Within Subjects Error | 891 | 15.3745 | |

* $\alpha = .01$ $F(11,891) = 2.26$

teacher perceptions of leader behavior of principals.

The age of the science department head, and the experience of the science department head as science department head were significantly related to teacher perceptions of leadership of science department head. The experience of the science department head prior to appointment, the experience of the science department head in the present school, and the years of training of the science department head were not significantly related to teacher perceptions of leadership behavior of science department heads.

Respondent Biographical Factors

Six biographical factors of respondents were analyzed for their relationship to respondent perceptions of leader behavior of principal

and department head. All parts of this question with one exception were analyzed by use of the same analysis of variance program used in the previous questions. Tables XXXIII to XL inclusive summarize these analyses.

TABLE XXXIII
ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS OF
PRINCIPALS AND AGE OF RESPONDENTS

| Source of Variation | df | MS | F |
|--|-----|----------|---------|
| Age of Respondent | 2 | 24.2423 | 0.116 |
| Between Subject Error | 80 | 208.2858 | |
| LBDQ-12 Subscales of Principals | 11 | 374.4863 | 21.633* |
| Age of Respondent - LBDQ-12 Subscales of Principals | 22 | 16.4370 | 0.950 |
| Within Subjects Error | 880 | 17.3107 | |

* $\alpha = .01$ $F(11,880) = 2.26$

TABLE XXXIV
ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS OF PRINCIPALS
AND YEARS OF EXPERIENCE OF RESPONDENTS

| Source of Variation | df | MS | F |
|---|-----|----------|---------|
| Years of Experience of Respondents | 2 | 31.9056 | 0.153 |
| Between Subject Error | 80 | 208.0115 | |
| LBDQ-12 Subscales of Principals | 11 | 391.6987 | 22.788* |
| Years of Experience of Respondents - LBDQ-12 Subscales of Principals | 22 | 22.2624 | 1.295 |
| Within Subjects Error | 880 | 17.1888 | |

* $\alpha = .01$ $F(11,880) = 2.26$

TABLE XXXV

ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS OF PRINCIPALS AND
EXPERIENCE IN PRESENT SCHOOL OF RESPONDENTS

| Source of Variation | df | MS | F |
|---|-----|----------|---------|
| Experience in Present School of Respondents | 2 | 45.8820 | 0.221 |
| Between Subject Error | 80 | 207.7682 | |
| LBDQ-12 Subscales of Principals | 11 | 394.8894 | 22.735* |
| Experience in Present School of Respondents - LBDQ-12 Subscales of Principals | 22 | 15.1390 | 0.872 |
| Within Subjects Error | 880 | 17.3696 | |

* $\alpha = .01$ $F(11,880) = 2.26$

TABLE XXXVI

ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS OF PRINCIPALS AND
YEARS OF TRAINING OF RESPONDENTS

| Source of Variation | df | MS | F |
|---|-----|----------|---------|
| Years of Training of Respondents | 2 | 53.6144 | 0.255 |
| Between Subject Error | 79 | 201.1861 | |
| LBDQ-12 Subscales of Principals | 11 | 386.2112 | 23.101* |
| Years of Training of Respondents - LBDQ-12 Subscales of Principals | 22 | 24.3063 | 1.454 |
| Within Subject Error | 869 | 16.7186 | |

* $\alpha = .01$ $F(11,869) = 2.26$

TABLE XXXVII
ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS OF
SCIENCE DEPARTMENT HEADS AND AGE OF RESPONDENT

| Source of Variation | df | MS | F |
|---|-----|----------|---------|
| Age of Respondent | 2 | 58.8359 | 0.276 |
| Between Subject Error | 80 | 213.0665 | |
| LBDQ-12 Subscales of Science Department Heads | 11 | 386.2112 | 23.101* |
| Age of Respondent - LBDQ-12 Subscales of Science Department Heads | 22 | 12.2080 | 0.788 |
| Within Subjects Error | 880 | 15.4951 | |

* $\mathcal{L} = .01$ $F(11,880) = 2.26$

TABLE XXXVIII
ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS OF SCIENCE
DEPARTMENT HEADS AND YEARS OF EXPERIENCE OF RESPONDENTS

| Source of Variation | df | MS | F |
|--|-----|----------|---------|
| Years of Experience of Respondents | 2 | 19.6737 | 0.092 |
| Between Subject Error | 80 | 213.7827 | |
| LBDQ-12 Subscales of Science Department Heads | 11 | 992.7839 | 64.814* |
| Years of Experience of Respondents - LBDQ-12 Subscales of Science Department Heads | 22 | 19.2581 | 1.257 |
| Within Subject Error | 880 | 15.3175 | |

* $\mathcal{L} = .01$ $F(11,880) = 2.26$

TABLE XXXIX
ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS OF SCIENCE DEPARTMENT
HEADS AND EXPERIENCE IN PRESENT SCHOOL OF RESPONDENTS

| Source of Variation | df | MS | F |
|--|-----|-----------|---------|
| Experience in Present School of Respondents | 2 | 190.2611 | 0.907 |
| Between Subject Error | 80 | 209.8604 | |
| LBDQ-12 Subscales of Science Department Heads | 11 | 1000.7681 | 65.132* |
| Experience in Present School of Respondents - LBDQ-12 Subscales | 22 | 17.9637 | 1.169 |
| Within Subjects Error | 880 | 15.3653 | |

* $\alpha = .01$ $F(11,880) = 2.26$

TABLE XL
ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS OF SCIENCE DEPARTMENT
HEADS AND YEARS OF TRAINING OF RESPONDENTS

| Source of Variation | df | MS | F |
|--|-----|----------|---------|
| Years of Training of Respondents | 2 | 136.7739 | 0.646 |
| Between Subject Error | 79 | 211.6579 | |
| LBDQ-12 Subscales of Science Department Heads | 11 | 950.0911 | 60.487* |
| Years of Training of Respondents - LBDQ-12 Subscales of Science Department Heads | 22 | 7.2311 | 0.460 |
| Within Subjects Error | 869 | 15.7074 | |

* $\alpha = .01$ $F(11,869) = 2.26$

These analyses indicate that there are no significant correlations among perceptions of leadership behavior as measured by the LBDQ-12 of (a) principal, (b) science department head and age of respondents, experience of respondents, experience in the present school of respondents, or years of training of respondents.

The Phi coefficient was the correlational statistic used to measure the relationship between sex of respondents and perceptions of leadership behavior of principals and science department heads. Tables XLI and XLII contain the summary of this analysis.

TABLE XLI

PHI COEFFICIENT FOR CORRELATION BETWEEN SEX OF RESPONDENTS AND
LBDQ-12 SUBSCALE AND OVERALL MEANS OF PRINCIPALS

| Subscale | Male Respondents | | Female Respondents | | ϕ |
|----------|------------------|------------|--------------------|------------|--------|
| | Above Mean | Below Mean | Above Mean | Below Mean | |
| 1 | 37 | 39 | 3 | 4 | .011 |
| 2 | 40 | 36 | 5 | 2 | .061 |
| 3 | 36 | 40 | 2 | 5 | .061 |
| 4 | 46 | 30 | 3 | 4 | .056 |
| 5 | 46 | 30 | 6 | 1 | .100 |
| 6 | 41 | 35 | 3 | 4 | .018 |
| 7 | 43 | 33 | 4 | 3 | .107 |
| 8 | 40 | 36 | 2 | 5 | .090 |
| 9 | 36 | 40 | 3 | 4 | .018 |
| 10 | 46 | 30 | 3 | 4 | .056 |
| 11 | 37 | 39 | 3 | 4 | .011 |
| 12 | 37 | 39 | 3 | 4 | .011 |

$\alpha = .05$ $\phi \geq .215$ for subscales

TABLE XLII

PHI COEFFICIENT FOR CORRELATION BETWEEN SEX OF RESPONDENTS AND LBDQ-12
SUBSCALE AND OVERALL MEANS OF SCIENCE DEPARTMENT HEADS

| Subscale | Male Respondents | | Female Respondents | | ϕ |
|----------|------------------|------------|--------------------|------------|--------|
| | Above Mean | Below Mean | Above Mean | Below Mean | |
| 1 | 36 | 40 | 4 | 3 | .011 |
| 2 | 35 | 41 | 5 | 2 | .111 |
| 3 | 37 | 39 | 6 | 1 | .184 |
| 4 | 39 | 37 | 3 | 4 | .004 |
| 5 | 42 | 34 | 5 | 2 | .008 |
| 6 | 35 | 41 | 5 | 2 | .111 |
| 7 | 36 | 40 | 3 | 4 | .018 |
| 8 | 47 | 29 | 3 | 4 | .063 |
| 9 | 37 | 39 | 2 | 5 | .068 |
| 10 | 39 | 37 | 2 | 5 | .096 |
| 11 | 45 | 31 | 3 | 4 | .048 |
| 12 | 42 | 34 | 5 | 2 | .008 |

$\alpha = .05$ $\phi \geq .215$ for subscales

This analysis reveals no significant correlation between sex of respondent and teacher perceptions of leader behavior of principal and science department head.

No significant relationships were discovered between age of respondent, years of experience of respondent, experience in present school of respondent, years of training of respondent, and sex of respondent and teacher perceptions of leadership behavior of either principal or science department head.

Situational Factors

City, type of school, and size of school are the three situational factors whose correlation with teacher perceptions of leader behavior of principal and science department head are analyzed in Tables XLIII to XLVIII inclusive. An analysis of variance was used for each of these situational factors.

TABLE XLIII

ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS OF PRINCIPALS AND CITY

| Source of Variation | df | MS | F |
|--|-----|----------|---------|
| City | 2 | 21.9430 | 0.105 |
| Between Subject Error | 80 | 208.2468 | |
| LBDQ-12 Subscale Means of Principal | 11 | 423.5251 | 24.868* |
| City - LBDQ-12 Subscale Means of Principal | 22 | 26.0001 | 1.527 |
| Within Subject Error | 880 | 17.0311 | |

* $\alpha = .01$ $F(11,880) = 2.26$

TABLE XLIV

ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS OF
PRINCIPALS AND TYPE OF SCHOOL

| Source of Variation | df | MS | F |
|---|-----|----------|----------|
| Type of School | 2 | 674.1694 | 3.448* |
| Between Subject Error | 80 | 195.5382 | |
| LBDQ-12 Subscale Means of Principal | 11 | 391.6548 | 23.066** |
| Type of School - LBDQ-12 Subscale Means of Principal | 22 | 32.8839 | 1.937*** |
| Within Subject Error | 880 | 16.9794 | |

* $\alpha = .05$ $F(2,80) = 3.11$ ** $\alpha = .01$ $F(11,880) = 2.26$ *** $\alpha = .01$ $F(22,880) = 1.89$

TABLE XLV
 ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS
 OF PRINCIPALS AND SIZE OF SCHOOL

| Source of Variation | df | MS | F |
|---|-----|----------|---------|
| Size of School | 3 | 38.2103 | 0.182 |
| Between Subject Error | 79 | 209.6320 | |
| LBDQ-12 Subscale Means of Principal | 11 | 389.4915 | 23.148* |
| Size of School - LBDQ-12 Subscale Means of Principal | 33 | 29.6916 | 1.765** |
| Within Subjects Error | 869 | 16.8262 | |

