

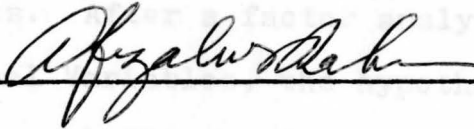
AN EMPIRICAL EVALUATION OF THE LIKERT
MODEL IN AN EDUCATIONAL INSTITUTION

by

Bruce Vinion

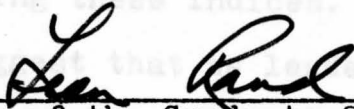
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ABSTRACT

AN EMPIRICAL EVALUATION OF THE LIKERT
MODEL IN AN EDUCATIONAL INSTITUTION

Bruce Vinion

Master of Business Administration

Youngstown State University, 1977

A field study was conducted to test the hypothesis that there is significant positive relationships between six Causal Variables and Performance. These Causal Variables are specified in the Likert Model. Also, a second hypothesis was tested to reveal the significance of the linear relationship between Performance and the six Causal Variables. After a factor analysis was performed on the Causal Variables, the hypotheses were tested using these indices. The results of the study suggest that as leadership style becomes more participative, the performance increases. The results also suggest that a significant linear relationship does exist between Performance and the Causal indices, Control Strategy, Supportive Dynamics, Work Group Interaction, Upward Receptiveness, Downward Involvement, and Organizational Influence.

ACKNOWLEDGEMENTS

I would like to express my thanks and appreciation to my adviser, Dr. Afzalur Rahim, for his interest, his direction, and his patience.

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r	Pearson Correlation Coefficient
Multiple r	Multiple Correlation Coefficient
R^2	Coefficient of Determination
\geq	is greater than or equal to
\leq	less than or equal to
$P \leq .001$	
$P \leq .01$	
$P \leq .05$	

LIST OF SYMBOLS

SYMBOL	DEFINITION
P	Probability
r	Pearson Correlation Coefficient
Multiple R	Multiple Correlation Coefficient
R ²	Coefficient of Determination
\geq	Is greater than or equal to
\leq	Less than or equal to
*	P \leq .001
**	P \leq .01
***	P \leq .05

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provide means of reviewing decisions and to serve in an advisory capacity to an administrative office. Since small group interactions is at the core of the Likert Model, these committees give us an optimum environment in which to evaluate the Model.

The Likert Model is complex and subject to multiple interpretations. This paper provides an interpretation and an empirical evaluation of this Model. The focus of this work is on what Likert said, rather than attempting to find fault with his work by a literal analysis of his text.

Where Likert does not set forth definitions of what he means (in some instances he provides only

¹Rensis Likert, The Human Organization: Its Management and Value (New York: McGraw-Hill Book Company, 1967).

CHAPTER I

Introduction

This study describes an empirical evaluation of a model set forth by Rensis Likert in The Human Organization.¹ The evaluation of the model is done in a new area of interest--an educational institution. In the formal organization of this educational institution certain committees are established to provide means of reviewing decisions and to serve in an advisory capacity to an administrative office. Since small group interactions is at the core of the Likert Model, these committees give us an optimum environment in which to evaluate the Model.

The Likert Model is complex and subject to multiple interpretations. This paper provides an interpretation and an empirical evaluation of this Model. The focus of this work is on what Likert said, rather than attempting to find fault with his work by a literal analysis of his text.

Where Likert does not set forth definitions of what he means (in some instances he provides only

¹Rensis Likert, The Human Organization: Its Management and Value (New York: McGraw-Hill Book Company, 1967).

labels), an attempt has been made to define what is implicit in the context of Likert's work. The approach to each section of this model is set in the following manner; first, the definition of what Likert meant; and second, a measure of the variable. The definition has two obvious elements: first, the set of elements over which the variable is defined; second, the range of values for that variable. The measure consists of questions used in the survey questionnaire. These measures contrast both ends of the variable's range in order to better describe it. The essence of this research is to put forth an analytical model comprised of mutually exclusive definitions and measures which reflect the major ideas of the Likert Model.

The focus of this study will be primarily on the relationship between the Causal variables, which can be manipulated by the organization, and the End Result variable. The Intervening variables, which can be described as the behavior of the subordinates in an organization, will become more participative as leadership style and organizational climate become more supportive. This relationship was described by Rensis Likert and will not be investigated in this study.

This research proposes significant correlations between the Causal variables and the End Result variable; and that Performance is a function of the

causal variables. The instrument used to measure these variables was developed by selecting questions from The Survey of Organizations Questionnaire.² Only slight modifications were made to these questions for the purpose of relating the instrument to this new area of interest.

Chapter II describes the basic features of the Likert Model and the scope of this effort to operationalize the Model. Chapter III sets forth the definitions of the causal variables, the intervening variables, and the end-result variable. Chapter IV presents the hypotheses and the methodology. Chapter V presents the data analysis and results. Chapter VI presents the conclusions and proposes implications for further study.

²James C. Taylor and David G. Bowers, Survey of Organizations (Michigan: Malloy Lithographing, Inc., 1972), pp. 2-8.

CHAPTER II

The Likert Model

The need for more effectiveness in the nonprofit organization may be seen during contract negotiations with the public sector. Public employees have demanded to be treated as well as their counter parts in the profit oriented sector. Along with the unions' drive for comparability has come a demand by public employers for increased productivity. Public employers are exploring ways to achieve more return for each dollar spent and are demanding comparable productivity for comparable pay.³

Because the desire for greater productivity can be readily seen, an attempt should be made by public employers to explore every means available to reach this goal. The subject of increased productivity has attracted the interest of many researchers. In the area of organizational theory, many major theoretical works have been set forth

³S. E. Schumacher, "Participative Management: Can It Work in the Public Sector?" Personnel Administrator, IX (1974), 36-40.

by Katz and Kahn, Likert, Loomis, Melcher, and March and Simon, to mention a few.⁴ The approach of this research has been directly influenced by Likert.

Rensis Likert has built a process model which explains change of productivity in terms of organizational characteristics. Likert describes the leadership process which affects individual behavior and group dynamics, which in turn affect the end-result variables--productivity, quality, and profitability.⁵

The Likert Model was selected because it is the most comprehensive of the process models. Although it may not be totally integrated, Likert has made an important contribution by his attempt to synthesize three aspects of organizations; (1) individual and motivation, (2) small-group interaction, and (3) systematic nature of enterprise. In addition, Likert's Model is in operational form even though it lacks

Processes directly influence seven intervening variables. These intervening variables are feeling

⁴Daniel Katz and Robert L. Kahn, The Social Psychology of Organizations (New York: Wiley, 1966); Rensis Likert, New Patterns of Management (New York: McGraw-Hill Book Company, 1961), and The Human Organization: Its Management and Value (New York: McGraw-Hill Book Company, 1967); Charles P. Loomis, Social Systems (Princeton, New Jersey: D. Van Nostrand Company, 1960); Arlyn J. Melcher, Structure and Process of Organizations: A Systems Approach (Englewood Cliffs, New Jersey: Prentice-Hall, 1976); James G. March and Herbert A. Simon, Organizations (New York: Wiley, 1958).

