The Open Versus Closed Mind in Management: an Exploration.

M. John Close

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Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy

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by

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ABSTRACT

A study was conducted to determine what relationships there might be between the personality structure (dogmatism) of managers, their attitude toward their subordinates, their role perceptions, their personal background variables, and selected organizational variables in the farm product industry. The analysis of covariance method was employed using the full range of dogmatism scores. Also, the chi-square test for independence was applied to the upper and lower quartiles of the dogmatism scores.

Respondents include 445 male managers. Of the subjects, 44 were classified as first-line managers, 224 as lower-middle managers, 117 as upper-middle managers, and 60 as top managers.

The results of the analysis depicted a positive relationship between open-mindedness and organizational level. For this sample, upper-middle and top managers were significantly more open-minded on the average than were first-line and lower-middle managers.

No significant difference was found between mean dogmatism scores of the various functional areas of employment. However, a significant dependency was found when the open-minded and closed-minded groups were compared. Those in the "general management" category were overrepresented in the open-minded category.
A significant positive correlation between open-mindedness and Theory Y attitudes toward subordinates was found. Also, a significant chi-square was found. The moderate Theory X group was underrepresented in the open-minded category, while the Theory Y group was overrepresented in the open-minded category. Moderate Theory Y respondents were also overrepresented in the open-minded category. Theory X respondents appear to have fallen into each category as expected statistically. For this sample of managers, open-minded respondents were more likely to hold Theory Y attitudes toward subordinates than were closed-minded individuals.

There was no evidence that a significant relationship existed between dogmatism and the respondent's perceived need to act in a considerate manner. However, the results indicate that the open-minded respondents perceived significantly less need to initiate structure than did their closed-minded counterparts. No significant relationships were found between dogmatism scores and various combinations of consideration and structure.

Age was not found to be significantly associated with dogmatism using the entire range of scores. However, when the closed-minded group was compared to the open-minded group, a significant dependency was found between age and dogmatism. It appears that the under 30 age group represents more closed-minded personalities than expected and the 41-50 age group represents slightly fewer closed-minded personalities than expected statistically.
A significant relationship was found between dogmatism and education level. Generally, the relationship was an inverse one with dogmatism decreasing with education, particularly as college education reached the advanced degree stage.

A significant chi-square of 13.72 pointed to a dependence of dogmatism on the number of years with present company. Those respondents with eleven or more years with their present companies appear to be overrepresented in the open-minded group, while those with ten years or less with their respective companies were underrepresented in the open-minded group.

First born managers were significantly more open-minded than only borns and later borns. Only borns were found equally represented in both the open and closed-minded groups. First borns were overrepresented in the open-minded category, while the later borns were underrepresented in the open-minded category. Those respondents from families of four and five persons were significantly more open-minded than those from the family size of six persons and over.

Neither approach to the analysis of dogmatism scores (full distribution or quartile) resulted in significant relationships between dogmatism and line versus staff designations, span of control, collegiate major, number of years in present position, years as a manager, and years of full-time work experience.
CHAPTER I

INTRODUCTION

In 1954, Peter F. Drucker pointed out that managers are the basic and scarcest resource of any business enterprise. He was referring not to the scarcity of people to fill managerial positions, but to the shortage of individuals who are willing to assume significant leadership roles and can manage effectively. For amplification of this point we need only to look to evidence from recent years: "of every one hundred new business establishments started, approximately fifty, or one-half, go out of business within two years. By the end of five years, only one-third of the original one hundred will still be in business." Most of these failures can be attributed to ineffective leadership.

It is not surprising then, that we have witnessed vigorous efforts in managerial recruitment and development. Business firms of all sizes and functions are actively searching for managerial talent. Many have college recruitment programs; some have established their own management institutes. All have some form of internal

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appraisal system designed to select potentially effective individuals for positions with greater responsibility.

The following predictions for organizations of the future (particularly business organizations) suggest that the demand for effective managers will increase:

1. Organizations will be operating in a turbulent environment which requires continual change and adjustment.

2. Organizations will continue to expand their boundaries and domains. They will increase in size and complexity.

3. Organizations will continue to differentiate their activities causing increased problems of integration and coordination.

4. Organizations will continue to have major problems in the accumulation and utilization of knowledge. Intellectual activities will be stressed.

5. Greater emphasis will be placed upon suggestion and persuasion rather than upon coercion based on authoritarian power as the means for coordinating the activities of the participants and functions within the organization.

6. Participants at all levels in organizations will have a greater influence. Organizations of the future will adopt a power-equalization rather than power-differentiation model.

7. Problems of interface between organizations will be greater. New means for effective interorganizational coordination will be developed.

8. Computerized information-decision systems will have an increasing impact upon organizations.

9. The number of professionals and scientists and their influence within organizations will increase. There will also be a decline in the proportion of independent professionals with many more salaried professionals.