* $\alpha = .01$ $F(11,869) = 2.26$

** $\alpha = .01$ $F(33,869) = 1.68$

TABLE XLVI
 ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS
 OF SCIENCE DEPARTMENT HEADS AND CITY

| Source of Variation | df | MS | F |
|--|-----|-----------|---------|
| City | 2 | 264.5596 | 1.267 |
| Between Subject Error | 80 | 208.8285 | |
| LBDQ-12 Subscale Means of Science Department Heads | 11 | 1007.3457 | 64.914* |
| City - LBDQ-12 Subscale Means of Science Department Heads | 22 | 10.3728 | 0.668 |
| Within Subjects Error | 880 | 15.5181 | |

* $\alpha = .01$ $F(11,880) = 2.26$

TABLE XLVII
ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS OF
SCIENCE DEPARTMENT HEADS AND TYPE OF SCHOOL

| Source of Variation | df | MS | F |
|--|-----|-----------|---------|
| Type of School | 2 | 233.4475 | 1.124 |
| Between Subject Error | 80 | 207.7014 | |
| LBDQ-12 Subscale Means of Science Department Heads | 11 | 1016.5430 | 65.981* |
| Type of School - LBDQ-12 Subscale Means of Science Department Heads | 22 | 19.5331 | 1.268 |
| Within Subjects Error | 880 | 15.4066 | |

* $\mathcal{L} = .01$ $F(11,880) = 2.26$

TABLE XLVIII
ANALYSIS OF VARIANCE OF LBDQ-12 SUBSCALE MEANS
OF SCIENCE DEPARTMENT HEADS AND SIZE OF SCHOOL

| Source of Variation | df | MS | F |
|--|-----|----------|---------|
| Size of School | 3 | 137.1449 | 0.646 |
| Between Subject Error | 79 | 212.2709 | |
| LBDQ-12 Subscale Means of Science Department Heads | 11 | 933.7629 | 61.737* |
| Size of School - LBDQ-12 Subscale Means of Science Department Heads | 33 | 21.8116 | 1.442 |
| Within Subjects Error | 869 | 15.1247 | |

* $\mathcal{L} = .01$ $F(11,869) = 2.26$

These tables reveal that principals' LBDQ-12 subscale means and city are not significantly related. They also reveal that science department heads' LBDQ-12 subscale means are not significantly related to city, type of school, or size of school.

Table XLIV indicates that principals' LBDQ-12 subscale and type of school are significantly related and that an interaction effect is significant too. To analyze these relationships, Figure 12 was prepared.

Many significant differences in subscale means were evident from Figure 12. Principals of schools with Grades X to XII or Grades IX to XII scored higher than principals of schools with Grades VII to XII or Grades VIII to XII. In addition, to a lesser extent, principals of schools with Grades X to XII scored higher than principals of schools with Grades IX to XII.

To determine which specific subscale means were significantly different, a Scheffé test was carried out on individual subscale means. The summary of this Scheffé test is found in Table XLIX.

There are no significant differences among principals from various types of schools on subscales 3, 6, and 9--one "system" and two "person" oriented subscales.

Principals' subscale means from schools with Grades X to XII are significantly higher than subscale means of all other principals on subscale seven--a "system" oriented subscale; their subscale means are significantly higher than subscale means of principals from schools with Grades IX to XII on subscales 1, 4, and 12; their subscale means are significantly higher than subscale means of principals from schools

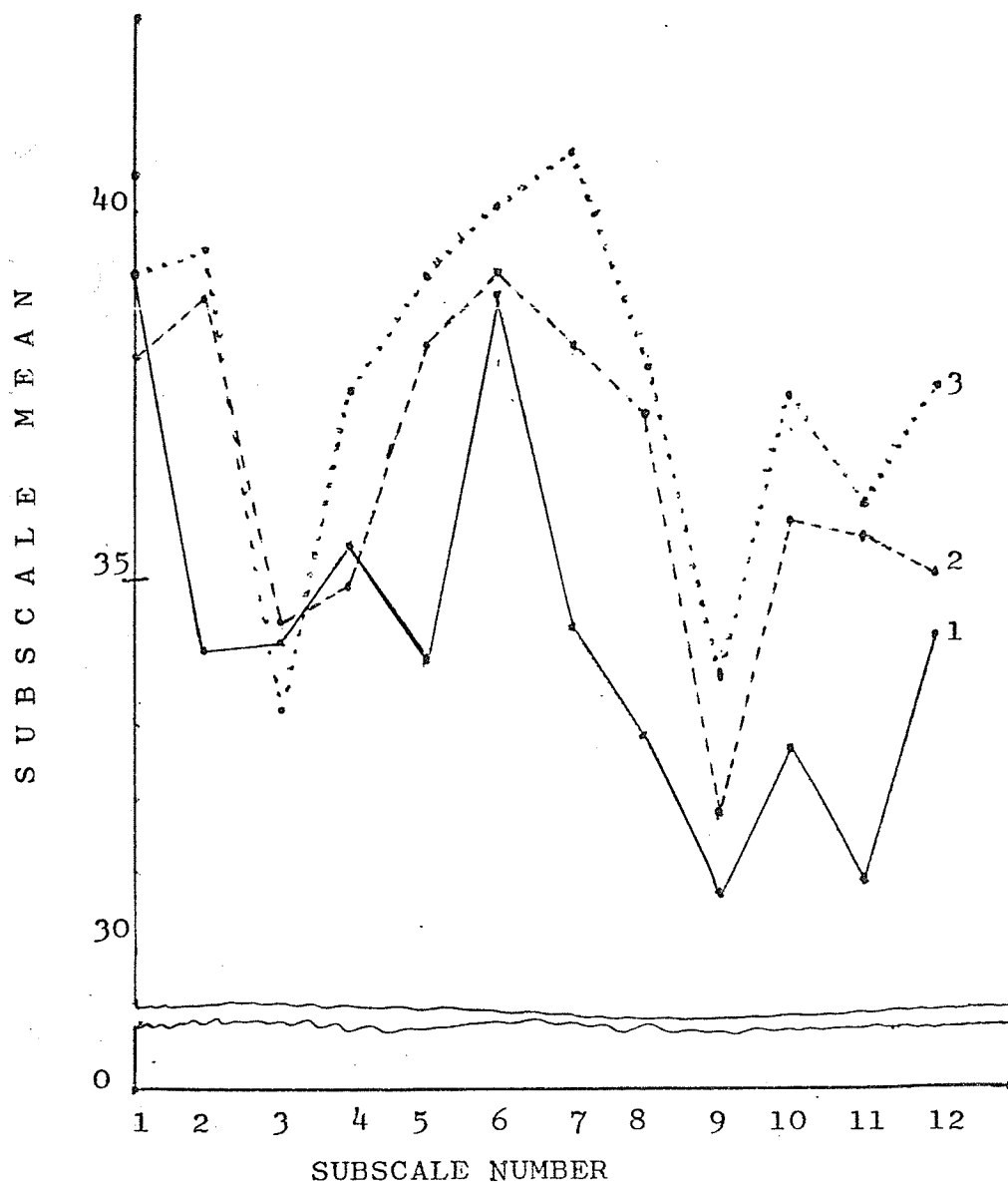


FIGURE 12

LBDQ-12 SUBSCALE MEANS OF PRINCIPALS BASED UPON TYPE OF SCHOOL:

1. Grades 7 to 12 or grades 8 to 12.
2. Grades 9 to 12.
3. Grades 10 to 12.

TABLE XLIX
SCHEFFÉ TEST OF TYPE OF SCHOOL AND LBDQ-12
INDIVIDUAL SUBSCALE MEANS OF PRINCIPALS

| Subscale Number | School Grades 7-12 or 8-12 | School Grades 7-12 or 8-12 | School Grades 9-12 |
|--------------------|----------------------------------|----------------------------------|------------------------|
| | School Grades 9-12 | School Grades 10-12 | School Grades 10-12 |
| 1 | | | 6.79** |
| 2 | 10.97* | 11.62* | |
| 3 | | | |
| 4 | | | 6.93** |
| 5 | 8.54** | 10.84* | |
| 6 | | | |
| 7 | 6.78** | 16.70* | 7.18** |
| 8 | 8.97** | 10.09* | |
| 9 | | | |
| 10 | | 9.21** | |
| 11 | 10.23* | 10.38* | |
| 12 | | | 6.68** |

* $\alpha = .01$ $F(2,80) = 4.92$ $F^1 = 2(4.92) = 9.84$

** $\alpha = .05$ $F(2,80) = 3.11$ $F^1 = 2(3.11) = 6.22$

*** $\alpha = .10$ $F(2,80) = 2.38$ $F^1 = 2(2.38) = 4.76$

with Grades VII to XII or Grades VIII to XII on subscales 2, 5, 8, 10 and 11. The subscale means of principals from schools with Grades IX to XII are significantly higher than subscale means of principals of schools with Grades VII to XII or Grades VIII to XII on subscales 2, 5, 7, 8 and 11.

Table XLV, page 117, indicates that though size of school is not

significantly related to LBDQ-12 subscale means of principals overall, there is an interaction effect. There are significant differences on some individual LBDQ-12 subscale means when related to school size. To analyze this interaction, Figure 13 was prepared. The scale of this figure was increased to improve clarity.

A cursory glance at Figure 13 indicated that there would be few significant differences. The second step in the analysis was to employ the Scheffé test to compare selected mean differences. Table L summarizes the test.

TABLE L
SCHEFFÉ TEST OF SIZE OF SCHOOL AND LBDQ-12
INDIVIDUAL SUBSCALE MEANS OF PRINCIPALS

| Subscale Number | 30 to 39 | 40 to 49 | 50 to 69 |
|--------------------|-----------------|-----------------|-----------------|
| | <u>Teachers</u> | <u>Teachers</u> | <u>Teachers</u> |
| | 50 to 69 | 70 to 89 | 70 to 89 |
| | <u>Teachers</u> | <u>Teachers</u> | <u>Teachers</u> |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | 7.52** | |
| 8 | | | |
| 9 | | | 11.95* |
| 10 | | | |
| 11 | | | |
| 12 | | | |