⁵Likert, The Human Organization.

rigorous conceptualization.

Likert attempts to build a framework by which an organization can manipulate its leadership style to achieve more effective performance of organizational objectives. Likert's thesis is founded on the clear recognition of the importance of motivational forces and small-group interactions. An effort is also made to take into account the systematic nature of the organization and to specify its formal and informal aspects.

His Model states that the causal variables directly influence intervening variables which directly influence the end-result variables of sales volume, sales costs, quality of goods, and earning.

Likert specifies six causal variables and states that the causal variables of Character of Motivational Forces, Interaction Forces, Communication Processes, Decision Making, Goal Setting, and Control Processes directly influence seven intervening variables. These intervening variables are Feeling of Pressure, Attitude Toward Manager, Peer Group Loyalty, Cooperation, Technical Assistance, Individual Performance Goals, and Individual Motivation to Produce, which directly influence the end-result variable of Performance. It is with these variables that he develops his process model. (See Fig. 1.).

Fig. 1. The Likert Model

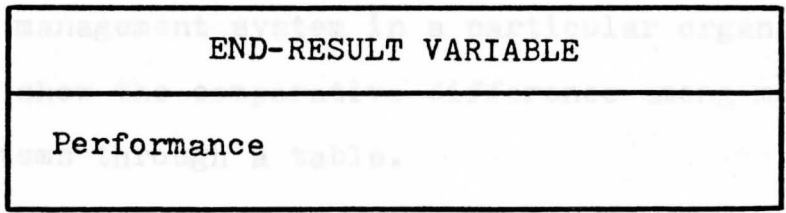
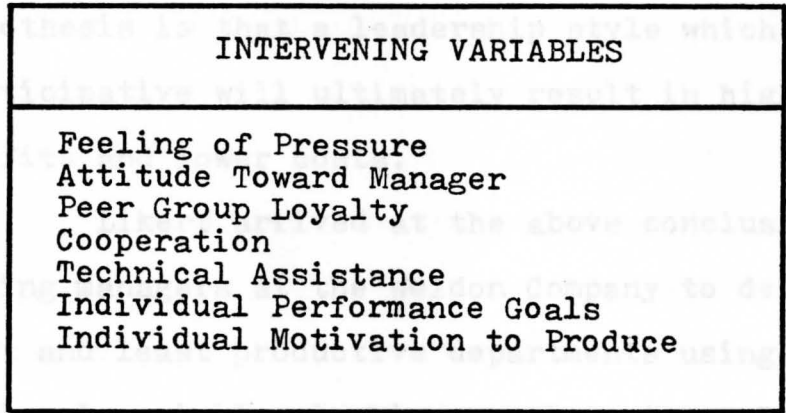
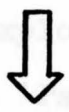
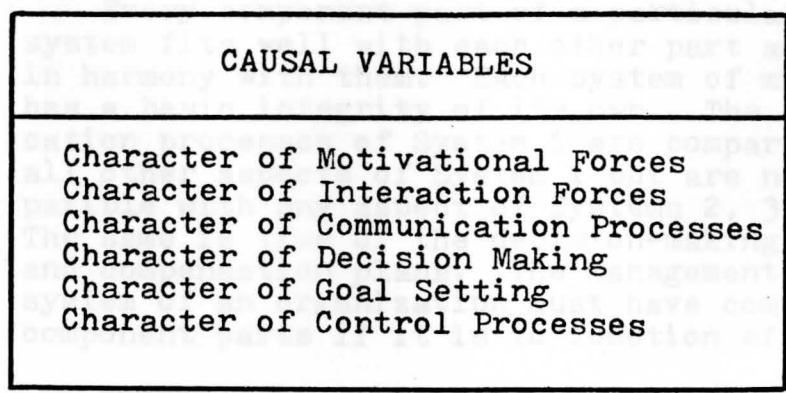


Fig. 1. The Likert Model

On the totality of the system, Likert states:

Every component part of a particular management system fits well with each other part and functions in harmony with them. Each system of management has a basic integrity of its own. The communication processes of System 1 are comparable with all other aspects of System 1 but are not compatible with any aspect of Systems 2, 3, or 4. The same is true of the decision-making processes and compensation plans. The management system of an organization must have compatible component parts if it is to function effectively.⁶

System 1 is a label for a leadership style which Likert calls 'Exploitive-authoritative', whereas System 4 is called 'Participative'.⁷ Likert's hypothesis is that a leadership style which is participative will ultimately result in higher profits and lower costs.

Likert arrived at the above conclusion by asking managers at the Weldon Company to describe the most and least productive departments using the organizational variables in his questionnaire. Then he compared the relative position of the high and lows of each item. He wanted to measure the nature of the management system in a particular organization and show the comparative difference among management systems through a table.

⁶Ibid., p. 123.

⁷Ibid., p. 197.

Likert tested how good a measure this table was by asking some management groups where their organization was regarding motivation, communication, interaction, decision making, etc. This determined the present characteristics of the organization and also the characteristics that those managers would like the organization to have.

A frequency distribution was prepared consolidating the answers concerning the management system they believed their organization used. From left to right, Likert labeled the systems 'Exploitive-authoritative', 'Benevolent-authoritative', 'Consultative', and 'Participative'. Likert found discrepancy between the actual management systems they described and the one they would like. From the data gathered at the Weldon Company, he discovered that managers and supervisors felt pressure to manage in the same style as their superiors. The finding that managers tend to manage like their superiors helps to answer the discrepancy between the existing management system they described and the one they would like. For Likert, the participative management system results in high productivity, low scrap loss, low costs, favorable attitudes, and excellent labor relations.

Organizational Variables are Attitudes Toward
Organization, Interaction of Individuals, and
Perceptions of Role.

To make this more clear, here is a description of (System 4) Participative Group Management System. Since it is a science based theory of organization, it helps cope with organizational problems. It should have the capacity to coordinate and therefore provide solutions to problems of organizing and managing a modern enterprise. This coordination would be both horizontal and vertical. This coordination requires a multiple, overlapping structure with every group using decision making processes. Likert also emphasized on the necessity of including the current value of human organization and of customer goodwill in all financial reports of firms. To create human asset accounting and to make reasonably accurate estimates of its two dimensions--the current value of the human organization and customer goodwill--require close cooperation between accountants and social scientists highly competent in the measurement of the causal and intervening variables.

In The Human Organization, Likert specifies three higher level concepts for the causal variables. These concepts are Principle of Supportive Relations, Organizational Decision Making, and Organizational Performance Goals. The higher level concepts for the intervening variables are Attitudes Toward Organization, Interaction of Individuals, and Perceptions of Role.