10. Goals of complex organizations will expand. Emphasis will be upon satisficing a number of goals rather than maximizing any one.
11. Evaluation of organizational performance will be difficult. Many new administrative techniques will be developed for evaluation of performance in all spheres of activity.\(^3\)

Due to the above factors, not only will the demand for managers increase, but the managerial role will require:

1. Individuals capable of dealing with change in a turbulent environment.
2. Individuals who possess the ability to innovate.
3. Individuals able to cope with high levels of ambiguity.
4. Individuals capable of meeting greater demands on their intellectual skills (hence greater emphasis on education).
5. Individuals characterized by a high degree of flexibility in thinking and behavior.\(^4\)
6. Individuals who possess technical skills, human relations skills and conceptual skills.\(^5\)

Thus, it is expected that the critical shortage of managerial talent will continue to confront the American business enterprise. Also, it appears that due to trends in the changes in role dimensions this shortage is very likely to become more severe.

It follows from the above statements that criteria for the identification of potentially successful managers are desperately

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\(^4\)Ibid., pp. 607-612.

needed and that research directed toward the identification of such criteria be given high priority. While considerable research has been carried out in this area, the art of predicting effective and successful managerial behavior is at best in its infancy.

The review of leadership theory and research contained in Chapter II will provide a picture of the state of the art in predicting effective and successful managerial behavior.

Purpose of the Study

The primary purpose of this exploratory study was to determine what relationships might exist between manager-leader personality structures, attitudes, role perceptions, and selected situational variables in a business setting. Specifically, the following question was asked— is there evidence to be found which might support the inclusion of the personality structure variable of open versus closed-mindedness in the analysis of manager-leader behavior and success as measured by organizational level?

Although leadership effectiveness was not studied directly, it was expected that questions of at least a speculative nature might appear in the analysis stage. As many situational variables as allowed, by the use of the questionnaire survey method, were included in the study.

Although the study was exploratory in nature, tentative hypotheses are proposed in Chapter IV in order to provide direction for analysis. It was expected that, as in most explorations of this type, more questions would be raised pertaining to manager-leader
characteristics than would be answered. So that overall direction might be established, three research questions were asked.

Research Questions

1. What relationship exists between personality structure and the variables of age, education, collegiate major, number of years in present position, number of years with present company, years as a manager, years of full-time working experience, and ordinal position in the family?

2. How do scores on the personality structure dimension of relatively closed versus relatively open-mindedness relate to functional role, span of control, line versus staff role, and organizational level?

3. Is there a relationship between the manager's personality structure, his attitudes toward subordinates, and how he perceives his managerial role?

Procedure

In order to reach answers to these research questions, the procedure described below was followed. At the outset, the data concerning the variables used in the study were obtained from a sample of managerial personnel employed in six companies in the farm product industry. The questionnaire used to collect the data required responses to items delineating the personal and situational variables of: (1) age, (2) educational level, (3) undergraduate major, (4) graduate major, (5) organizational level, (6) number of managerial positions held in present company and in career, (7) number of years in present position, (8) type of position—line or staff, (9) years
with present company, (10) years as a manager, (11) years of full-time working experience, (12) span of control, (13) functional area, (14) order of birth, and (15) family size. The questionnaire also contained Likert-type scales which identify the manager's role perception, attitudes toward subordinates, and the degree of openness of his personality (the last dimension is more commonly referred to as open versus closed-mindedness or dogmatism). Utilizing the data, the investigator employed the Pearson product moment, analysis of covariance and chi-square techniques. A more detailed description of procedures and statistical tools used in this study is presented in Chapter IV.

Organization of the Remainder of the Study

The remainder of the study was divided into five parts. Chapters II and III contain a review of the literature related to this study. The design of the study and the procedures used are presented in Chapter IV. Chapter V is an analysis of the findings. The discussion of the results, the conclusions of the present study, and the recommendations for further research are contained in Chapter VI.

The dissertation is concluded with appendices and references.
CHAPTER II

REVIEW OF THE LITERATURE - LEADERSHIP

Introduction

According to Professors Filley and House, leadership "... is a process whereby one person exerts social influence over the members of a group. A leader, then, is a person with power over others who exercises this power for the purpose of influencing their behavior."\(^6\)

Professors Hersey and Blanchard, in a review of leadership theory and research, state that "... leadership is the process of influencing the activities of an individual group in efforts toward goal achievement in a given situation." Thus, "... it follows that the leadership process is a function of the leader, the follower, and the situation, \( L = f(l, f, s) \)."\(^7\)

The latter definition allows for the analysis of leadership from an organizational perspective rather than from a personal quality or individual perspective. It can be expected then "... that the degree to which an individual exhibits leadership depends not only on

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his characteristics, but, also on the characteristics of the situation in which he finds himself.\textsuperscript{8}

To distinguish leadership from management, Filley and House define management "... as a process, mental and physical, whereby subordinates are brought to execute prescribed formal duties and to accomplish certain given objectives."\textsuperscript{9} The implication of differences in the definitions of leadership and management appears to be that management is a more broadly based function including activities other than leading. Keith Davis makes the following distinction:

Leadership is a part of management, but not all of it. A manager is required to plan, and organize, for example, but all we ask of the leader is that he get others to follow ... Leadership is the ability to persuade others to seek defined objectives enthusiastically. It is the human factor which binds a group together and motivates it toward goals. Management activities such as planning, organizing, and decision making are dormant cocoons until the leader triggers the power of motivation in people and guides them toward goals.\textsuperscript{10}

From the above discussion, this researcher concluded that the inclusion of the term "leadership" in the chapter title is not entirely appropriate. A more correct term would be "managerialship," defined as a process requiring both cognitive and behavioral efforts directed toward the structuring and directing of group efforts toward organizational objectives. Thus, it follows that the managerial role demands a decision-maker who formulates cognitive maps and at times

\textsuperscript{8}Alex Bavelas, "Leadership: Man and Function," \textit{Administrative Science Quarterly}, IV, No. 4 (March, 1960), 493.

\textsuperscript{9}Filley and House, \textit{Managerial Process}, p. 391.

displays leader behavior in attempts to influence others to operationalize those maps.

What is referred to here, is that manager-leaders are actors who occupy status-position in complex organizations. These status-positions are made up of a number of related roles which, in turn, are made up of norms or acceptable behavior patterns dedicated to the same function.\textsuperscript{11}

The manager-leader, as an occupant of a status-position, is required at times to play the role of leader or influencer. However, he also, at times, plays the role of teacher, advisor, planner, organizer, educator, and controller. While research studies relating to the process of managerialship, as defined above, have generally been lumped under the label of leadership, it is important to note that much of the research deals with the evaluation of manager-leader behavior as it related to roles other than the leadership role. This researcher is somewhat at a loss to explain the general absence of clear-cut distinctions between norms relating to leading and norms relating to the other managerial roles.

The various approaches to research concerning what has been termed managerialship, but traditionally labeled leadership, reviewed in this chapter, deal with basically different aspects of the managerial process. Trait theorists attack the problem by analyzing the personality characteristics of the occupants of status-positions. The

\textsuperscript{11}For a detailed description of the structural and dynamic characteristics of norms, roles, and status-positions, see: Alvin L. Bertrand, Social Organizations: A General Systems and Role Theory Perspective (Philadelphia, Penn.: Davis Company, 1972).
behavioral theorists approach the analysis with an emphasis on actual role behavior of status-position holders. Currently, situational or contingency theorists are including in their analysis the personality of position incumbents and their role behaviors as they relate to structural, physical, and human factors which affect the status-positions and, consequently, organizational outcomes. To facilitate consistency with the above discussion of management and leadership, the term "leader" may usually be translated to mean manager-leader.

In general, the scheme for review followed that used by Filley and House who evaluated the following propositions as apparent tenets of the various theories of leadership.¹²

**Trait Theory**
1. There are a finite number of identifiable characteristics, or traits, of successful and effective leaders. These traits differentiate the successful from unsuccessful leaders.

**Supportive Behavioral Theory**
2. The effective leader is characterized by supportive, employee-oriented, democratic behavior, uses general supervision, and is considerate of his subordinates.

**Instrumental Behavioral Theory**
3. The effective leader is characterized by the performance of instrumental functions in the achievement of group goals. These functions consist of planning, organizing, coordinating, directing and controlling the work of his subordinates.

**"Great Man" Behavioral Theory**
4. The effective leader is characterized by both supportive and instrumental leadership behavior.

Situational Theory

5. Leadership behavior is multidimensional. These dimensions are finite in number, and vary according to leader personality, the requirements of the task to be performed by him and his followers, the attitudes, needs, and expectations of his followers, and the organizational and physical environment in which he and they operate.\textsuperscript{13}

These propositions were used in this review of leadership research for evaluative purposes only and were not tested in this study.

Trait Theory

The earliest and, until recent years, the most common approach to the study of leadership was the analysis of the personal characteristics or qualities of the leader. These qualities were usually termed "traits." Most studies of leader traits were designed to determine if there are a finite number of traits which could be used to distinguish between leaders and non-leaders, effective and less effective leaders, and successful and unsuccessful leaders. It was hoped that a set of traits would evolve which could be used to predict successful leader behavior.

Proposition 1

There are a finite number of identifiable characteristics, or traits, of successful and effective leaders. These traits differentiate the successful from the unsuccessful.\textsuperscript{14}

Proposition one may be separated for review purposes into the areas of (1) traits distinguishing between leaders and non-leaders,


\textsuperscript{14}Ibid., p. 398.
(2) traits distinguishing between effective leaders and less effective leaders, and (3) traits distinguishing successful from unsuccessful leaders. In each area, studies are reviewed in order of occurrence.

Leader Versus Non-Leader

It should be noted that none of the studies cited in this section specify characteristics of effective or successful leaders.