$$* \alpha = .05 \quad F(3,79) = 2.73 \quad F^1 = 3(2.73) = 8.19$$

$$** \alpha = .10 \quad F(3,79) = 2.16 \quad F^1 = 3(2.16) = 6.48$$

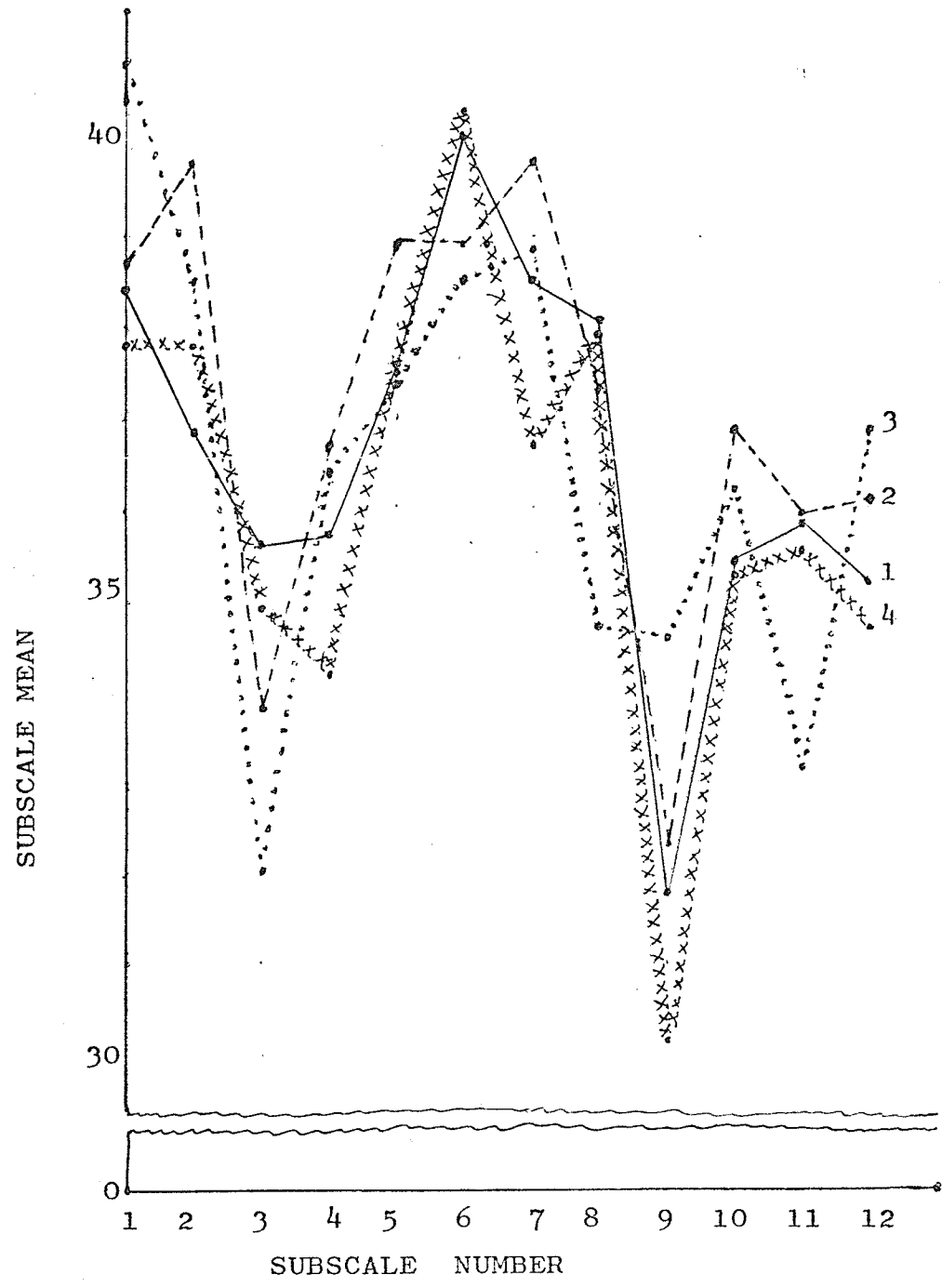


FIGURE 13

LBDQ-12 SUBSCALE MEANS OF PRINCIPALS
BASED UPON SIZE OF SCHOOL
1. 30 to 39 Teachers _____
2. 40 to 49 Teachers - - - - -
3. 50 to 69 Teachers
4. 70 to 89 Teachers xxxxx

Only two significant results were evident. Principals from schools of 50 to 69 teachers had subscale means which were significantly higher than the subscale means of principals from schools of 70 to 89 teachers on subscale nine--production emphasis. Principals from schools with 40 to 49 teachers had subscale means which were significantly higher than the subscale means of principals from schools with 70 to 89 teachers on subscale 7--role assumption.

Question 6 would be summarized as follows. Perceptions of leadership behavior of science department heads were not significantly related to the situational factors--city, type of school, size of school. Perceptions of leadership behavior of principals and city were not significantly related. Type of school and size of school were both related to perceptions of leader behavior of principals.

The analysis undertaken in this study has been outlined in this chapter. Perceptions of leadership behavior of principals were found to be significantly different from that of science department heads. The profiles of perceptions of leader behavior of principals and science department heads were found to be varied from school to school. Within a given school the combination of principal-science department head profiles were generally either supplementary or complementary in nature. Of ten leader characteristics, five were found to be significantly related to perceptions of leader behavior. The age of the principal, the experience prior to appointment of principal, the experience prior to appointment of science department head, the experience in the present school of the science department head, and the years of training of the science

department head were not significantly related to perceptions of leader behavior. The experience as principal, the experience in present school of principal, the years of training of principal, the age of the science department head, and the experience as science department head were significantly related to perceptions of leader behavior.

All respondent situational factors--age of respondent, years of experience of respondent, experience in present school of respondent, years of training of respondent and sex of respondent--failed to demonstrate any significant relationships to perceptions of leader behavior.

Of the general situational factors--city, size and type of school were not significantly related to perceptions of leader behavior of science department head. City was not related to perceptions of leader behavior of principal. Both size and type of school were significantly related to perceptions of leader behavior of principal.

CHAPTER V

SUMMARY AND IMPLICATIONS

I. INTRODUCTION

This study was undertaken to survey teacher perceptions of leader behavior of principals and science department heads in secondary schools of Manitoba and Saskatchewan. Teacher perceptions of leader behavior of principals as a group were compared to teacher perceptions of leader behavior of science department heads as a group. Individual profiles of perceived leader behavior of the various principals were compared and contrasted as were individual profiles of perceived leader behavior of various science department heads. The perceived leader behavior of the principal-science department head combination in each individual school was analyzed. The effect on perceived leader behavior of principal and science department head of age of the leader, tenure as leader, tenure in present school, experience prior to appointment as leader, and years of training was measured as was the effect of teacher respondent age, sex, tenure in the present school, teaching experience, and years of training. Finally, the effect on perceptions of leader behavior of principal and science department head of school size, grades in school, and city in which school was located was tested.

To gather data for this study, science teachers of nineteen collegiates in Regina, Saskatoon, and Winnipeg completed a LBDQ-12 on their principal, a LBDQ-12 on their science department head, and a biographical questionnaire. A biographical questionnaire was completed

by the science department head in each collegiate. The principal of each collegiate completed a biographical and situational questionnaire.

The analysis of the data collected was presented in the previous chapter. To compare teacher perceptions of leader behavior of the average principal and the average science department head a two-way analysis of variance, repeated measures design, was employed. To investigate the significant interactions which were discovered, two procedures were used. A profile of teacher perceptions of leader behavior of the average principal was compared to a profile of teacher perceptions of leader behavior of the average science department head. Finally a Scheffé test was used to compare "average" principal and science department head individual subscale means.

To study individual profiles of principal and science department head the means on each subscale of LBDQ-12 were converted to standardized scores. The standardized scores on the various subscales were then grouped in "system," "person," or "transactional" areas and those scores more than one standard error from the mean were noted. The perceived leader behavior of the principal-science department head combination in each school was also studied by means of standardized scores.

To test the correlations between teacher perceptions of leader behavior and leader and respondent biographical data the same two-way analysis of variance was used as the initial step. If significance was established the profiles and Scheffé test described earlier were used to test that significance. The study of the relationship between sex of respondents and perceived leader behaviors was completed by means of

the Phi coefficient.

This chapter will serve four purposes. A summary of the study to this point forms this introductory section. A statement of the major findings of the study follows. General conclusions which will answer the questions presented in Chapter I are outlined. Finally, some suggested implications of the study are advanced.

II. MAJOR FINDINGS

The six questions posed in Chapter I serve as the structure for these findings.

Teacher Perceptions of Principal and Science Department Head

The principal scored significantly higher than the science department head on the subscales for initiation of structure, production emphasis, and predictive accuracy. The science department head scored significantly higher than the principal on subscales for tolerance of freedom and consideration.

Teacher Perceptions of Principals from School to School

Of the nineteen principals, eight were more than one standard error above the mean on one or more subscales. Three of these principals demonstrated strength in "person," "system," and "transactional" orientations; two were strong on only one subscale in each area while one principal was strong on nine subscales. Three other principals had subscale scores one standard error above the mean on subscales which focused on two of three orientations; one of these principals had two

high scores on "system" and one on "person" orientation; another principal had three high scores on "system" and one on "transactional" orientation; the third principal had two high scores on "person" orientation and one on "transactional" orientation. Two principals had subscale scores one standard error above the mean on one subscale; one principal had one high score on a "system" subscale and the other had one high score on a "transactional" subscale.

Three of the nineteen principals were within one standard error of the mean on all subscales.

Eight principals had subscale scores more than one standard error below the mean. One of these principals had one low score-- production emphasis. Five principals had subscale scores which were more than one standard error below the mean on subscales in two orientations; three had low scores on one to four "system" subscales and low scores on one to three "transactional" factors; one principal had one low score on "system" and two low scores on "transactional" and one low score on "person" orientation. Two principals had low scores that were found in all three orientations; one of these principals had seven scores one standard error below the mean and one, production emphasis, more than one standard error above the mean; the other principal had ten such low scores.

Teacher Perceptions of Science Department Heads From School to School

Science department heads were classified in a manner similar to that outlined for principals.

Nine department heads had more subscale scores one standard error

above the mean than below. Two of the department heads had high scores focusing on all three orientations; one had six such high scores and the other had four. Five of the group of nine science department heads had subscale scores more than one standard error above the mean focusing on "system" and "transactional" orientations; in each instance there were one or two high "system" scores and one high "transactional" score; two of these five department heads had one score one standard error below the mean. Two of the nine department heads with subscale scores more than one standard error above the mean had high scores that focused on one area; one had three high "system" scores while the other had two high "person" factors coupled with one low "person" factor.

Two science department heads had all scores within one standard error of the mean in either direction.

The remaining eight science department heads had more scores one standard error below the mean than those above. Two department heads had low scores on tolerance of freedom. Three department heads had low scores on two areas and each had one high score; one had one low "system" and "transactional" score and one high "person" score; the second had four low "system" scores, two low "transactional" scores, and one high "person" score; the third had two low "person" scores, one low "transactional" score and one high "transactional" score. The remaining three department heads with low scores had such scores in all areas; one had one low score on each area; another had two low "transactional" scores but one low and one high score on each of the remaining areas; the third department head had all scores, except tolerance of freedom, low.

Teacher Perceptions of Principal/Science Department Head Combination
Within a School

Leadership combinations were classified in two major categories.

Ten schools of the 19 schools in the sample were perceived as having a leadership combination which was labelled complementary. Four of these schools had principals who were chiefly "person" oriented while the science department head was "system" oriented. Three schools had principals who were perceived as "system" principals while the science department head stressed "person" orientation. In the remaining three schools the principal was strong in two or three areas; the science department complemented his leadership by exhibiting strength on different subscales in an area where the principal was strong.

Of the seven schools in which supplementary leadership was perceived two schools existed in which both principal and science department head rated high on one or more subscales in each area; two schools existed where principal and science department head were average on one or more subscales in each area; three schools existed in which principal and science department head had one or more scores in each area more than one standard error below the mean.

The perceptions of leadership in two schools were not classified as either complementary or supplementary. In each of these schools one of the leaders had many low scores while the other leader had average scores on most subscales.