In this study considerable care has been given to defining and operationalizing each of these variables. The care given to operationalizing each of the variables can be thought of as a step forward in the development of this model. Melcher, in his book Structure and Process: A System Approach, has developed a formal, structural model in which most of the variables are explicitly conceptualized and operationalized (except for the dependent variables--intra-group lateral, intra-group vertical, and inter-group behavior patterns).⁸

Vagueness concerning definitions makes analyzing the similarity or differences of concepts used by other researchers difficult. If organizational theoretical literature is ever to be integrated and codified for more efficient utilization, then this vagueness of the conceptual definitions must be removed.

The literature on organizational theory has a number of analytical frameworks which are only partially developed. Model building efforts can contribute towards the integration and codification of this literature by providing explicit

⁸Melcher, Structure and Process of Organizations: A Systems Approach.

⁹William J. Doll, The Katz and Kahn Model (Ph. D. dissertation, Kent State University, 1973).

conceptual and operational definitions and clarifying theoretical and operational linkages.

Operational definitions make the frameworks more useful for describing organizations, i.e., they provide measurement. Conceptual definitions make the models more analytically useful for explaining organizational behavior. Explicit definitions contribute to the integrations of the literature by clarifying each model's similarity to or differences from other models. This analysis of similarity and differences permits the elimination of redundancy as more comprehensive frameworks are developed. Specifying operational linkages permits the systematic testing of the framework.⁹

⁹William J. Doll, The Katz and Kahn Model (Ph. D. dissertation, Kent State University, 1975).

CHAPTER III

Definitions of the Variables

Definitions of Causal Variables

Character of Motivational Forces is the means by which the individuals in the organization are rewarded for their performance. These rewards may be strictly negative for poor or unsatisfactory performance. In contrast, they may be rewarded for outstanding performance with full employment of positive rewards. This can be viewed along a continuum:

Character of Motivational Forces

<u>1</u>	<u>4</u>	<u>7</u>
Negative	-----	Positive

Likert contends that noneconomic motives must be used fully along with the economic needs to establish the level of motivational forces which yield high productivity.

The measure of the Character of Motivational Forces is the response to question 58 in the survey of Appendix C.

The Character of Interaction Forces consists of the emphasis and to what extent there is encouragement of group members to confer among themselves.

The organizational leadership may encourage group members to confer or interact. In contrast, there may be active discouragement to prevent group members from conferring and interacting. This can be viewed as a continuum:

Character of Interaction Forces

1	4	7
Discourage	-----	Encourage

Likert feels that this "serves the function of creating or maintaining a network of interpersonal relationships among group members."¹⁰

Interaction Forces are measured by averaging the responses to questions 1, 2, and 3 in the survey in Appendix C.

The Character of Communication Processes is the organizational communication network of formal and informal channels. The communication network is intelligible when content is clear and channels of communications have minimal noise and sufficient information. In contrast, the communication network may be meaningless where information is unclear and transmission channels have high noise levels and insufficient information. This can be viewed along

¹⁰Likert, The Human Organization, p. 72.

the rest of the organization. He brings to the group of which he is the leader the views, goals, and decisions of those other groups. In this way, he provides a linkage whereby communication and the exercise of influence can be performed in both directions.¹¹

In contrast, the content of information may be clear and unmistakable. This can be viewed as a continuum:

Information Content

<u>1</u>	<u>4</u>	<u>7</u>
Vague		Clear

Information Transmission refers to the means of transfer arrangements through which interchange of information takes place between various positions in an organization. With willing and cooperative channel members, transmission of information could be accurate. In contrast, transmission may be inaccurate whenever without proper attitude. This can be viewed as a continuum:

Information Transmission

<u>1</u>	<u>4</u>	<u>7</u>
Inaccuracy		Accuracy

Information Sufficiency refers to the amount of information required in order to arrive at a

¹¹Likert, New Patterns of Management, p. 171.

decision. The organizational structure can tend to generate adequate information and in contrast the flow of information can be inadequate. This can be viewed as a continuum:

Information Sufficiency

<u>1</u>	4	<u>7</u>
Inadequate		Adequate

Character of Decision Making Process refers to the manner in which members of the organization make decisions affecting the organization. The individual members may not be involved in these decisions at all. In contrast, there may be complete involvement of the individuals in decisions. This can be viewed on a continuum:

Character of Decision Making Process

<u>1</u>	4	<u>7</u>
Uninvolved		Involved

Goal setting is the act of predicting the result of a task or activity prior to the actual performing of the task. Goals set by an organization may be done by the formal leaders only. In contrast, the goals may be set with complete participation of all members of the organization, regardless of the position in the formal hierarchy.

This can be viewed along a continuum:

Character of Goal Setting

<u>1</u>	4	<u>7</u>
No participation		Participation

Likert contends that goal setting by the organization should involve the participation of members.

The measure for the Character of Goal Setting is the mean of the responses to questions 16 and 59 in the survey in Appendix C.

Character of the Control Process is the organizational measurement of its own effectiveness and effectiveness of its individual members. The information gathered by the organization may be used for policing the effectiveness of the individual. In contrast, the information may be used as a feedback for individual self-guidance. This can be viewed on a continuum:

Character of the Control Process

<u>1</u>	4	<u>7</u>
Policing		Self-guidance

Likert specifies control processes in terms of management review and the accuracy of measurement. The measures for the Character of the Control Process is the mean of the responses to questions 17 through 21 in the survey in Appendix C.

Definitions of Intervening Variables

Feeling of Pressure is an attitude that an individual has when he feels that he must drive himself too hard, take on the responsibilities of others, and to seek goals that cannot be achieved. An individual may expect to feel a certain amount of pressure to get the job done on one hand, but if this pressure becomes unreasonable, it will lead to frustration in the individual. This can be viewed on a continuum:

Feeling of Pressure

1	4	7
Unreasonable	_____	Reasonable

. . . that when the levels of direct, hierarachial, managerial pressure for production are high in relation to the amount of manager's supportive behaviour [sic], a feeling of unreasonable pressure is produced in the men.¹²

The Attitude Toward Manager consists of the individual's perception of his formal leader in the organization. This attitude may be unfavorable when the individual does not feel that he can trust his supervisor. In contrast, this attitude may be favorable when the individual feels that he can completely trust his supervisor. This can be viewed

¹²Likert, The Human Organization, p. 55.

stimulated between members of the group who remind him of his goals and commitments.¹³

The measures for Peer Group Loyalty is the mean of the responses to questions 40 through 43 in the survey of Appendix C.