In a survey of research occurring prior to 1940, Bird found that only 5 percent of discovered leadership traits were common to four or more investigations. Richardson and Hanawalt conclude that managers with fifteen or more persons under their direction were less neurotic and more self-confident than non-supervisors. In another comparative analysis Jenkins concluded that no single trait was found which distinguished leaders and non-leaders.

Stogdill summarized his review of leadership studies to 1948 as follows:

1. The following conclusions are supported by uniformly positive evidence from fifteen or more of the studies surveyed:
   a. The average person who occupies a position of leadership exceeds the average member of his group in the following respects: (1) intelligence, (2) scholarship, (3) dependability in exercising responsibilities, (4) activity and social participation, and (5) socio-economic status.


2. The following conclusions are supported by uniformly positive evidence from ten or more of the studies surveyed:
a. The average person who occupies a position of leadership exceeds the average member of his group to some degree in the following respects: (1) sociability, (2) initiative, (3) persistence, (4) knowing how to get things done, (5) self-confidence, (6) alertness to and insight into situations, (7) cooperativeness, (8) popularity, (9) adaptability, and (10) verbal facility.

3. In addition to the above, a number of factors have been found which are specific to well defined groups . . . Intellectual fortitude and integrity are traits found to be associated with eminent leadership in maturity.

4. The items with highest overall correlation with leadership are originality, popularity, sociability, judgment, aggressiveness, desire to excel, humor, cooperativeness, liveliness, and athletic ability, in approximate order of average correlation coefficient.

5. In spite of considerable negative evidence, the general trend of results suggests a low positive correlation between leadership and such variables as chronological age, height, weight, physique, energy, appearance, dominance, and mood control. The evidence is about evenly divided concerning the relation to leadership of such traits as introversion-extroversion, self-sufficiency, and emotional control.\footnote{Reprinted by special permission: Ralph M. Stogdill, "Personal Factors Associated with Leadership: A Survey of the Literature," \textit{Journal of Psychology}, XXV, First Half (January, 1948), 35-71.}

Thurstone and Thurstone provide norms on the Thurstone Test of Mental Alertness, which indicate that the average score of sixty executives was in the ninetieth percentile when compared with retail-sales personnel, stockmen, clerical workers, and clerical applicants.\footnote{Leonard L. Thurstone and Thelma G. Thurstone, \textit{Examiner Manual for the Thurstone Test of Mental Alertness} (Chicago, Illinois: Science Research Associates, 1952).} That is, only about 10 percent of these groups scored as high as the average executive.


Gibb suggests that the various studies that he reviewed failed to identify any particular pattern of traits.\(^{20}\) Meyer and Pressel found that top managers were better adjusted, less concerned for detail, and displayed less emotionality than factory workers and clerks.\(^{21}\) Wald and Doty, in a study of top executives, found the traits of intelligence, firmness, positiveness, decisiveness, frankness, and ability to evaluate as significant differences in that group and non-leaders.\(^{22}\) Morse and Weiss found that managers tend to rate achievement and accomplishment in their jobs higher than do members of other occupations.\(^{23}\) Ghiselli discovered that managers score higher on initiative than the general population.\(^{24}\)

Huttner, Levy, Rosen, and Stopol found that the "typical executive" consistently scored higher than the general population on tests of mental ability (intelligence and numerical ability, among others), mental health (more confident, optimistic, and capable of tolerating a good deal of frustration), dominance, dependence and


independence (dependence—need to achieve popularity and need to belong, and independence—striving for status, position and authority, competitiveness and belief in being a leader). Also, the typical executive demonstrated a greater ability to evaluate alternatives and reach a course of action than did the general population tested.25 Veroff, Atkinson, Feld, and Gurin found that managers score higher on projective measures (TAT) of achievement motivation than non-managers.26 McClelland and Meyer, Walker, and Litwin reported that managers score higher on achievement drive than do non-managers.27 Goodstein and Schrader reported that managers have stronger drives for status and prestige than non-managers.28

Effective Versus Less Effective Leader

Several of the studies mentioned above, plus additional studies have dealt with the relationship between leader traits and


effective performance. Criteria such as superior and subordinate ratings, measurable production, and various types of overall rating systems have been used. What follows is a brief discussion of pertinent studies, along with their respective conclusions.

Gaudet found intelligence to correlate with high rankings of supervisors. Huttner, et al. identified the traits of intelligence, drive, enthusiasm, little anxiety, and more optimism as contrasting the more effective executive from the less effective. Wagner identified years of education as the best predictor (out of thirty-one variables) of superior ratings.

Mahoney, Jerdee, and Nash found that "more effective managers" in contrast to "less effective" were more intelligent, aggressive, self-reliant, and persuasive. Also, they had attained a higher level of education.