Teacher Perceptions of Leader Behavior and Leader Characteristics

No significant relationship was measured between age of principals

or experience of principals prior to appointment and teacher perceptions of leader behavior of principal. No significant relationship was measured between experience prior to appointment as science department head, experience in the present school of science department head, or years of training of science department head and teacher perceptions of leader behavior of science department head.

Two significant relationships existed between age of science department head and teacher perceptions of leader behavior of science department heads. Science department heads, 25 to 29 years of age, scored significantly lower on integration than science department heads, 35 to 44 years of age. The department heads under 45 years of age scored significantly higher on superior orientation than department heads over 45 years of age.

A number of significant relationships existed between experience as principal of principals and teacher perceptions of leader behavior of principals. Principals with 9 to 15 years of experience as principals scored significantly higher than each of the following:

1. Principals of less than nine years experience on two "system" subscales.
2. Principals with one to four or seven to eight years experience on subscale one, another "system" subscale.
3. Principals with one to six years experience on subscale five, another "system" subscale.
4. Principals with five to eight years experience on subscale 12.
5. Principals with one to four years experience on subscales 2, 9, 10 and 11.

6. Principals with seven or eight years experience as principal on subscale 6, a "person" subscale.

Principals with five to eight years experience as principal scored significantly higher than principals with one to four years experience as principal on subscales 2 and 5.

Principals with one to four years experience as principal scored significantly higher on tolerance of freedom than principals with seven or eight years experience as principal.

Two significant relationships were found between science department head experience as department head and teacher perceptions of leadership behavior of science department heads. Science department heads with three to six years experience as department head scored significantly higher on subscales four and eight than science department heads with one or two years experience as department head.

When perceptions of leader behavior were related to experience in the present school, no significant differences existed between principals with one to four years experience in the present school and those with more than eight years experience in the present school. The significant relationships were as follows:

1. Principals with one to four years or more than eight years experience in the present school scored higher on subscales 2, 4, 10 and 11 than principals with five to eight years experience in the present school.
2. Principals with more than eight years experience in the present school scored higher on subscales 1, 6 and 12 than principals with five to eight years experience in the present school.

3. Principals with one to four years experience in the present school scored higher on subscales eight and nine than principals with five to eight years experience in the present school.

The years of training of principals were significantly related to teacher perceptions of leader behavior of principals. Principals with seven years of training scored significantly higher on subscales 8, 10 and 11, than all other principals, and significantly higher on subscales 2, 7 and 9 than principals with six years of training. Principals with five years of training scored significantly higher on persuasiveness than principals with six years of training.

Teacher Perceptions of Leader Behavior and Respondent Situational Factors

The sex of the respondents, age of respondents, years of experience of respondents, experience in present school of respondents, and years of training of respondents were not related to teacher perceptions of leader behavior of principal or science department head.

Teacher Perceptions of Leader Behavior and Environmental Factors

No relationship was discovered between teacher perceptions of leader behavior of science department heads and city, type of school, or size of school. No relationship existed between teacher perceptions of leader behavior of principals and city.

The following significant relationships existed between teacher perceptions of leader behavior of principal and type of school:

1. On subscales 2, 5, 7, 8 and 11, principals from schools with Grades X to XII or Grades IX to XII scored significantly

higher than principals from schools with Grades VII to XII or Grades VIII to XII.

2. On subscales 1, 4, 7 and 12, principals from schools with Grades X to XII scored significantly higher than principals from schools with Grades IX to XII.
3. On subscale 10, principals from schools with Grades X to XII scored significantly higher than principals from schools with Grades VII to XII or Grades VIII to XII.

Two significant relationships existed between size of school and teacher perceptions of leader behavior of principals. On production emphasis principals from schools with 50 to 59 teachers scored significantly higher than principals from schools with 70 to 89 teachers. On role assumption, principals of schools with 40 to 49 teachers scored significantly higher than principals from schools with 70 to 89 teachers.

III. GENERAL CONCLUSIONS

The six questions posed at the outset of this study are answered in this section.

Levels of Leadership

The failure of the overall average of LBDQ-12 means of principals and science department heads to be significantly different does not imply that teachers perceive both leaders in the same manner. The significant interaction on the same analysis was a prognosis of the significant relationships that were to be discovered in the second analysis. Principals were indeed significantly different from science department heads as measured on three subscales of the LBDQ-12. Principals were perceived to

be higher on initiation of structure, production emphasis, and predictive accuracy. The former two of the subscales weighed most heavily on "system" orientation in the Brown factor analysis.¹

When considered in relation to science department heads, principals were viewed as leaders who knew what was to be done, who defined clearly who was to do the job, who defined clearly how the task was to be accomplished and finally exerted some effort to encourage or force teachers to work at capacity or beyond.

Science department heads had significantly higher subscale means on tolerance of freedom and consideration. These subscales, consideration and tolerance of freedom were two of the three heaviest weightings on "person" orientation in the Brown analysis. Teachers tended to visualize the science department head of the hypothetical "average" collegiate of the sample in the following manner when compared to the "average" principal. He met his teachers as equals to discuss proposed changes. He was willing to explain his actions, to consider suggestions, and to implement changes. When he reached a decision he assigned the task and then left details for completion of the task to the initiative and judgment of the teachers involved. He assisted members in the completion of the task by resolving minor problems.

As indicated earlier successful leaders had demonstrated strength on both initiation of structure and consideration. However, since the dual strength on "system" and "person" orientations was often an

¹Alan F. Brown, "Reactions to Leadership," Educational Administration Quarterly, II (Winter, 1967), 67.

unattainable goal compromise solutions were proposed. The solution proposed by Argyris involved dual leadership.² Two leaders would fulfill the leadership needs by each demonstrating strength in a different area. Of the five significantly different subscales, four subscales were among the four highest factor loadings, .86 to .89, in Brown's factor analysis and account for a large percentage of the variance. In the present study the "average" principal has taken on the "system" function while the "average" science department head has assumed the "person" function. This complementary leadership pattern was similar to results which led Stogdill³ to state that the position determined the pattern of leadership and prompted Day⁴ to conclude that leadership style was significantly different for different levels of an organization.

Similar Organizations and Leadership

The LBDQ-12 purported to measure "system", "person" or "transactional" oriented leadership styles. The leader who secured above average subscale scores on "system" subscales was perceived as a leader who had strong convictions which he attempted to translate

²Chris Argyris, Integrating the Individual and the Organization (New York: John Wiley and Sons, Inc., 1964).

³Ralph M. Stogdill, et al., Managers, Employees, Organizations (Columbus, Ohio: Ohio State University, 1965), p. 28.

⁴D. R. Day, Basic Dimensions of Leadership in Selected Industrial Organizations. Unpublished Doctoral Thesis, cited by H. W. Kitchen, "Recent Studies Relating to Leadership" in Leadership (Calgary, University of Calgary, 1968), p. 25.

into action by effective persuasion and argument. He was effective in getting things done because he clarified both his own role and that of teachers. Finally he spoke and acted so that it was obvious he represented the group.

The leader who secured above average subscale scores on "person" subscales was perceived as a leader who gave teachers an opportunity to initiate plans and to make decisions while implementing the plans. He was able to tolerate the uncertainty and postponement associated with implementation of the plans. Finally he was aware of the importance of his teachers, paid attention to the needs of teachers, and recognized the contribution they made to the school operation.

The leader who secured above average subscale scores on "transactional" subscales was perceived as a leader who was able to anticipate outcomes of actions and exerted special effort to resolve major conflicts so that the group functioned as a single unit. Finally he was a leader who had a good relationship with his superiors and was able to influence them.

Eight principals were perceived as possessing strength in one or more of the three areas of leadership outlined above. Three of the eight principals were perceived by their teachers as displaying above average leadership characteristics in all three areas. Three principals had above average subscale scores in two of the three leadership areas so one principal was "system-person" oriented,

another was "system-transactional" oriented, and the third was "person-transactional" oriented. The remaining two principals had average subscale scores on eleven subscales but demonstrated strength on one subscale--production emphasis for one principal and superior orientation for the other principal.

Of the nineteen principals, three were perceived by their science teachers as being average in all areas of leadership.

The remaining eight principals were perceived as leaders with less than average competence in one or more of the areas of leadership studied. One principal failed to demonstrate average strength in all areas of leadership. Three of these principals were perceived as demonstrating weakness in both "system" and "transactional" areas of leadership. One principal scored below average on "person" and "transactional" subscales. One principal was perceived as below average on "person" and "system" leadership areas. One principal demonstrated weakness in one general area--"person" oriented leadership. Finally one principal was perceived as below average on one specific subscale--production emphasis.

Though the "average science department head was perceived as "person" oriented, science department head profiles displayed even greater variation than principal profiles.

Nine department heads were perceived as possessing strength in one or more of the leadership areas of interest in this study. Two department heads were perceived as of above average strength in all three areas--"person," "system," and "transactional" leadership.

Five department heads displayed strong leadership characteristics focusing on both "transactional" and "system" areas but three of these department heads were perceived as below average on at least one specific leadership function. One department head failed to allow his teachers sufficient freedom of action; a second failed to maintain satisfactory relationships with his superiors; the third failed to demonstrate strong convictions and persuasive ability. The final two department heads whose teacher perceptions were above average were "person" oriented in one instance and "system" oriented in the other.

Of the nineteen science department heads, two were perceived as average on all areas of leadership involved in this study. Two other science department heads were deemed average on all subscale save one. Both department heads refused to grant sufficient freedom of action to members of the department.

Six science department heads demonstrated profiles that were below average on several subscales. Three of these department heads had below average scores on subscales focused on all three areas of leadership. One of the three had high subscale scores in both "person" and "system" orientations. The final three department heads had low scores on subscales focusing on two areas of leadership but each had one subscale score which rated above average. One of these department heads scored above average on superior orientation; a second scored above average on integration; the third scored

above average on tolerance of uncertainty.

Stogdill and Brown, both of whom employed more sophisticated statistical techniques on larger samples, failed to agree on the question: Do similar leaders in similar organizations have matching profiles?⁵ The present study did not resolve the question. The analysis associated with question 1 delineated a "system" oriented principal and a science department head who was "person" oriented. The evidence from question 1 would support the contention of Brown that principals were not dissimilar leaders from school to school. The panorama of profiles sketched in the past several pages supports separate profiles for similar leaders in similar organizations. The evidence from question 2 would support Stogdill's contention that leaders had significantly different profiles even in apparently similar organizations.

Superior-Subordinate Leadership

Though the analysis of question 1 indicated the average principal and science department head exercised complementary roles, the question was not answered with respect to specific principal-science department head combinations within one school.

To classify the school combinations in this manner two variables were considered. If the principal-science department head standardized scores were within one standard error of one another

⁵Stogdill, op. cit., p. 48; Alan F. Brown, "Reactions to Leadership," Educational Administration Quarterly, II (Winter, 1967), 65.

two possibilities existed. If both scores were within one standard error of the mean, the subscale was considered average for both leaders. If the highest score of the combination was more than one standard error above the mean the subscale was considered high for both leaders. If the lowest score of the combination was more than one standard error below the mean, the subscale was considered low for both leaders. In each instance these combinations were supplementary in character.