. . . management will make full use of the potential capacities of its human resources only when each person in an organization is a member of one or more effectively functioning work groups that have a high degree of group loyalty, effective skills of interaction, and high performance goals.¹⁴

Cooperation means to act or operate jointly with another or others for common benefit. Cooperation is manifested in the concept of teamwork, and is contrasted with individual competitive striving. A low level of Cooperation indicates limited joint action whereas extensive joint action indicates a high level of Cooperation. This can be viewed as a Continuum:

Cooperation

1	4	7
Limited		Extensive

Likert feels that,

Subordinates aid each other and share leadership tasks rather than putting immediate self-interest ahead of long-range self-interest and organizational success.¹⁵

¹³Ibid., p. 57.

¹⁴Likert, New Patterns of Management, p. 104.

¹⁵Likert, The Human Organization, p. 75.

The measure for Cooperation is the mean of the responses to questions 44 through 50 in the survey in Appendix C.

Technical Assistance consists in the tendering or receiving of information of a technical nature to or from others. There may be a limited amount of technical information exchanged among members of the group. In contrast, there may be extensive amounts of technical information exchanged among group members in performing their job. This can be viewed along a continuum:

Technical Assistance

<u>1</u>	<u>4</u>	<u>7</u>
Limited	-----	Extensive

Likert does not define Technical Assistance. However, in order not to overlap with the definition of Cooperation, a distinction can be made concerning the active behavior of the individual. In Cooperation, active involvement is required. Whereas, for the individual to manifest the behavior under Likert's label of Technical Assistance, only the passive accepting or tendering of information is involved.

The measure for Technical Assistance is the mean of the responses to questions 51, 52, and 53 in the survey in Appendix C.

The leader has adequate competence to handle the technical problems faced by his group, or he sees that access to this technical knowledge is fully provided. This may involve bringing in, as needed, technical or resource persons. Or he may arrange to have technical training given to one or more members of his group so that the group can have available the necessary technical know-how when the group discusses a problem and arrives at a decision.¹⁶

Individual Performance Goals consist of the results of the tasks or activities undertaken by an individual, which he predicts prior to undertaking the task and to which he strives to achieve. Individuals may not drive themselves hard enough and therefore they are setting low goals for themselves. In contrast, they may be setting their goals high so as to make their tasks challenging. This may be viewed as a continuum:

Individual Performance Goals

<u>1</u>	<u>4</u>	<u>7</u>
Low		High

Likert believes that a superior that sets high performance goals for himself is much more likely to have subordinates who set high performance goals.

Individual Performance Goals is measured by finding the mean of the responses to the questions 54 and 55 in the survey in Appendix C.

¹⁶Likert, New Patterns of Management, p. 171.

If a high level of performance is to be achieved, it appears to be necessary for a supervisor to be employee-centered and at the same time to have high performance goals and a contagious enthusiasm as to the importance of achieving these goals.¹⁷

Individual Motivation to Produce refers to the degree to which a person initiates and sustains meaningful activity which contributes to the performance of the group. Motivation may be high when there are many activities leading to the accomplishment of tasks initiated by the individual, and low where these activities are not initiated by the individual. Individual Motivation to Produce can be viewed as a continuum:

Individual Motivation to Produce

1	4	7
No initiative	High initiative	

The measure for Individual Motivation to Produce is the mean of the responses to questions 56 and 57 in the survey in Appendix C.

Definition of End Result Variable

Performance consists of the actual performance of the organization in terms of how well it is meeting its objectives. The company may consider itself unsuccessful when it fails to meet any of its

¹⁷Ibid., p. 8.

goals. In contrast, when it meets all of its performance goals, it can be considered successful.

This can be viewed on a continuum:

Performance

<u>1</u>	<u>4</u>	<u>7</u>
Fails to meet goals		Meets all goals

Likert implies that it is a situational requirement that the organization be successful to be able to use a scientific management style.

The measure of Performance is the mean of the responses to the questions 22 through 25 in the survey in Appendix.C.

CHAPTER IV

Hypotheses and Methodology

The Likert approach has been proven effective when dealing with profit oriented organizations. At the Weldon Company, the average earnings of piece-rate workers increased nearly 30%; while the total manufacturing costs decreased by about 20%. The turnover rate, at the Weldon Company, dropped to nearly half of its former level. Significant decreases in employee training time were also realized.¹⁸

To date no empirical work has been done to test the Likert Model in an educational institution where the following issues must be considered:

1. What is the relationship between the six Causal variables and the End Result variables? Are they all positively correlated with the End Result variables, all negatively correlated, or a mixture of positive and negative correlations?

2. How does the Likert Model relate the End Result variables with the Causal variables?

¹⁸Likert, The Human Organization, pp. 37-38.

As previously stated, Likert attempts to build a framework by which an organization can manipulate its leadership style to achieve more effective performance of organizational objectives.

Hypotheses

The first hypothesis to be investigated is that there is a significant, positive correlation between the End Result variable and each of the Causal variables. The Causal variables are Character of Motivational Forces, Character of Interaction Forces, Character of Communication Processes, Character of Decision Making, Character of Goal Setting, and Character of Control Processes.

The second hypothesis to be considered is that Performance can be described as a linear function of the Causal variables. It should be noted that the Causal variables will be subjected to factor analysis. The indices, generated by the factor analysis, will be used to test the hypotheses.

Methodology

The data for this study will be collected through a field study. The reason for choosing a field study, rather than a field experiment, or laboratory experiment, is to test the hypotheses in the real world. A great number of field studies

have been performed by the Institute of Social Research at the University of Michigan, concentrating on small group interactions. For this reason, it seemed incongruent to gather data in any method other than through a field study. Much of their work was taken as a guide line.

Instrument

The measurement instrument used in this study was derived from a questionnaire developed by Taylor and Bowers at the Institute of Social Research at the University of Michigan.

The Survey of Organizations questionnaire is a machine-scored, standardized instrument developed since 1966 by the Organizational Development Research Program of the Center for Research on Utilization of Scientific Knowledge for use as a core measurement tool in a program of development studies of industrial and commercial enterprises.¹⁹

The survey was reviewed and questions were chosen which best measured the conceptualized variables previously stated. In most instances only slight modification in the survey questions was made; such as changing from manager or supervisor to chairman. The questionnaire used in this study contains a total of sixty-four questions. Fifty-nine pertain

¹⁹Taylor and Bowers, Survey of Organizations, p. 1.

directly to the variables, and the remaining five questions were demographic.

Subjects

The instrument was distributed to one-hundred ninety-five committee members of a midwest state university. The committees were staffed for the 1976-1977 school year, ending the spring quarter of 1977. There were a total of twenty-six committees comprised of members from the college administration, college faculty, the student body and off campus representatives. The committees were divided into two types; the Administrative Boards and the Advisory Committees. The Administrative Boards are established to provide a means of reviewing decisions of an administrator. Advisory Committees are established to serve in an advisory capacity to an administrative office. As such, administrative regulations can be reviewed prior to their implementation or operating policies can be reviewed for possible revision.