Hicks and Stone concluded that the more effective managers had a high degree of emotional strength, held broader and more

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31 Edwin E. Wagner, "Predicting Success for Young Executives from Objective Test Scores and Personal Data," Personnel Psychology, XIII, No. 2 (Summer, 1960), 181-186.

theoretical views about things in general, and avoided too much attention to detail.33

In 1963, Ghiselli reviewed the numerous research studies in which he participated and concluded that the traits of intelligence, supervisory ability, initiative, self-assurance, and perceived occupational level appear to identify superior managerial talent.34

In a 1968 review of research pertaining to the prediction of managerial performance, Korman concludes the following:

1. Intelligence, as measured typically by verbal ability tests, is a fair predictor of first-line supervisory performance but not of higher-level managerial performance. Restriction of range is probably the explanation for this finding.
2. Objective personality inventories and "leadership ability" tests have generally not shown predictive validity, with the exception of the projective measure of managerial motivation developed by Miner.
3. Personal history data as predictors are fair for first-line supervisors, but less so for the higher-level individual.
4. "Judgmental" prediction methods, as exemplified particularly by executive assessment procedures and peer ratings, are generally better predictors than psychometric procedures, although allowance must be made for the generally small samples involved.
5. Little has been learned from selection research which can contribute to a theory of leadership behavior.
6. Changes in the orientation of predictive research are needed.35


Successful Versus Unsuccessful Leader

First, it is necessary to modify the term "unsuccessful" to mean "less successful" as measured by organization level, and/or salary versus less effective as measured by subjective ratings or peers, superiors, and subordinates. The following review of research is restricted to those studies which used organizational level or salary or both as criterion for success. As in the two preceding reviews, the studies listed are only representative and are included to suggest the flavor of the research and conclusions drawn therefrom.

Guilford found that in one sample executives were more sociable, free from depression and inferiority feelings, emotionally stable, happy-go-lucky, socially bold, self-confident, calm and composed, objective, agreeable, and cooperative than were supervisors.36

Meyer and Pressel examined groups of managers at various levels and found that as the groups approached the top level, scores were higher on personal adjustment, lower on "liking for detail" and lower on display of emotionality. The scores of first level managers, however, tended toward the scores of clerks and factory workers.37

Pellegrin and Coates compared executives and first line supervisors and found the executives defined success in terms of pride in personal accomplishment and securing the esteem of others.


while the first level people defined success in terms of security and job satisfaction.\textsuperscript{38}

McClelland concluded that expressed need achievement increases positively with managerial level in small companies, but that in larger firms the relationship is curvilinear. Top management expressed less of an achievement need.\textsuperscript{39} Bell Telephone studies found that college grade-average and leadership in college activities were significantly related to success as measured by salary.\textsuperscript{40}

In 1963, Ghiselli identified the traits of intelligence, supervisory ability, initiative, self-assurance, and perceived occupational level as identifying successful managerial talent.

1. Top managers score higher on intelligence than first level managers, but about the same as middle managers. It appears that for individuals of higher and higher intelligence there is a greater chance of succeeding as managers until some critical level of intelligence is reached where the relationship will turn downward and become negative. The relationship between intelligence and success appears to be curvilinear with the low scores and extremely high scores related to unsuccessful management and the middle scores related to success.


\textsuperscript{40}College Achievement and Progress in Management, Personnel Research Section, American Telephone and Telegraph Company (March, 1962).
2. Supervisory ability is defined as the effective utilization of whatever supervisory practices are required by a particular situation. The difference in the capacity to supervise between line workers and first level managers is relatively small, but there is a substantial difference in the capacity of middle managers over first level managers and of top managers over middle managers.

3. Initiative is defined as the ability to act independently, to begin action without support from others, and to see alternative courses of action not readily apparent.

A significant difference in means on a test for initiative was found for first, middle, and top level managers. The means relate positively with level.

4. Self-assurance means the extent to which the individual perceives himself able to make sound judgments and able to cope with any situation. As with the other factors, self-assurance was found to relate in a positive way to organizational level with a substantial difference between lower and middle managers and between middle and top managers.

5. A test for perceived occupational level was used which describes to what extent an individual aspires to higher level jobs and wants the responsibility and prestige associated with those jobs. While this factor also distinguishes lower managers from middle and top managers, the scores of first level managers are more closely related to those of line workers and scores of middle managers were
more in line with those of top managers, with a substantial gap between middle and lower.\textsuperscript{41} Ghiselli concludes:

\begin{quote}
\ldots that important to managerial success are the traits of intelligence, supervisory ability, initiative, self-assurance, and perceived occupational level. I do not mean to imply that success in management is determined solely by these five traits, for certainly there are many others. Nevertheless, it does seem to me that these particular five traits—intelligence, supervisory ability, initiative, self-assurance, and perceived occupational level—play a key role in managerial functions and therefore are major facets of managerial talent.\textsuperscript{42}
\end{quote}

Porter compared managers at five levels for differences in strengths of security needs, social needs, esteem needs, autonomy needs, and self-actualization needs. Higher level managers placed greater emphasis on self-actualization and autonomy needs, but there were no differences across levels in the other three categories.\textsuperscript{43}

Campbell et al., in an extensive review of research stated that:

\begin{quote}
[There is good evidence] \ldots that a fairly sizeable portion (30 to 50 percent) of the variance in general managerial effectiveness can be expressed in terms of personal qualities \ldots such as high intelligence, good verbal skills, effective judgment in handling managerial situations and organizing skills; disposition toward interpersonal relationships, hard work, being active, and taking risks, and temperamental qualities such as dominance, confidence, straight-forwardness, low anxiety, and autonomy.\textsuperscript{44}
\end{quote}

\textsuperscript{41}Ghiselli, "Managerial Talent," pp. 631-642.