The second variable analyzed was the distance between principal and science department head scores on a given subscale. A distance of one standard error was considered significant. If the difference was significant position of the scores in the combination was also considered. The second variable gave a measure of significant differences and position that was used to measure the degree of complementary leadership.

Three general categories existed for classifying teacher perceptions of principal-science department head leadership within a school. In schools where both leaders, i.e., principal and science department head, displayed similar leadership character by having scored high, average or low on relatively the same number and type of subscales, the combination was labelled supplementary leadership.

In seven schools principal and science department head displayed supplementary leadership. In one of these schools both leaders were perceived as having strength in the three leadership

areas. In three of the schools both leaders rated average on subscales from the three leadership areas. In each of these schools some variation from the average existed; in the first school the principal scored high on role assumption; in the second school both principal and science department head scored high on production emphasis; in the third school both leaders scored low on one subscale. In two schools both leaders scored low on four subscales. Finally in one school both leaders were rated high on three subscales.

In schools where the principal demonstrated strength of leadership in one main area and the science department head demonstrated strength of leadership in another area, the combination was labelled complementary leadership. Ten schools exhibited variations of complementary leadership. An unexpected find appeared when the leadership pattern in these schools was analyzed. In five of the ten schools the principal's strength was concentrated on subscales focusing upon "person" oriented leadership while the department head strength was concentrated on subscales focusing upon "system" oriented leadership. In three schools, the principal scored high on subscales focused on either "system" or "transactional" leadership while the science department head scored high on subscales focused on "person" oriented leadership. In the final two schools, the major strength of the principal was on subscales other than those on which the science department head displayed strength. No

pattern such as "person" or "system" oriented leadership emerged for either leader.

Two schools existed where neither supplementary nor complementary leadership combinations were evident.

One of the findings of the Stogdill studies was that when a leader such as a principal delegated responsibilities, the subordinate leader such as the science department head would also delegate.⁶ The converse was also found to be true. Delegation is measured as a portion of the subscale labelled tolerance of freedom. Approximately sixty per cent of the sample schools had principals and science department heads within one standard error on the subscale containing delegation.

From the same studies by Stogdill came the contention that subordinate leaders tend to have similar leadership profiles to those of the superior leader.⁷ Support for this contention was most evident in the schools where the leadership was classified as supplementary. Though similarities were common the evidence did not affirm that one profile conditioned the other.

Brown contended that school staffs were prepared to accept strength on either "system" or "person" orientation as satisfactory

⁶Ralph M. Stogdill, Leadership and Structure of Personal Interaction (Columbus, Ohio: The Ohio State University, 1957), p. 103.

⁷Ralph M. Stogdill, Ellis L. Scott and William E. Jaynes, Leadership and Role Expectations (Columbus, Ohio: Ohio State University, 1956), p. 130.

leadership by the principal.⁸ Approximately fifty per cent of the schools in the sample had such strength. Another thirty per cent had "average" strength on either or both of the "system" and "person" orientations. In ten per cent of the schools the weakness in both areas perceived in principal leadership was complemented by science department head strength. The final ten per cent of schools had principals who were perceived weak in both areas without any compensating strength by the science department head.

Leader Characteristics and Leadership

Larsen had found that new principals were perceived as high on consideration while veteran principals were perceived as high on representation.⁹ This type of relationship was analyzed to a limited extent in this study. Five leader characteristics of both principal and science department head were analyzed in relation to perceptions of leader behavior. The characteristics were leader age, leader years of training, leader experience prior to appointment, leader experience as a leader, and leader experience in the present school.

Of the five characteristics, only one did not show any relationship to perceptions of leader behavior for principals and science department heads--experience prior to appointment. The age of principals was not related to perceptions of leadership but some significant

⁸Brown, op. cit., p. 72.

⁹Jack Lyle Larsen, "A Study of the Decision-Making Process in the High School and the Leader-Behavior Role of the Principal in the Process," Dissertation Abstracts, XXVII (April, 1967), 3265-A.

relationships existed between the age of science department heads and leadership characteristics. Mastering the art of reconciling the demands of "system" and "person" appeared to require some maturity for science department heads 35 to 44 years of age were significantly better at integration. Perhaps most noteworthy was the significantly higher scores on superior orientation for department heads below 45 years of age when compared to those over 45 to 54 years of age.

The years of training of leader and the type of perceived leadership behavior were not significantly related for science department heads but significant relationships existed for principals. Principals with seven years of training were significantly higher than principals with less training on three subscale means-- consideration, predictive accuracy, and integration.

Moreover, the same principals, with seven years of training, were perceived as being significantly different on several additional subscales from principals with six years of training. They scored significantly higher on demand reconciliation, role assumption, and production emphasis.

Principals with five years of training had profiles nearly parallel to those of principals with six years of training but subscale means which were significantly higher on one specific subscale-- persuasiveness.

The only leader characteristic that was significantly related to perceptions of leader behavior for both principals and science

department heads was experience as a leader.

Principals with 9 to 15 years experience as principal scored significantly higher than all other principals on two subscale means--both "system" subscales. They scored significantly higher than principals with 1 to 4 or 7 to 8 years experience as a principal on subscale one--a "system" subscale. Principals with 9 to 15 years experience scored higher than principals with 1 to 6 years experience as principal on subscale five--another "system" subscale. They scored significantly higher than principals with 5 to 8 years experience as principal on subscale 12, a "transactional" subscale. They scored significantly higher than principals with 1 to 4 years experience as principal on subscales 2, 9, 10 and 11--three "transactional" and one "system" subscales. Lastly, they scored significantly higher than principals with 7 or 8 years experience as principal on subscale 6--a "person" factor.

Principals with 5 to 8 years experience as principal are significantly higher than principals with 1 to 4 years experience as principal on subscales 2 and 5--demand reconciliation and initiation of structure.

Principals with 7 or 8 years experience as principal are significantly lower than principals with 1 to 4 years experience as principal on one subscale--tolerance of freedom, a "person" subscale.

With so many significant differences generalization is suspect. The picture of perceptions of principal behavior which emerged involved

a shift from limited "person" orientation and substantial "transactional" orientation as a novice principal to a definite "system" orientation in the principal with 9 to 15 years experience as principal. No significant differences among groups of principals based upon years of experience as principal were found in subscales 3 and 8--both "person" oriented subscales.

The short tenure as department heads, six years maximum, may have accounted for the few significant results when years as science department head were related to LBDQ-12 subscales. Science department heads who had been department heads three to six years were significantly higher than science department heads with one or two years experience as department head on subscales 4 and 8--persuasiveness and consideration.

The final characteristic to be analyzed was experience of leaders in the present school. No significant relationships existed between experience in the present school of science department head and teacher perceptions of leader behavior. Significant relationships did exist between experience in the present school of principal and teacher perceptions of leader behavior of principals.

No significant differences existed between principals with 1 to 4 years experience in the present school and principals with more than eight years experience in the present school. These two groups of principals were significantly higher than principals with 5 to 8 years experience in the present school on means for subscales 2, 4,

10 and 11. Principals with more than 8 years in the present school were also significantly higher than principals with 5 to 8 years experience in the present school on subscales 1, 6 and 12. Principals with 1 to 4 years experience in the present school were significantly higher than principals with 5 to 8 years in the present school on subscales 8 and 9. Once again hypotheses resulting from a rather complex series of significant differences must be accepted as speculation-only.

Both principals with few years in the present school, 1 to 4 years, and those with many years in the present school, more than 8 years, were perceived as significantly superior to principals with 5 to 8 years in the present school in managing those aspects of leadership that deal with the compromise between "system" and "person" orientations. In addition principals with 1 to 4 years in the present school were perceived as dealing more effectively than principals with 5 to 8 years experience in the present school on both consideration and production emphasis. These are very significant subscales weighing on "person" and "system" orientation respectively. Principals with more than 8 years experience in the present school were perceived as being significantly higher than principals who had been 5 to 8 years in the present school on a "system" subscale which indicated they were more representative of the staff. They also excelled on a "transactional" subscale which indicated they related more easily to superiors in the system and on a "person"

subscale which indicated they granted more freedom of action to the staff.

Larsen reported that new principals were strong on consideration.¹⁰ In the present study, no significant differences were found on this subscale. Larsen reported also that veteran principals were strong on representation. The present study indicated that principals with 9 to 15 years experience as principal were significantly higher on representation than principals with 1 to 4 or 8 or 8 years experience as principal.

Of five principal leader characteristics two were not significantly related to teacher perceptions of leader behavior. The age of the principal and the experience of the principal prior to appointment were the characteristics. The experience of the principal as principal, the experience of the principal in the present school, and the years of training of the principal were significantly related to teacher perceptions of leadership behavior of principal.

Of the five science department head leader characteristics, three were not significantly related to teacher perceptions of leader behavior of science department heads. The experience of the science department head prior to appointment, the experience of the science department head in the present school, and the years of training of the science department head were the characteristics. The age of the science department head and the experience as department head of

¹⁰Ibid.

the science department were significantly related to teacher perceptions of leader behavior of science department head.

Respondent Characteristics and Leadership

Brown reported that age, experience, experience in the present school, years of training and sex of respondent had no significant relationship to perceptions of leadership behavior.¹¹ This led Brown to suggest that leaders cease using such factors to excuse ineffective leadership performance.

Mansour reported a study where respondent characteristics did bear a relationship to LBDQ-12 subscale means.¹² He felt this evidence cast doubt on the validity of the LBDQ-12 as an instrument for measuring perceptions of leadership behavior.

The present study confirmed the findings of Brown that no relationship existed between the five respondent characteristics and perceptions of leader behavior of either principal or science department head.

Situational Factors and Leadership

Brown also reported that size and type of school were not significantly related to perceptions of leadership behavior.¹³ He

¹¹Brown, loc. cit.

¹²Joseph Mikael Mansour, "Leadership Behavior and Principal-Teacher Interpersonal Relations," Dissertation Abstracts, XXX (August, 1969), 526A.

¹³Brown, loc. cit.

did report one type of school, that with Grades I to XII, which suffered an "organizational disadvantage." The present study replicated the above two tests and analyzed one more situational factor. The relationship between city in which the school was located and perceptions of leader behavior was also analyzed. The leader behavior of neither principal nor science department head bore any relationship to city in which the school was located.

Perceived leader behavior of science department head was not related to either size or type of school. Perceived leader behavior of principals was related to both size and type of school.

Principals from schools with Grades X to XII scored significantly higher than principals from schools with Grades IX to XII on subscales that focused on "system" orientation. Principals from schools with Grades X to XII or Grades IX to XII scored significantly higher than principals from schools with Grades VII to XII or Grades VIII to XII on a combination of subscales from all orientations.

Only two specific significant relationships were discovered between size of school and perceptions of leader behavior of principal. Principals from schools with 50 to 59 teachers scored significantly higher than principals from schools with 70 to 89 teachers on production emphasis. Principals from schools with 40 to 49 teachers scored significantly higher than principals of schools with 70 to 89 teachers on role assumption.

Summary

The "average" principal in the sample was a "system" oriented leader; the "average" science department head was a "person" oriented leader. Though the principal was a different leader from the science department head, the individual profiles were varied enough to suspect that each principal was different from every other principal and each science department head was different from every other science department head.