The committee chairmen were not asked to respond to a questionnaire. However, one week before the questionnaires were mailed, the chairmen received introductory letters asking for their support (See Appendix A).

Each committee member received a letter of explanation (See Appendix B) and a questionnaire with a detachable, returnable answer sheet (See Appendix C).

Since one-half of the academic school year was completed, valid responses as to the workings of their committee was expected.

In the event a person is a member of more than one committee, he/she was directed to answer each question with reference to the committee specified on the answer sheet.

attend a committee meeting. If the questionnaire was inappropriate for their particular situation. The questionnaires received from these respondents could not be used for data analysis. This situation reduced the number of usable responses to fifty.

Factor Analysis

The data collected, through the use of the questionnaire, was subjected to factor analysis to examine and improve the internal consistency of the measuring instrument. The questionnaire items relating to Causal and Intervening variables were factor analyzed separately. The factor analyses were run with the use of The Statistical Package for Social Sciences.²⁰

²⁰Norman H. Nie, et al; A Statistical Package for the Social Sciences (2nd Ed.; New York: McGraw-Hill Book Company, 1975).

CHAPTER V

Data Analysis and Results

A total of seventy-two responses were received. Some of the respondents stated that the questionnaire was not completed because the committee had never met, the chairman was absent from all committee meetings, they had never been able to attend a committee meeting, or the questionnaire was inappropriate for their particular situation. The questionnaires received from these respondents could not be used for data analysis. This situation reduced the number of usable responses to fifty.

Factor Analysis

The data collected, through the use of the questionnaire, was subjected to factor analysis to examine and improve the internal consistency of the measuring instrument. The questionnaire items relating to Causal and Intervening variables were factor analyzed separately. The factor analyses were run with the use of The Statistical Package for Social Sciences.²⁰

²⁰Norman H. Nie, et al, A Statistical Package for the Social Sciences (2nd. Ed.: New York: McGraw-Hill Book Company, 1975).

The factoring method used was principal factoring with iterations. This factoring method replaces the main diagonal elements of the correlation matrix with communality estimates. It also employs an iteration procedure for improving the estimates of communality. Among the several orthogonal rotation methods available in the SPSS, the Varimax method was used to obtain the desired factors.²¹

The selection of items in each factor were based upon the criteria: eigenvalues ≥ 1.0 ; factor loadings ≥ 0.60 .

The results of two factor analyses are shown on Table 1 for the Causal Variables, and Table 2 for End Result Variables which are grouped by association.

Due to a small sample size and the large number of variables, a factor analysis was not run on all variables combined.

The End Result Variables have not undergone factor analysis and are grouped by association.

²¹Afzalur Rahim, "Managing Conflict Through Effective Organization Design: An Experimental Study with the MAPS Design Technology" (Ph. D. dissertation, University of Pittsburgh, 1976). Ann Arbor: University Microfilms, Inc., 1977, p. 31.

TABLE 1

VARIMAX ROTATED FACTOR MATRIX for CAUSAL VARIABLES		
Factor 1		% of variance=57.9
Control Strategy		
Item #	Items	Factor Loading
18	To what extent does your chairman maintain high standards of performance?	.79
19	To what extent does your chairman set an example by working hard himself?	.78
20	To what extent does your chairman show you how to improve your performance?	.67
21	To what extent does your chairman provide the help you need so that you can schedual work ahead of time?	.63
Factor 2		% of variance=11.1
Supportive Dynamics		
6	How often does your chairman hold group meetings where he and the people who work for him can really discuss things together?	.77
7	To what extent does your chairman encourage the persons who work for him to work as a team?	.63
14	To what extent do different units or departments plan together and coordinate their efforts?	.75
Factor 3		% of variance=5.8
Work Group Interactions		
3	How much do persons in your work group encourage each other to work as a team?	.69
Factor 4		% of variance=6.9
Upward Receptiveness		
1	How receptive are those above you to your ideas and suggestions?	.87

Factor 5 To what extent do you... % of variance=10.1
Downward Involvement

12	When decisions are being made, to what extent are the persons affected asked for their ideas?	.88
13	People at all levels of an organization usually have the know-how that could be of use to decision-makers. To what extent is information widely shared in this organization so that those who make decisions have access to all available know-how?	.72

Factor 6 To what extent are persons... % of variance=8.2
Organizational Influence

10	In general, how much say or influence does each of the following people/groups of people have on what goes on <u>in your work group</u> ? Persons not belonging to your committee?	-.79
58	Why do people work hard in this organization?	.71

TABLE 2

VARIMAX ROTATED FACTOR MATRIX
for INTERVENING VARIABLES

Factor 7 To what extent do persons... % of variance=50.8
Attitude Toward Supervisor

26	To what extent are you able to respond to unusual work demands placed upon you?	.72
27	All in all, how satisfied are you with your chairman?	.79
28	How friendly and easy to approach is your chairman?	.68
29	When you talk with your chairman, to what extent does he pay attention to what you're saying?	.88
30	To what extent is your chairman willing to listen to your problems?	.86
31	To what extent do you feel your chairman has confidence and trust in you?	.86

52	To what extent does your chairman handle well the <u>technical</u> side of his job--for example, general expertness, knowledge of job, technical skills needed in his profession or trade?	.62
Factor 8 Peer Group Communications		% of variance=4.6
44	When you talk with persons in your work group, to what extent do they pay attention to what you're saying?	.79
45	To what extent are persons in your work group willing to listen to your problems?	.73
Factor 9 Peer Group Loyalty		% of variance=6.5
40	All in all, how satisfied are you with the persons in your work group?	.65
Factor 10 Work Group Cooperation		% of variance=16.5
46	To what extent do persons in your work group help you find ways to do a better job?	.61
50	To what extent do persons in your work group provide the help you need so that you can plan, organize, and schedule work ahead of time?	.70
53	To what extent do persons in your work group offer each other new ideas for solving job-related problems?	.78
Factor 11 Perceived Leadership Style		% of variance=9.3
35	A change in the kinds of things he personally feels are important?	.82
36	In general, how much say or influence does each of the following people/groups of people have on what goes on <u>in your work group</u> ? Persons not belonging to your committee?	.86

37	Practice in making use of information he already has about how his people feel, how to be a good manager, etc.?	.66
Factor 12 Individual Motivation		% of variance=5.6
57	How much do you look forward to coming to work each day?	.76
Factor 13 Perceived Leadership Involvement		% of variance=3.1
33	More information about how his people see and feel about things?	.75
38	A situation that lets him do what he already knows how to do and wants to do?	.67

TABLE 3

END RESULT VARIABLES

Performance

- | | |
|----|--|
| 23 | To what extent do persons in your work group maintain high standards of performance? |
| 24 | To what extent does your work group make good decisions and solve problems well? |
| 25 | To what extent does your work group really want to meet its objectives successfully? |
| 26 | To what extent are you able to respond to unusual work demands placed upon you? |

By using the decision rules previously mentioned, thirteen items were selected for the Causal Variables: four in Factor 1; three in Factor 2; one in Factors 3 and 4; two in Factor 5; and two in Factor 6. Also, nineteen items were

selected for the Intervening Variables: seven in Factor 7; two in Factor 8; one in Factor 9; three in Factor 10; three in Factor 11; one in Factor 12; and two in Factor 13.