\textsuperscript{42}Ibid., p. 635.


Trait Theory - Evaluation

The results of the research reviewed in the preceding sections do not point to a consensus on the proposition that there exists a finite number of traits which are characteristics of effective, successful leaders. However, there is a good deal of evidence to support the contention that there are specific traits which are associated with effective, successful leadership in specific situations.

The reasons for the apparent lack of consensus on this issue are varied. Possible explanations might appear as follows:

1. There is no finite number of traits to be found.
2. There are global traits, but researchers have been unable to select or adequately measure crucial traits.\textsuperscript{45}
3. The problem of defining criterion for measuring effectiveness and success is an ever present hurdle for researchers. There is little agreement on satisfactory criterion. Criterion such as salary, organizational level, job evaluations, objective performance measures, and subjective appraisals of peer, superiors, and subordinates all have their inherent disadvantages.\textsuperscript{46}
4. The samples used often refer to people in very different kinds of managerial positions.\textsuperscript{47}

\textsuperscript{45}Filley and House, \textit{Managerial Process}, p. 412.


\textsuperscript{47}Filley and House, \textit{Managerial Process}, p. 413.
5. Certain personality traits are of questionable stability and it is likely that trait changes and situational differences may interfere with positive identification.

6. Some traits may be necessary conditions for effective leadership in a particular situation, but may not be sufficient in and of themselves. Further, it is likely that required traits are distributed widely and their possession will not differentiate leaders from non-leaders until the traits are combined with the situation.48

7. The identification of traits is complicated by moderating situational factors such as (a) nature of the organization, (b) nature of the task, (c) size of the organization and its growth rate, (d) number of organizational levels, and (e) span of control factor.

8. The "self-selection" process may interfere with the identification of cause-effect relationships, particularly in the case of the achievement motive. If individuals with high achievement needs actually choose managerial jobs as means of satisfying those needs, then it can be concluded that achievement motivation is carried into the job and is not derived from it. The differences in achievement drive between leaders and non-leaders might be explained by the differences in the kind of expectations people have about the outcomes attached to holding a leadership position.49 The same argument may

48 Ibid.

hold in the case of effective versus less effective and successful versus less successful leaders when differences in achievement motivation are noted.

Festinger identified an interaction effect between organization level and the perception of individuals in positions at the various levels. If the individual did not perceive his position as a dead end and raised his level of aspiration, the achievement motive tended to take on a greater importance. If, however, the position was perceived as a dead end, the individual's family and outside interests took on a greater importance. In general, the value and motive orientations of those studied by Festinger did not change appreciably over a period of years, as they were promoted to higher and higher levels.50

Trait Theory Conclusions

Based on the foregoing review of the research bearing on the trait approach to the identification of differences between leaders and non-leaders, effective leaders and less effective leaders, and successful versus less successful leaders, and on the more extensive review of research by Campbell, et al., this researcher concludes the following:

1. A consensus of opinion on the proposition that there is a finite number of identifiable characteristics, or traits, of

successful and effective leaders and that these traits differentiate the successful from the unsuccessful, does not exist at this time.

2. The lack of consensus is very likely due to (a) the lack of agreement on crucial traits, (b) the methodological problems, and (c) the confounding effects of situational variables.

3. Some traits may be necessary conditions for effective leadership, but may not be sufficient in and of themselves.

4. The factors of initiative and perceived occupational level or achievement drive, as identified by Ghiselli and others, appear to be important to managerial success and are traits which can be supported as those closely related to the demands of the managerial role.

5. On the basis of Ghiselli's work, identification of crucial traits appears to be a more promising prospect than the writings of early researchers suggest.

6. It is apparent that continuing research directed toward the identification of manager-leader traits should identify as many situational variables as possible which may exist as intervening variables.

**Behavioral Theory**

While trait theory attempts to explain leadership in terms of what the leader is, the behavioral theory attempts to explain leadership in terms of what the leader does.

Filley and House have classified four types of leadership which have been given a good deal of attention in theory and in
research: autocratic, supportive (participative), instrumental, and "great man."

The autocratic leader is one who: issues commands on the basis of rewards and punishments, is arbitrary in decision-making and dogmatic in relations with subordinates, seldom gives reasons for or explains his actions, and is hesitant to accept suggestions that run counter to his opinions.