Within the school, three combinations of leadership perceptions were observed. Fifty per cent of the schools had principals and science department heads whose leadership was complementary; forty per cent of the schools had principals and science department heads whose leadership was supplementary; in the remaining ten per cent of schools one leader demonstrated weakness which the other leader failed to either complement or supplement.

Of the leader characteristics only experience prior to appointment was not related to teacher perceptions of leader behavior for either leader. Though age of principal was not related to teacher perceptions of leader behavior, younger science department heads were weaker than others on integration while older science department heads were weaker than others on superior orientation. The years of training of science department heads were not related to teacher perceptions of leader behavior but principals with seven years of training scored significantly higher on several subscales

than principals with five or six years of training. While the tenure of science department head in the school was not related to teacher perceptions of leader behavior the principal as a leader became more self-assured and effective as he increased his years in the school. Teacher perceptions of leader behavior of principals and science department heads were significantly related to experience as leader. Science department heads with three to six years experience were significantly higher on two subscales than science department heads with one or two years experience. Principals moved from "person" emphasis to "system" emphasis as their tenure as principals increased.

Respondent characteristics were not related to teacher perceptions of leader behavior of either leader.

The city in which the school was located was not related to teacher perceptions of leader behavior of either leader. Size and type of school were not related to teacher perceptions of leader behavior of science department heads but were related to teacher perceptions of leader behavior of principals. Principals from schools with Grades IX to XII or Grades X to XII scored higher on subscales 2, 5, 7, 8, and 11 than principals of schools with Grades VII to XII or Grades VIII to XII. Principals from schools with Grades X to XII were more "system" oriented than principals of schools with Grades IX to XII. Principals from schools of intermediate size, 40 to 59 teachers, placed more stress on production

emphasis and role assumption, than did principals from larger schools with from 70 to 89 teachers.

IV. IMPLICATIONS

It is not uncommon in secondary schools of Manitoba and Saskatchewan for department heads to become principals after some years as vice-principals. The variety of profiles perceived for individual principals in the current study, some with distinct "person" orientation, averaged to a single perception of a "system" oriented leader. For the science department head the average perception was one of a "person" oriented leader. If, as suggested by Greenfield, the perception is of the role of leader and not the specific leader, these differences in perceptions may merely represent the teachers' recognition of the more responsible role of the principal.¹⁴ If the differences in perception represent a view of a changed leader, a leader who moves from emphasis on "person" orientation to emphasis on "system" orientation, it becomes significant to inquire whether this is a necessary and desirable change. If the change is both necessary and desirable, is experience the only avenue to facilitate the change? If not experience alone, should training for principal leaders be directed at accelerating the change?

¹⁴T. Barr Greenfield, "Research on the Behavior of Educational Leaders: Critique of a Tradition," Alberta Journal of Educational Research, XIV (March, 1968), 57.

In four schools of the sample, the principal stressed "person" orientation and the science department head stressed "system" orientation; in three additional schools the converse was true; in three schools the principal demonstrated strength on both "person" and "system" orientations and the science department head complemented one or both of these areas by strength on specific subscales; in two schools both leaders are strong in both areas. In almost two-thirds of the sample teachers perceive strength in these two orientations. Brown had suggested that teachers would accept principal strength in either orientation as they were aware that dual strength from one leader was utopian.¹⁵ The present study gives some support to a modification of Brown's statement. Teachers in secondary schools may be less concerned with which leader provides "system" or "person" leadership than with the desirability of having both types.

Hemphill had concluded that each leadership situation was not unique and that one would not have to be content with broad generalities to describe the qualities of all leaders in all situations.¹⁶

The rather unique nature of virtually every profile of perceptions of leader behavior of either principal or science department

¹⁵ Brown, loc. cit.

¹⁶ John K. Hemphill, Situational Factors in Leadership (Columbus, Ohio: The Ohio State University, 1949), p. 100.

head offered little support for Hemphill's conclusion. Future studies will require more effective statistical treatment. This implication will be extended in the concluding paragraphs.

The recognition that science department heads, 25 to 29 years of age, were significantly lower on integration than department heads, 35 to 44 years of age, suggests that assistance from some senior leader, vice-principal or principal, in this area may reap rewards. The failure of science department heads, 45 to 54 years of age, to equal science department heads under 45 years of age on superior orientation should not be ignored. If this veteran science department head is perceived as not maintaining as effective relations with superiors it would suggest that principals with such department heads should investigate the problem and seek solutions.

Principals with 9 to 15 years as principals have high scores on most subscales. Such scores on most subscales are associated with effective leadership. Science department heads with more experience as department heads, 3 to 6 years, rated significantly higher on two subscales than science department heads with little experience as science department heads. Similar results replicated on a larger study would indicate that salary increments based upon years of experience as leader have some merit.

Principals from schools with Grades VII to XII or Grades VIII to XII scored significantly lower than principals from schools with Grades IX to XII or Grades X to XII on subscales from "person,"

"system" and "transactional" areas of leadership. This result was not anticipated from the review of the literature although Brown did note dysfunctional organization for Grades I to XII schools.¹⁷ Principals from schools with Grades X to XII were perceived as more "system" oriented than principals from schools with Grades IX to XII. When decisions are to be made relative to combined junior-senior high schools such findings should be considered.

The final implication deals with similar studies for the future. Reference has been made earlier in the implications to the statistical problems associated with a small sample. There was some reluctance by some administrators to allow a study such as this in a high school since no immediate benefit to the teachers, administration, or board was evident. It would appear that a worthwhile in-service program where university and collegiate were joint sponsors would have some merit. Graduate studies might then work within the framework of the program. When administrative authorities recognized more immediate advantage larger numbers of collegiates would be involved. With larger samples more adequate statistical techniques would be possible. Greater confidence in findings would be another worthwhile outcome.

¹⁷Brown, loc. cit.

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APPENDIX "A"

June 22, 1970.

The Department of Youth and Education does not have the following information recorded in their files so I am requesting your assistance in answering five questions. This information is required as part of a thesis survey being completed at the University of Manitoba. A stamped-addressed envelope is attached.

1. How many teachers are in your school, including the principal?

2. Do you have a science department head? _____
3. Would you name any collegiates in contiguous areas that have science department heads? (This question serves as an approximate check of our questionnaire coverage.)

4. If your answer to question 2 was YES,
 - (a) How many teachers teach science? _____
 - (b) How long has there been a science department head in your collegiate?

Thank you for your assistance.

Sincerely,

Dale Baldwin.

APPENDIX "B"

PRINCIPALLEADER BEHAVIOR DESCRIPTION QUESTIONNAIRE - FORM XII

Originated by staff members of
The Ohio State Leadership Studies
and revised by the
Bureau of Business Research

Purpose of the Questionnaire

On the following pages is a list of items that may be used to describe the behavior of your supervisor. Each item describes a specific kind of behavior, but does not ask you to judge whether the behavior is desirable or undesirable. Although some items may appear similar, they express differences that are important in the description of leadership. Each item should be considered as a separate description. This is not a test of ability or consistency in making answers. Its only purpose is to make it possible for you to describe, as accurately as you can, the behavior of your supervisor.

Note: The term, "group," as employed in the following items, refers to a department, division, or other unit of organization that is supervised by the person being described.

The term "members," refers to all the people in the unit of organization that is supervised by the person being described.

Published by

Bureau of Business Research
College of Commerce and Administration
The Ohio State University
Columbus, Ohio

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DIRECTIONS:

- a. READ each item carefully.
- b. THINK about how frequently the leader engages in the behavior described by the item.
- c. DECIDE whether he (A) always; (B) often; (C) occasionally; (D) seldom; or (E) never acts as described by the item.
- d. DRAW A CIRCLE around one of the five letters (A B C D E) following the item to show the answer you have selected.

A = Always
 B = Often
 C = Occasionally
 D = Seldom
 E = Never

- e. MARK your answers as shown in the examples below.

Example: He often acts as described A B C D E
 Example: He never acts as described A B C D E
 Example: He occasionally acts as described A B C D E

-
1. He acts as the spokesman of the group A B C D E
 2. He waits patiently for the results of a decision A B C D E
 3. He makes pep talks to stimulate the group . . . A B C D E
 4. He lets group members know what is expected of them A B C D E
 5. He allows the members complete freedom in their work A B C D E
 6. He is hesitant about taking initiative in the group A B C D E
 7. He is friendly and approachable A B C D E
 8. He encourages overtime work A B C D E
 9. He makes accurate decisions A B C D E
 10. He gets along well with the people above him . . A B C D E

A = Always
 B = Often
 C = Occasionally
 D = Seldom
 E = Never

11. He publicizes the activities of the group . . . A B C D E
12. He becomes anxious when he cannot find out
 what is coming next A B C D E
13. His arguments are convincing A B C D E
14. He encourages the use of uniform procedures . . A B C D E
15. He permits the members to use their own
 judgment in solving problems A B C D E
16. He fails to take necessary action A B C D E
17. He does little things to make it pleasant to
 be a member of the group A B C D E
18. He stresses being ahead of competing groups . . A B C D E
19. He keeps the group working together as a team . A B C D E
20. He keeps the group in good standing with
 higher authority A B C D E
21. He speaks as the representative of the group . A B C D E
22. He accepts defeat in stride A B C D E
23. He argues persuasively for his point of view . A B C D E
24. He tries out his ideas in the group A B C D E
25. He encourages initiative in the group members . A B C D E
26. He lets other persons take away his leadership
 in the group A B C D E
27. He puts suggestions made by the group into
 operation A B C D E
28. He needles members for greater effort A B C D E
29. He seems able to predict what is coming next . A B C D E

A = Always
 B = Often
 C = Occasionally
 D = Seldom
 E = Never

30. He is working hard for a promotion A B C D E
31. He speaks for the group when visitors are
 present A B C D E
32. He accepts delays without becoming upset . . A B C D E
33. He is a very persuasive talker A B C D E
34. He makes his attitudes clear to the group . . A B C D E
35. He lets the members do their work the way they
 think best A B C D E
36. He lets some members take advantage of him . . A B C D E
37. He treats all group members as his equals . . A B C D E
38. He keeps the work moving at a rapid pace . . . A B C D E
39. He settles conflicts when they occur in the
 group A B C D E
40. His superiors act favorably on most of his
 suggestions A B C D E
41. He represents the group at outside meetings . A B C D E
42. He becomes anxious when waiting for new
 developments A B C D E
43. He is very skillful in an argument A B C D E
44. He decides what shall be done and how it shall
 be done A B C D E
45. He assigns a task, then lets the members
 handle it A B C D E
46. He is the leader of the group in name only . . A B C D E
47. He gives advance notice of changes A B C D E

A = Always
 B = Often
 C = Occasionally
 D = Seldom
 E = Never

48. He pushes for increased production A B C D E
49. Things usually turn out as he predicts A B C D E
50. He enjoys the privileges of his position A B C D E
51. He handles complex problems efficiently A B C D E
52. He is able to tolerate postponement and
 uncertainty A B C D E
53. He is not a very convincing talker A B C D E
54. He assigns group members to particular tasks A B C D E
55. He turns the members loose on a job, and lets
 them go to it A B C D E
56. He backs down when he ought to stand firm A B C D E
57. He keeps to himself A B C D E
58. He asks the members to work harder A B C D E
59. He is accurate in predicting the trend of
 events A B C D E
60. He gets his superiors to act for the welfare of
 the group members A B C D E
61. He gets swamped by details A B C D E
62. He can wait just so long, then blows up A B C D E
63. He speaks from a strong inner conviction A B C D E
64. He makes sure that his part in the group is
 understood by the group members A B C D E
65. He is reluctant to allow the members any
 freedom of action A B C D E
66. He lets some members have authority that he
 should keep A B C D E