The hypotheses were tested by running the Pearson Correlation between the factors that represented the Causal Variables and the factor that represented the End Result Variables. Also, correlations were run between the indices of the Causal Variables and the indices of the Intervening Variables. Table 4 shows the correlations between the Causal indices with the Intervening indices and the Causal indices with the End Result indices. The criteria for evaluating the correlation coefficient was $r \geq .25$ at $P \leq .05$.

The correlations were computed using a program called Pearson Corr developed by Nie in A Statistical Package for the Social Sciences. The Pearson Corr computes Pearson Product-Moment correlation coefficient for pairs of interval-level variables.²²

It can be seen that the Causal indices (Factors 1 through 6) have significant positive

²²Nie, et al, A Statistical Package for the Social Sciences, p. 276.

TABLE 4

PEARSON CORRELATION: CAUSAL WITH INTERVENING, CAUSAL WITH END RESULT

CAUSAL	INTERVENING							END RESULT
Factor	7	8	9	10	11	12	13	14
1 Control Strategy	.71 *	.36 **	.31 **	.51 *	-.16	.51 *	-.21	.52 *
2 Supportive Dynamics	.45 *	.53 *	.30 **	.72 *	.12	.56 *	-.18 *	.61 *
3 Work Group Interaction	.32 **	.43 *	.27 ***	.39 ***	-.42 *	.14	-.11	.36 **
4 Upward Receptiveness	.40 **	.39 **	.23 ***	.26 ***	.13	.53 *	-.13	.49 *
5 Downward Involvement	.61 *	.49 *	.27 ***	.40 **	-.15	.49 *	-.35 **	.81 *
6 Organizational Influence	.37 **	.16	.28 **	.32 *	-.14	.22	-.18	.28 ***

* P \leq .001
 ** P \leq .01
 ***P \leq .05

correlations with the End Result index. The correlations of Factor 3 with Factor 14 and Factor 6 with Factor 14 experienced a weak relationship, but not so weak as to be deemed insignificant by the decision rule. Thus, the null hypothesis can be rejected, i.e., H_0 states there is no significant positive correlation between each of the Causal indices and the End Result index. The correlation between the Causal indices with themselves, indicate that despite the factor analysis with Verimax rotation, significant correlations exist between Factors 1, 2, and 5. (See Table 5).

TABLE 5

PEARSON CORRELATION: CAUSAL WITH CAUSAL

Factor	1	2	3	4	5	6
1	1.	.52 *	.22	.33 **	.45 *	.35 *
2		1.	.04	.37 **	.55 *	.30 **
3			1.	0.0	.23	.23
4				1.	.45 *	.06 **
5					1.	.28 **
6						1.

* $P \leq .001$ ** $P \leq .01$

In considering the correlations of the Causal indices with the Intervening indices, it is important to note Factor 11 has one significant negative correlation ($r = -.42$) with Factor 3. This relationship indicates that as work group members encourage each other to work as a team, less significance is put on the supervisor's leadership style. This may indicate a diminishing effect by the supervisor on a tightly knit work group. Also, Factor 5 has one significant negative correlation ($r = -.35$) with Factor 13. This indicated that as subordinates participate in making decisions which affect them, less significance is placed on their supervisors' involvement. This may indicate a diminishing effect by a supervisor on a work group which utilized participative management.

To test the second hypothesis, a multiple linear regression analysis was performed. The regression analysis was done by using a program called Regression, developed by Nie in A Statistical Package for the Social Sciences.²³ The regression coefficients are given in Table 6. The equation has a multiple R of .87, an R^2 of .76, and a standard error of .70.

_____ null hypothesis that there is no significant linear relationship between Performance and the Causal indices.

It should be noted that the null hypothesis relating to Factors 1, 4, and 6 could not be rejected.

²³Ibid., p. 342

TABLE 6

REGRESSION COEFFICIENT

Factor	Coefficient	Calculated F Value	Std. Error
1 Control Strategy	.065	.583	.084
2 Supportive Dynamics	.179	4.100*	.088
3 Work Group Interaction	.172	6.675*	.067
4 Upward Receptiveness	.134	2.563	.084
5 Downward Involvement	.527	31.325**	.094
6 Organizational Influence	-.040	.085	.136
Constant	.037		

* Significant $P \leq .05$ (1/15 Degrees of Freedom)

**Significant $P \leq .001$ (1/50 Degrees of Freedom)

Using the F statistic to test the null hypothesis, it was shown that $F_{cal} = 21.98$ is significant at .001 (6/43 Degrees of Freedom). This rejects the second null hypothesis that there is no significant linear relationship between Performance and the Causal indices. It should be noted that the null hypothesis relating to Factors 1, 4, and 6 could not be rejected.

Factors 1, 4, and 6 do not each have a significant linear relationship with Performance. Also, the coefficient of Factor 6 is $-.40$. This unanticipated negative sign happened by chance and is not statistically significant.

This study shows that in a given organization where group decision making is set up in a formal manner, and is a working mechanism of the organization, the effectiveness of these groups can be affected by several indices. These indices can be manipulated to some extent by the supervision of these groups and, also, by a general attitude set forth by the organization which will influence individual group members.

These indices are not steadfast; further research may determine if they really exist.

It is easy to name a factor and then to believe there is a reality behind the name. But giving a factor a name does not give it reality. Factor names are simply attempts to epitomize the essence of factors. They are always tentative, subject to later confirmation or disconfirmation.²⁴

Future studies on Likert's Model, in an educational institution, should be conducted to test the correlations between Factors 1, 2, and 3. This should be done through factor analysis, using the Verwey reference.

²⁴Fred N. Kerlinger, Foundations of Behavioral Research (2nd, Ed., New York: Holt, Rinehart & Winston, Inc., 1964), p. 588.

CHAPTER VI

Conclusions and Implications

This study shows that in a given environment where group decision making is set up in a formal manner, and is a working mechanism of the organization, the effectiveness of these groups can be affected by several indices. These indices can be manipulated to some extent by the supervision of these groups and, also, by a general attitude set forth by the organization which will influence individual group members.

These indices are not steadfast; further research may determine if they really exist.