The supportive leader is one who: strives to create a favorable social climate in which subordinates will want to do their best, solicits group participation in decision-making and bases his decisions, when possible, on opinions derived from the group, and uses general rather than close supervision and encourages individual initiative.

The instrumental leader is one who: exhibits rational-intellectual behavior, plans, organizes, controls, and coordinates the activities of his subordinates, attempts to control available resources in order to use them in the most effective way, and may adopt either an autocratic or supportive style.

The "great man" theory calls for the use of instrumental behavior and supportive behavior. The effective leader: performs the functions of planning, organizing, controlling, and coordinating, is supportive in that he fosters member interaction and represents the group, and will be an effective leader in any situation.\footnote{Filley and House, Managerial Process, pp. 393-395.}
The propositions to be evaluated in this section are:

Proposition 2
The effective leader is characterized by supportive, employee-oriented, democratic behavior, uses general supervision, and is considerate of his subordinates.\textsuperscript{52}

Proposition 3
The effective leader is characterized by the performance of instrumental functions in the achievement of group goals. These functions consist of planning, organizing, coordinating, directing, and controlling the work of his subordinates.\textsuperscript{53}

Proposition 4
The effective leader is characterized by both supportive and instrumental leadership behavior.\textsuperscript{54}

Proposition 2 (Supportive Theory)
The effective leader is characterized by supportive employee-oriented, democratic behavior, uses general supervision, and is considerate of his subordinates.

Generally, the studies included in this portion of the review have dealt with the effects of supportive leader behavior versus non-supportive or autocratic behavior.

In support of Proposition two, and in order of occurrence, are the following studies.

In a 1940 report of an experimental study of the effects of democratic and autocratic atmospheres, Lippitt found that the democratic atmosphere led to less aggressive behavior, less dependency on the leader, greater group cohesiveness, and less

\textsuperscript{52}Ibid., p. 397.

\textsuperscript{53}Ibid.

\textsuperscript{54}Ibid.
discontent than the autocratic atmosphere. The effects of the two on production were not clear.55 Katz, Maccoby, and Morse, and Katz and Kahn found supportive behavior related positively to subordinate productivity.56 In 1952, Moore and Smith, and in 1953, Moore, found supportive leader behavior associated with subordinate satisfaction in a military setting.57

Comrey, Pfiffner, and High found supportive leader behavior correlated with positive attitudes and satisfaction of subordinates and productivity in industrial plants, in forest work, and in government organizations. Also, in the same year, Hemphill reported similar results in a school administration setting.58


In a study of clerical departments, Morse and Reimer discovered that autocratic leadership combined with centralized control, and that democratic leadership matched with decentralized control. Both resulted in increases in productivity, however, the autocratically supervised group became dissatisfied and the democratically supervised group became more satisfied, and had less turnover and fewer grievances.59

Danielson and Maier, and Baumgartel found a positive relationship between supportive leadership and subordinate attitudes and job satisfaction in an industrial setting and in research laboratories respectively.60

In two reviews of early research, Gibb, and Jennings suggest that there is a general tendency for democratic leaders to have teams which are satisfied, cooperative, and productive.61 Argyle found a


positive relationship between supportive behavior and subordinate attitudes, job satisfaction, and productivity in an industrial plant.\textsuperscript{62}

In 1960, Indik, Seashore, and Georgopoulos and Patchen reported supportive behavior relating to subordinate satisfaction and productivity in an industrial setting. In the same year, Spector, Clark, and Glickman found similar results in a military sample, and Seeman in a sample of school administrators.\textsuperscript{63} In a laboratory experiment, Day and Hamblin found that under supportive treatment subordinates increased productivity after the change from autocratic treatment. Similar results were found by Schacter, Festinger, Willerman, and Hyman, and DeCharms and Bridgeman.\textsuperscript{64}


In Likert's 1961 review of research conducted by the University of Michigan research staff, the conclusions were that supervisors of high productivity groups exhibited more supportive behavior than those of low productivity groups.\(^6^5\) Blau and Scott reported that supportive leader behavior has positive effects on group and individual productivity.\(^6^6\) Fleishman and Harris reported supportive leader behavior as relatively negative to turnover and grievance rates.\(^6^7\)

Oaklander and Fleishman, in 1964, concluded that where leaders use a supportive style, there is less intragroup stress and more cooperation among group members.\(^6^8\)

Korman, in a review of research using the Ohio State consideration scale, found that in groups with leaders scoring high on consideration, subordinate satisfaction was high.\(^6^9\)


The following studies lend contrary evidence to Proposition two.