A = Always
 B = Often
 C = Occasionally
 D = Seldom
 E = Never

67. He looks out for the personal welfare of group members A B C D E
68. He permits the members to take it easy in their work A B C D E
69. He sees to it that the work of the group is coordinated A B C D E
70. His word carries weight with his superiors A B C D E
71. He gets things all tangled up A B C D E
72. He remains calm when uncertain about coming events A B C D E
73. He is an inspiring talker A B C D E
74. He schedules the work to be done A B C D E
75. He allows the group a high degree of initiative A B C D E
76. He takes full charge when emergencies arise A B C D E
77. He is willing to make changes A B C D E
78. He drives hard when there is a job to be done A B C D E
79. He helps group members settle their differences A B C D E
80. He gets what he asks for from his superiors A B C D E
81. He can reduce a madhouse to system and order A B C D E
82. He is able to delay action until the proper time occurs A B C D E
83. He persuades others that his ideas are to their advantage A B C D E
84. He maintains definite standards of performance A B C D E

A = Always
 B = Often
 C = Occasionally
 D = Seldom
 E = Never

85. He trusts the members to exercise good judgment A B C D E
86. He overcomes attempts made to challenge his leadership A B C D E
87. He refuses to explain his actions A B C D E
88. He urges the group to beat its previous record A B C D E
89. He anticipates problems and plans for them A B C D E
90. He is working his way to the top A B C D E
91. He gets confused when too many demands are made of him A B C D E
92. He worries about the outcome of any new procedure A B C D E
93. He can inspire enthusiasm for a project A B C D E
94. He asks that group members follow standard rules and regulations A B C D E
95. He permits the group to set its own pace A B C D E
96. He is easily recognized as the leader of the group A B C D E
97. He acts without consulting the group A B C D E
98. He keeps the group working up to capacity A B C D E
99. He maintains a closely knit group A B C D E
100. He maintains cordial relations with superiors A B C D E

APPENDIX "C"

DEPARTMENT HEAD

SOME INFORMATION ABOUT YOU

1. How long have you been department head, including this year?
- _____ (1) 1 year
 _____ (2) 2 years
 _____ (3) 3 or 4 years
 _____ (4) 5 or 6 years
 _____ (5) 7 or 8 years
 _____ (6) 9 or 10 years
 _____ (7) 11 to 15 years
 _____ (8) 16 to 20 years
 _____ (9) 21 years or more
2. How long have you been in your present school, including this year?
- _____ (1) 1 year
 _____ (2) 2 years
 _____ (3) 3 or 4 years
 _____ (4) 5 or 6 years
 _____ (5) 7 or 8 years
 _____ (6) 9 or 10 years
 _____ (7) 11 to 15 years
 _____ (8) 16 to 20 years
 _____ (9) 21 years or more
3. How many years of teaching experience did you have, prior to your appointment as department head?
- _____ (1) 1 year
 _____ (2) 2 years
 _____ (3) 3 or 4 years
 _____ (4) 5 or 6 years
 _____ (5) 7 or 8 years
 _____ (6) 9 or 10 years
 _____ (7) 11 to 15 years
 _____ (8) 16 to 20 years
 _____ (9) 21 years or more
4. How many years of training are you credited with for salary purposes?
 (Please drop fractional years.)
- _____ (1) 1 year
 _____ (2) 2 years
 _____ (3) 3 years
 _____ (4) 4 years
 _____ (5) 5 years
 _____ (6) 6 years
 _____ (7) 7 years
5. What is your age?
- _____ (1) Under 25 years
 _____ (2) 25-29 years
 _____ (3) 30-34 years
 _____ (4) 35-39 years
 _____ (5) 40-44 years
 _____ (6) 45-49 years
 _____ (7) 50-54 years
 _____ (8) 55-59 years
 _____ (9) 60 years and over
- Thank you. Please write the name and address of your school on the envelope provided for the completed questionnaire.

APPENDIX "D"

PRINCIPAL

SOME INFORMATION ABOUT YOU AND YOUR SCHOOL

1. How long have you been principal, including this year?
- _____ (1) 1 year
 _____ (2) 2 years
 _____ (3) 3 or 4 years
 _____ (4) 5 or 6 years
 _____ (5) 7 or 8 years
 _____ (6) 9 or 10 years
 _____ (7) 11 to 15 years
 _____ (8) 16 to 20 years
 _____ (9) 21 years or more
2. How long have you been in your present school, including this year?
- _____ (1) 1 year
 _____ (2) 2 years
 _____ (3) 3 or 4 years
 _____ (4) 5 or 6 years
 _____ (5) 7 or 8 years
 _____ (6) 9 or 10 years
 _____ (7) 11 to 15 years
 _____ (8) 16 to 20 years
 _____ (9) 21 years or more
3. How many years of teaching experience did you have, prior to your appointment as principal?
- _____ (1) 1 year
 _____ (2) 2 years
 _____ (3) 3 or 4 years
 _____ (4) 5 or 6 years
 _____ (5) 7 or 8 years
 _____ (6) 9 or 10 years
 _____ (7) 11 to 15 years
 _____ (8) 16 to 20 years
 _____ (9) 21 years or more
4. What grades does your school include?
- _____ (1) 7 to 12
 _____ (2) 8 to 12
 _____ (3) 9 to 12
 _____ (4) 10 to 12
5. How many years of training are you credited with for salary purposes? (Please drop fractional years.)
- _____ (1) 1 year
 _____ (2) 2 years
 _____ (3) 3 years
 _____ (4) 4 years
 _____ (5) 5 years
 _____ (6) 6 years
 _____ (7) 7 years
6. What is your age?
- _____ (1) Under 25 years
 _____ (2) 25-29 years
 _____ (3) 30-34 years
 _____ (4) 35-39 years
 _____ (5) 40-44 years
 _____ (6) 45-49 years
 _____ (7) 50-54 years
 _____ (8) 55-59 years
 _____ (9) 60 years and over
7. How many teachers are in your school, including the principal?
- _____ (1) Under 30
 _____ (2) 30 to 39
 _____ (3) 40 to 49
 _____ (4) 50 to 59
 _____ (5) 60 to 69
 _____ (6) 70 to 79
 _____ (7) 80 to 89
 _____ (8) 90 or more

Thank you. Please write the name and address of your school on the envelope provided for the completed questionnaire.

APPENDIX "E"

SOME INFORMATION ABOUT YOU

1. How long have you been in your present school, including this year?
- _____ (1) 1 year
 _____ (2) 2 years
 _____ (3) 3 or 4 years
 _____ (4) 5 or 6 years
 _____ (5) 7 or 8 years
 _____ (6) 9 or 10 years
 _____ (7) 11 to 15 years
 _____ (8) 16 to 20 years
 _____ (9) 21 years or more
2. What is your age?
- _____ (1) Under 25 years
 _____ (2) 25-29 years
 _____ (3) 30-34 years
 _____ (4) 35-39 years
 _____ (5) 40-44 years
 _____ (6) 45-49 years
 _____ (7) 50-54 years
 _____ (8) 55-59 years
 _____ (9) 60 years and over
3. Your sex:
- _____ (1) Male
 _____ (2) Female
4. How many years of teaching experience do you have, including the present year?
- _____ (1) 1 year
 _____ (2) 2 years
 _____ (3) 3 or 4 years
 _____ (4) 5 or 6 years
 _____ (5) 7 or 8 years
 _____ (6) 9 or 10 years
 _____ (7) 11 to 15 years
 _____ (8) 16 to 20 years
 _____ (9) 21 years or more
5. How many years of training are you credited with for salary purposes? (Please drop fractional years.)
- _____ (1) 1 year
 _____ (2) 2 years
 _____ (3) 3 years
 _____ (4) 4 years
 _____ (5) 5 years
 _____ (6) 6 years
 _____ (7) 7 years

Thank you. Write name and address of school on envelope.

APPENDIX "F"

TEACHER PERCEPTIONS OF LEADER BEHAVIOR OF PRINCIPALS AND
SCIENCE DEPARTMENT HEADS IN SELECTED SECONDARY
SCHOOLS OF MANITOBA AND SASKATCHEWAN

This study is not an attempt to solve leadership problems in secondary schools. It is an attempt to determine, from the perspective of the classroom teacher, some patterns of leader behavior. The analysis of these patterns of leader behavior will become part of a master's thesis. Anonymity of sources of all information will be strictly maintained.

The survey would make the following requests of school personnel. The principal would be asked to answer seven (7) situational and biographical questions. The science department head would be asked to answer five (5) biographical questions. Each of five teachers, chosen by random selection, from the science department would be asked to complete the following: A LBDQ-12 questionnaire to indicate his perceptions of principal leader behavior, a LBDQ-12 questionnaire to indicate his perceptions of department head leader behavior, and a five question biographical questionnaire.

The writer would administer the questionnaires at a time convenient to the principal, department head, and staff members.

Faculty: 474-9741
Home: 489-6639

Dale G. Baldwin,
Master of Education Student,
University of Manitoba.

APPENDIX "G"

NOTE TO PRINCIPAL

TEACHER PERCEPTIONS OF LEADER BEHAVIOR OF PRINCIPALS
AND SCIENCE DEPARTMENT HEADS IN SELECTED SECONDARY
SCHOOLS OF MANITOBA AND SASKATCHEWAN

This study is not an attempt to solve leadership problems in secondary schools. It is an attempt to determine, from the perspective of the classroom teacher, some patterns of leader behavior. The analysis of these patterns of leader behavior will become part of a master's thesis. Anonymity of sources of all information will be strictly maintained.

Each science teacher, to a maximum of five teachers, will complete three questionnaires--LBDQ-12 questionnaire to indicate perceptions of principal leader behavior, LBDQ-12 questionnaire to indicate perceptions of department head leader behavior, and a teacher questionnaire of five biographical questions.

If there are more than five teachers in the science department some person not involved with the study should select five teachers by random selection.

The department head questionnaire consists of five biographical questions. The principal questionnaire enclosed with this note may be returned in the accompanying envelope with the name and address of your school on the outside of the envelope.

A summary of the findings will be forwarded to you.

Your assistance is much appreciated.

Dale G. Baldwin,
University of Manitoba.