It is easy to name a factor and then to believe there is a reality behind the name. But giving a factor a name does not give it reality. Factor names are simply attempts to epitomize the essence of factors. They are always tentative, subject to later confirmation or disconfirmation.²⁴

Future studies on Likert's Model, in an educational institution, should be conducted to remove the correlations between Factors 1, 2, and 5. Even through factor analysis, using the Verimax rotation,

²⁴Fred N. Kerlinger, Foundations of Behavioral Research (2nd. Ed.: New York: Holt, Rinehart and Winston, Inc., 1964), p. 688.

was used--the multicollinearity problem could not be eliminated. The development of new and better measures of the variables may help reduce the significant correlations between these three factors.

In this study Performance was viewed as a function of the six Causal indices; caution is advised when separately analyzing the affect of each of these indices on Performance.

It is assumed in regression analysis that the effects of the independent variables are additive. This assumption implies that the relationship between the dependent variable and any given independent variable is the same across all values of the remaining independent variables. For some social science applications this assumption will not be tenable.²⁵

Significant portions of the variation, explained by the regression equation, may be due to the interaction of some or all of the Causal indices. Future studies should be developed to include the interaction terms, rather than to exclude them.

This study was limited, however, that it was drawn on a small sample size with a small response to the survey questionnaire. Since it is not a randomly drawn sample from a random population, statistical inference cannot be drawn. The tentative conclusions are not without merit, however. This study may be

²⁵Nie, et al, A Statistical Package for the Social Sciences, p.372.

used to guide future work in this area of interest.
As a larger data base becomes available, more significance can be given to the results of research in this area.

Dear Chairperson:

My name is Bruce Vinion. I am a Graduate Student in Business Administration at Youngstown State University. I am currently working on my thesis which involves the evaluation of a model I developed. This model is based on the works of Emile Lihart, concerning group interactions. The evaluation will be done through the use of a survey of academic committees (an area not previously considered). Your committee members will receive the survey; and I am requesting you give me your support and encourage your committee members to participate. These persons will receive the questionnaires later this week.

Thank you.

Bruce Vinion

APPENDIX A

Feb. 1, 1977

Dear Chairperson:

My name is Bruce Vinion. I am a Graduate Student in Business Administration at Youngstown State University. I am currently working on my thesis which involves the evaluation of a model I developed. This model is based on the works of Rensis Likert, concerning group interactions. The evaluation will be done through the use of a survey of academic committees (an area not previously considered). Your committee members will receive the survey; and I am requesting you give me your support and encourage your committee members to participate. These persons will receive the questionnaire later this week.

please return both pages of the answer sheets to Bruce Vinion in care of the University, no later than February 11, 1977.

Thank you,

Bruce Vinion

Thank you,

Bruce Vinion

APPENDIX B

Feb. 1., 1977

Dear Committee Member:

My name is Bruce Vinion. I am a Graduate Student in Business Administration at Youngstown State University. I am currently working on my thesis which involves the evaluation of a model I developed. This model is based on the works of Rensis Likert, concerning group interactions. The evaluation will be done through the use of a survey of academic committees (an area not previously considered). I am requesting you give me your support and respond to the questionnaire. Please detach the last two (2) pages of the survey (the answer sheets). You will find your name, a respondent number, and your committee affiliation on the bottom of the sheets. When you have completed the questionnaire please return both pages of the answer sheets to Bruce Vinion in care of the MAIL ROOM, at the University, no later than February 11, 1977.

Thank you,

Bruce Vinion

APPENDIX C

Q U E S T I O N N A I R EI N S T R U C T I O N S

1. Most questions can be answered by indicating a circle around the choice you want to give. If you do not find the exact answer that fits your case, use the one that is closest to it.
2. Remember, the value of the study depends upon your being straightforward in answering this questionnaire. You will not be identified with your answers.
3. Keep in mind that you are asked to answer the questions as a member of an academic committee. Please use this as your reference base.
4. Please indicate all answers on the answer sheets.
NOT ON THE QUESTIONNAIRE.
5. Now that you have completed the instructions, please begin with the questions on the following page. There are two pages of answers.

1. How receptive are those above you to your ideas and suggestions?
2. To what extent do persons in your work group exchange opinions and ideas?
3. How much do persons in your work group encourage each other to work as a team?
4. How adequate for your needs is the amount of information you get about what is going on in other departments or shifts?
5. To what extent are you told what you need to know to do your job in the best possible way?
6. How often does your chairman hold group meetings where he and the people who work for him can really discuss things together?
7. To what extent does your chairman encourage the persons who work for him to work as a team?
8. In general, how much say or influence does each of the following people/groups of people have on what goes on in your work group.
 8. Chairman?
 9. Other committee members?
 10. Persons not belonging to your committee?
11. In this organization to what extent are decisions made on the levels where the most adequate and accurate information is available?
12. When decisions are being made, to what extent are the persons affected asked for their ideas?
13. People at all levels of an organization usually have know-how that could be of use to decision-makers. To what extent is information widely shared in this organization so that those who make decisions have access to all available know-how?
14. To what extent do different units or departments plan together and coordinate their efforts?
15. When your chairman has problems related to the work, to what extent does he use group meetings to talk things over with his subordinates and get their ideas?

16. To what extent does this organization have clear-cut, reasonable goals and objectives?
17. How much does your chairman encourage people to give their best effort?
18. To what extent does your chairman maintain high standards of performance?
19. To what extent does your chairman set an example by working hard himself?
20. To what extent does your chairman show you how to improve your performance?
21. To what extent does your chairman provide the help you need so that you can schedule work ahead of time?
22. All in all, how satisfied are you with this organization, compared to most others?
23. To what extent do persons in your work group maintain high standards of performance?
24. To what extent does your work group make good decisions and solve problems well?
25. To what extent does your work group really want to meet its objectives successfully?
26. To what extent are you able to respond to unusual work demands placed upon you?
27. All in all, how satisfied are you with your chairman?
28. How friendly and easy to approach is your chairman?
29. When you talk with your chairman, to what extent does he pay attention to what you're saying?
30. To what extent is your chairman willing to listen to your problems?
31. To what extent do you feel your chairman has confidence and trust in you?
32. To what extent do you have confidence and trust in your chairman?

How much does your chairman need each of the following to be a better manager?

33. More information about how his people see and feel about things:
34. More information about principles of good management:
35. A change in the kinds of things he personally feels are important:
36. Greater ability in handling the administrative side of his job:
37. Practice in making use of information he already has about how his people feel, how to be a good manager, etc.:
38. A situation that lets him do what he already knows how to do and wants to do:
39. More interest in and concern for the people who work for him.
40. All in all, how satisfied are you with the persons in your work group?
41. How friendly and easy to approach are the persons in your work group?
42. How much do persons in your work group encourage each other to give their best effort?
43. To what extent do you have confidence and trust in the persons in your work group?
44. When you talk with persons in your work group, to what extent do they pay attention to what you're saying?
45. To what extent are persons in your work group willing to listen to your problems?
46. To what extent do persons in your work group help you find ways to do a better job?
47. How much do persons in your work group emphasize a team goal?
48. To what extent does your work group plan together and coordinate its efforts?
49. To what extent is information about important events and situations shared within your work group?

50. To what extent do persons in your work group provide the help you need so that you can plan, organize, and schedule work ahead of time?
51. To what extent are the equipment and resources you have to do your work with adequate, efficient, and well-maintained?
52. To what extent does your chairman handle well the technical side of his job--for example, general expertness, knowledge of job, technical skills needed in his profession or trade?
53. To what extent do persons in your work group offer each other new ideas for solving job-related problems?
54. To what extent do persons in your work group know what their jobs are and have the know-how to do them well?
55. To what extent do you feel a real responsibility to help the committee be successful?
56. To what extent are there things about working here (people, policies, or conditions) that encourage you to work hard?
57. How much do you look forward to coming to work each day?
58. Why do people work hard in this organization?
59. How are objectives set in this organization?
60. Your sex:
61. When did you first become associated with this organization?
62. Into what age bracket do you fall?
63. How much schooling have you had?
64. While you were growing up--say until you were eighteen--what kind of community did you live in for the most part?

All answers should be indicated on the answer sheets.

A N S W E R S H E E T

- a. To a very little extent
- b. To a little extent
- c. To some extent
- d. Somewhat
- e. To a fair extent
- f. To a great extent
- g. To a very great extent

- | | | | | | | | | | | | | | | | |
|-----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|
| 1. | a. | b. | c. | d. | e. | f. | g. | 30. | a. | b. | c. | d. | e. | f. | g. |
| 2. | a. | b. | c. | d. | e. | f. | g. | 31. | a. | b. | c. | d. | e. | f. | g. |
| 3. | a. | b. | c. | d. | e. | f. | g. | 32. | a. | b. | c. | d. | e. | f. | g. |
| 4. | a. | b. | c. | d. | e. | f. | g. | 33. | a. | b. | c. | d. | e. | f. | g. |
| 5. | a. | b. | c. | d. | e. | f. | g. | 34. | a. | b. | c. | d. | e. | f. | g. |
| 6. | a. | b. | c. | d. | e. | f. | g. | 35. | a. | b. | c. | d. | e. | f. | g. |
| 7. | a. | b. | c. | d. | e. | f. | g. | 36. | a. | b. | c. | d. | e. | f. | g. |
| 8. | a. | b. | c. | d. | e. | f. | g. | 37. | a. | b. | c. | d. | e. | f. | g. |
| 9. | a. | b. | c. | d. | e. | f. | g. | 38. | a. | b. | c. | d. | e. | f. | g. |
| 10. | a. | b. | c. | d. | e. | f. | g. | 39. | a. | b. | c. | d. | e. | f. | g. |
| 11. | a. | b. | c. | d. | e. | f. | g. | 40. | a. | b. | c. | d. | e. | f. | g. |
| 12. | a. | b. | c. | d. | e. | f. | g. | 41. | a. | b. | c. | d. | e. | f. | g. |
| 13. | a. | b. | c. | d. | e. | f. | g. | 42. | a. | b. | c. | d. | e. | f. | g. |
| 14. | a. | b. | c. | d. | e. | f. | g. | 43. | a. | b. | c. | d. | e. | f. | g. |
| 15. | a. | b. | c. | d. | e. | f. | g. | 44. | a. | b. | c. | d. | e. | f. | g. |
| 16. | a. | b. | c. | d. | e. | f. | g. | 45. | a. | b. | c. | d. | e. | f. | g. |
| 17. | a. | b. | c. | d. | e. | f. | g. | 46. | a. | b. | c. | d. | e. | f. | g. |
| 18. | a. | b. | c. | d. | e. | f. | g. | 47. | a. | b. | c. | d. | e. | f. | g. |
| 19. | a. | b. | c. | d. | e. | f. | g. | 48. | a. | b. | c. | d. | e. | f. | g. |
| 20. | a. | b. | c. | d. | e. | f. | g. | 49. | a. | b. | c. | d. | e. | f. | g. |
| 21. | a. | b. | c. | d. | e. | f. | g. | 50. | a. | b. | c. | d. | e. | f. | g. |
| 22. | a. | b. | c. | d. | e. | f. | g. | 51. | a. | b. | c. | d. | e. | f. | g. |
| 23. | a. | b. | c. | d. | e. | f. | g. | 52. | a. | b. | c. | d. | e. | f. | g. |
| 24. | a. | b. | c. | d. | e. | f. | g. | 53. | a. | b. | c. | d. | e. | f. | g. |
| 25. | a. | b. | c. | d. | e. | f. | g. | 54. | a. | b. | c. | d. | e. | f. | g. |
| 26. | a. | b. | c. | d. | e. | f. | g. | 55. | a. | b. | c. | d. | e. | f. | g. |
| 27. | a. | b. | c. | d. | e. | f. | g. | 56. | a. | b. | c. | d. | e. | f. | g. |
| 28. | a. | b. | c. | d. | e. | f. | g. | 57. | a. | b. | c. | d. | e. | f. | g. |
| 29. | a. | b. | c. | d. | e. | f. | g. | | | | | | | | |

NAME: _____

NUMBER: _____

NUMBER: _____

58. a. Just to keep their jobs and avoid being chewed out.
 b. To keep their jobs and to make money.
 c. To keep their jobs, make money, and to seek promotions.
 d. To keep their jobs, make money, seek promotions, and for the satisfaction of a job well done.
 e. To keep their jobs, make money, seek promotions, do a satisfying job, and because other people in their work group expect it.
59. a. Objectives are announced with no opportunity to raise questions or give comments.
 b. Objectives are announced and explained, and an opportunity is then given to ask questions.
 c. Objectives are drawn up, but are discussed with subordinates and sometimes modified before being issued.
 d. Specific alternative objectives are drawn up by chairmen, and subordinates are asked to discuss them and indicate the one they think is best.
 e. Problems are presented to those persons who are involved, and the objectives felt to be best are then set by the subordinates and the chairman jointly, by group participation and discussion.
60. a. Male b. Female
61. a. Less than 1 yr. ago. b. Between 1-5 yrs. ago.
 c. Between 5-10 yrs. ago. d. Between 10-15 yrs.
 e. Between 15-25 yrs. f. More than 25 yrs.
62. a. 25 yrs. or under b. 26 to 30 yrs.
 c. 31 to 35 yrs. d. 36 to 40 yrs.
 e. 41 to 45 yrs. f. 46 to 55 yrs.
 g. 56 yrs. or over.
63. a. Some college. b. Completed Baccalaureate.
 c. Working on Masters. d. Masters Degree.
 e. Working on Doctorate. f. Has Doctorate.
64. a. Rural area or farm.
 b. Town or small city.
 c. Suburban area near large city.
 d. Large city.

NUMBER: _____

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