APPENDIX "H"

RANDOM SAMPLE SELECTION

(1) List members of science department in any order and number each

member. e.g.

| | |
|----------|-----|
| Able | - 1 |
| Baker | - 2 |
| Campbell | - 3 |
| Down | - 4 |
| Elm | - 5 |
| Francis | - 6 |
| | . |
| | . |
| | . |
| Mason | -15 |

(2) Select any position in the following random number table. Read (up, down, across or diagonally) in any direction until five members are selected. Ignore the second occurrence of a number.

| | | | | | | |
|----|----|----|---|----|----|----|
| 12 | 7 | 8 | 3 | 4 | 13 | 2 |
| 1 | 1 | 11 | 8 | 11 | 10 | 6 |
| 7 | 9 | 6 | 5 | 4 | 15 | 6 |
| 10 | 8 | 5 | 2 | 6 | 8 | 8 |
| 7 | 7 | 11 | 9 | 2 | 13 | 8 |
| 1 | 14 | 7 | 1 | 5 | 5 | 15 |
| 9 | 6 | 15 | 9 | 10 | 7 | 5 |
| 7 | 3 | 11 | 2 | 13 | 10 | 10 |
| 11 | 3 | 7 | 5 | 6 | 9 | 14 |
| 13 | 1 | 4 | 5 | 8 | 6 | 14 |

APPENDIX "I"

NOTE TO DEPARTMENT HEAD

TEACHER PERCEPTIONS OF LEADER BEHAVIOR OF PRINCIPALS
AND SCIENCE DEPARTMENT HEADS IN SELECTED SECONDARY
SCHOOLS OF MANITOBA AND SASKATCHEWAN

This study is not an attempt to solve leadership problems in secondary schools. It is an attempt to determine, from the perspective of the classroom teacher, some patterns of leader behavior. The analysis of these patterns of leader behavior will become part of a master's thesis. Anonymity of sources of all information will be strictly maintained.

Each science teacher, to a maximum of five teachers, will complete three questionnaires--LBDQ-12 questionnaire to indicate perceptions of principal leader behavior, LBDQ-12 questionnaire to indicate perceptions of department head leader behavior, and a teacher questionnaire of five biographical questions.

Your principal has details of selection procedures where there are more than five teachers in the science department.

The principal questionnaire contains seven questions of a situational and biographical nature.

The department head questionnaire enclosed with this note could be placed in the accompanying envelope. Please write the name and address of your school on the outside of the envelope.

Your assistance is much appreciated.

Dale G. Baldwin,
University of Manitoba.

APPENDIX "J"

NOTE TO TEACHERTEACHER PERCEPTIONS OF LEADER BEHAVIOR OF PRINCIPALS AND
SCIENCE DEPARTMENT HEADS IN SELECTED SECONDARY
SCHOOLS OF MANITOBA AND SASKATCHEWAN

This study is not an attempt to solve leadership problems in secondary schools. It is an attempt to determine, from the perspective of the classroom teacher, some patterns of leader behavior. The analysis of these patterns of leader behavior will become part of a master's thesis.

Your description will not be seen by any of the persons whom you are asked to describe.

You are asked to complete the LBDQ-12 questionnaire to indicate your perceptions of your principal's leader behavior. The face of the questionnaire indicates the purpose. All that is required is for you to describe your principal's leader behavior as accurately as possible. You are asked to complete the other LBDQ-12 to indicate your perceptions of your department head's leader behavior. Finally five questions about yourself are included. If you teach science less than fifty per cent of teaching time, indicate the percentage on the biographical sheet.

When the three questionnaires are complete, place in the envelope, seal the envelope, and write the name and address of the school on the outside of the envelope. Your name does not need to be indicated.

Your assistance is much appreciated.

Dale G. Baldwin,
University of Manitoba.

APPENDIX "K"

PRINCIPAL LBDQ-12 SUBSCALE MEANS*

| Principal | S U B S C A L E | | | | | | | | | | | |
|-----------|-----------------|------|------|------|------|------|------|------|------|------|------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| A | 42.4 | 42.4 | 38.8 | 44.0 | 42.4 | 44.2 | 45.4 | 42.8 | 34.0 | 39.2 | 40.4 | 41.4 |
| B | 41.6 | 40.8 | 33.6 | 36.6 | 41.0 | 38.0 | 41.2 | 39.0 | 38.4 | 39.6 | 36.8 | 37.2 |
| C | 37.5 | 35.5 | 32.0 | 35.5 | 32.8 | 38.0 | 37.3 | 35.0 | 28.5 | 31.5 | 29.5 | 34.3 |
| D | 41.2 | 35.6 | 36.6 | 37.4 | 30.4 | 42.2 | 33.0 | 33.2 | 31.8 | 33.6 | 30.4 | 36.2 |
| E | 37.0 | 37.0 | 35.8 | 28.3 | 32.5 | 41.5 | 29.8 | 33.0 | 23.8 | 29.0 | 28.5 | 31.8 |
| F | 42.0 | 42.5 | 39.0 | 40.3 | 42.8 | 42.3 | 42.5 | 40.8 | 31.8 | 37.0 | 38.0 | 34.8 |
| G | 41.2 | 42.4 | 31.8 | 36.8 | 40.4 | 37.8 | 42.0 | 35.8 | 32.2 | 38.0 | 36.0 | 38.8 |
| H | 30.7 | 23.3 | 33.0 | 27.0 | 31.0 | 35.0 | 29.7 | 31.7 | 30.3 | 26.7 | 30.0 | 32.3 |
| I | 42.0 | 42.4 | 37.0 | 38.2 | 40.0 | 43.2 | 42.0 | 43.0 | 28.4 | 38.0 | 41.2 | 35.8 |
| J | 38.0 | 42.7 | 37.7 | 40.7 | 39.7 | 42.3 | 41.0 | 39.3 | 30.7 | 41.3 | 38.7 | 38.3 |
| K | 40.7 | 38.7 | 33.0 | 37.3 | 38.0 | 41.0 | 41.3 | 40.0 | 33.7 | 38.0 | 38.0 | 37.3 |
| L | 42.8 | 41.6 | 25.8 | 36.0 | 44.6 | 35.8 | 43.6 | 31.8 | 38.6 | 39.2 | 35.6 | 39.2 |
| M | 33.0 | 40.0 | 29.3 | 31.0 | 39.3 | 28.8 | 36.0 | 26.5 | 39.0 | 34.5 | 27.5 | 30.3 |
| N | 38.0 | 36.4 | 35.8 | 35.4 | 34.2 | 43.2 | 35.6 | 39.2 | 27.6 | 36.4 | 35.2 | 35.4 |
| O | 39.6 | 42.4 | 35.4 | 36.8 | 38.8 | 44.2 | 41.6 | 43.4 | 31.8 | 39.2 | 41.2 | 35.6 |
| P | 34.8 | 35.2 | 29.2 | 33.4 | 37.4 | 34.4 | 37.2 | 34.4 | 34.4 | 33.6 | 33.6 | 33.8 |
| Q | 39.0 | 40.0 | 36.0 | 36.5 | 37.0 | 41.0 | 39.0 | 39.0 | 31.5 | 38.5 | 36.5 | 36.5 |
| R | 37.6 | 35.6 | 35.4 | 33.8 | 38.6 | 39.6 | 35.6 | 39.8 | 34.0 | 36.0 | 36.8 | 36.2 |
| S | 36.5 | 32.0 | 31.0 | 33.0 | 38.3 | 34.5 | 36.0 | 32.5 | 29.3 | 31.5 | 31.5 | 31.8 |
| MEAN | 38.7 | 38.2 | 34.0 | 35.7 | 37.8 | 39.3 | 38.4 | 36.8 | 32.1 | 35.8 | 35.0 | 35.6 |

* Means for subscales 1, 2, 10 and 11 have been doubled.

APPENDIX "L"

DEPARTMENT HEAD LBDQ-12 SUBSCALE MEANS*

| Department Head | S U B S C A L E | | | | | | | | | | | |
|--------------------|-----------------|------|------|------|------|------|------|------|------|------|------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| A | 41.6 | 42.4 | 38.8 | 37.0 | 38.2 | 45.2 | 41.0 | 42.8 | 28.0 | 32.4 | 37.2 | 38.8 |
| B | 39.2 | 40.0 | 36.4 | 38.2 | 37.2 | 41.8 | 38.6 | 42.0 | 32.6 | 38.0 | 38.8 | 38.8 |
| C | 38.5 | 37.0 | 36.8 | 36.5 | 33.8 | 40.0 | 39.0 | 36.5 | 26.3 | 31.5 | 31.5 | 39.0 |
| D | 35.2 | 38.8 | 32.4 | 41.0 | 31.2 | 42.8 | 40.0 | 36.8 | 27.2 | 34.4 | 29.6 | 32.4 |
| E | 43.5 | 39.5 | 36.3 | 39.5 | 34.0 | 40.3 | 37.5 | 41.0 | 26.0 | 34.0 | 38.0 | 37.8 |
| F | 42.0 | 40.0 | 34.0 | 37.0 | 37.3 | 41.8 | 43.3 | 38.3 | 33.3 | 34.0 | 33.5 | 37.8 |
| G | 40.4 | 38.0 | 32.0 | 34.4 | 34.0 | 42.4 | 38.2 | 35.2 | 27.6 | 32.8 | 27.2 | 39.8 |
| H | 39.3 | 39.3 | 35.3 | 39.7 | 36.3 | 41.3 | 39.7 | 38.7 | 31.3 | 37.3 | 37.3 | 33.7 |
| I | 30.4 | 40.0 | 37.4 | 32.2 | 35.0 | 41.6 | 38.0 | 43.2 | 25.4 | 36.0 | 36.4 | 33.6 |
| J | 41.3 | 41.3 | 35.3 | 36.7 | 38.7 | 40.7 | 39.7 | 40.7 | 29.0 | 39.3 | 37.3 | 39.3 |
| K | 38.7 | 40.7 | 35.0 | 35.0 | 34.7 | 41.0 | 36.7 | 38.7 | 29.0 | 34.7 | 34.0 | 38.0 |
| L | 40.4 | 37.6 | 35.4 | 39.0 | 34.2 | 41.8 | 38.2 | 41.4 | 27.4 | 35.2 | 35.2 | 37.6 |
| M | 34.0 | 37.0 | 40.3 | 33.3 | 28.5 | 40.8 | 32.3 | 37.8 | 24.0 | 33.0 | 27.5 | 33.5 |
| N | 40.0 | 39.6 | 32.0 | 33.6 | 35.4 | 42.8 | 37.4 | 42.6 | 26.0 | 36.4 | 36.8 | 35.6 |
| O | 28.0 | 32.8 | 29.8 | 26.0 | 29.4 | 42.4 | 31.2 | 32.8 | 23.2 | 26.8 | 26.8 | 32.4 |
| P | 39.6 | 40.4 | 34.8 | 34.8 | 32.6 | 39.8 | 37.2 | 38.6 | 27.2 | 34.4 | 31.2 | 37.4 |
| Q | 37.5 | 40.0 | 33.5 | 36.8 | 36.0 | 40.5 | 39.0 | 39.3 | 31.5 | 34.5 | 38.0 | 39.5 |
| R | 40.4 | 37.6 | 36.8 | 39.8 | 37.0 | 41.0 | 37.6 | 38.2 | 31.0 | 36.4 | 35.2 | 40.0 |
| S | 36.5 | 37.0 | 35.5 | 35.0 | 36.5 | 41.0 | 34.8 | 35.8 | 28.5 | 30.0 | 34.0 | 37.0 |
| MEAN | 38.6 | 38.9 | 35.2 | 36.1 | 34.7 | 41.5 | 37.9 | 39.0 | 28.1 | 34.3 | 33.9 | 36.9 |

* Means for subscales 1, 2, 10 and 11 have been doubled.