McCurdy and Eber reported no significant differences in productivity under autocratic versus democratic supervision.\(^7\) Gibb found that subordinates with authoritarian tendencies responded better to authoritarian leaders.\(^7\)

In 1955, Shaw reported that autocratically supervised groups tended to require less time to solve problems and made fewer mistakes than democratically supervised groups.\(^7\) Spector and Suttell's 1957 study of naval trainees revealed no significant differences which could be attributed to leadership style.\(^7\)

Foa found that both autocratic and democratic leaders are more likely to be satisfied workers when they conform to subordinate expectations.\(^7\)

French, Israel, and Ås reported that Scandinavian workers do not perceive participation as legitimate as do their American


\(^7\)Gibb, "Leadership," pp. 877-917.


\(^7\)Uriel G. Foa, "Relation to Worker's Expectation to Satisfaction with Supervisor," *Personnel Psychology*, X (1957), 161-168.
counterparts, and that this perception affects satisfaction and productivity.\textsuperscript{75}

Vroom and Mann discovered that desirable performance may result from participative leadership when subordinates have a high need for independence and a preference for non-authoritarian values, but not under opposite conditions.\textsuperscript{76} Patchen concluded that close supervision does not necessarily reduce subordinate freedom to do the work in their own way and that close supervision and employee orientation may go together.\textsuperscript{77} Sales found no difference in groups producing under the two styles of autocratic and supportive behavior in a laboratory setting.\textsuperscript{78}

Conclusions Pertaining to Proposition 2

The foregoing findings suggest:

1. The effects of supportive leadership style depend on what dimension is being studied—participative supervision, considerate


\textsuperscript{76}Victor Vroom and Floyd C. Mann, "Leader Authoritarianism and Employee Attitudes," \textit{Personnel Psychology}, XIII, No. 2 (Summer, 1960), 125-139.


supervision, or closeness of supervision. All dimensions have been employed to mean supportive behavior.

2. The effects of supportive behavior depend on the needs and expectations of the subordinates.  

3. Supportive leadership can generally be associated with subordinate satisfaction, less group stress, lower turnover, lower absenteeism and grievance rates, and better cooperation among group members.

4. No consistent evidence has been found to support the proposition that supportive leadership will necessarily cause higher productivity. (There is some evidence that the inverse is true.)

5. The acceptability of the kinds of leader behavior employed will very likely depend on situational variables such as size of the organization, organizational level, span of control, time allowed for decision making, task difficulty, and personalities of superiors, peers, and subordinates.

Generally, the proposition that the effective leader is characterized by supportive, employee-oriented, democratic behavior, uses general supervision, and is considerate of his subordinates, can neither be fully supported nor rejected.

Proposition 3

The effective leader is characterized by the performance of instrumental functions in the achievement of group goals. These functions consist of planning, organizing, coordinating, directing, and controlling the work of subordinates.

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The bulk of research on instrumental leadership comes from the Ohio State leadership research staff, the University of Southern California researchers, and from the University of Michigan Research Center.

The Ohio State group isolated "initiating structure" as one of two basic dimensions of leadership behavior.80 Initiating structure is defined as the extent to which an individual is likely to define and structure his role and those of his subordinates toward goal attainment. A high score of this dimension characterizes individuals who play a more active role in directing group activities through planning, communicating information, scheduling and trying out new ideas.81 Thus, answers to this Ohio State questionnaire are said to be an indication of the extent to which a manager-leader uses instrumental leadership.

The University of Southern California staff developed a ten question scale which also is said to measure the initiating structure variable. High scores are characterized by subordinates who organize work, define responsibility and authority, and schedule activities. Also, a dimension called "formalization" is used to measure the degree to which an organization operates according to job descriptions, work rules, procedures, and other formal role prescriptions.


81 Edwin A. Fleishman and David A. Peters, "Interpersonal Values, Leadership Attitudes and Managerial Success," Personnel Psychology, XV, No. 2 (Summer, 1962), 127-143.
The studies of Stouffer; Katz, Maccoby, and Morse; Harris; Moore and Smith; Moore; Katz and Kahn; Halpin; Comrey, Pfiffner, and High; Halpin and Winer; tend to support Proposition three.\textsuperscript{82}

All of the above studies provide evidence which relate high scores on instrumental behavior to high ratings of superiors and objective effectiveness measures such as productivity, cost, and scrap.

Contrary to the above observations are those of Korman and Lowin, Hrapchak, and Kavanagh.

In a 1966 review of research done on using the initiating structure factor of the Ohio State group, Abraham Korman concluded that its predictive significance has not been demonstrated and that

\begin{footnotesize}
\end{footnotesize}
situational variables such as the size of the company, organizational level, and subordinate attitudes appear to modify the relationship between instrumental behavior and various criteria of effectiveness.83

In 1969, Lowin, Hrapchak, and Kavanagh reported no significant relationship between initiating structure and productivity. Further, the intervening variables such as the complexity of the task, the expertise of the subordinate, the expertise of the supervisor, and the need for interunit coordination affect the relationship of initiating structure and effectiveness.84

Conclusions Pertaining to Instrumental Behavior - Proposition 3

1. Instrumental leadership has been associated with higher group productivity and greater certainty and direction.

2. The effects of instrumental behavior may depend on situational variables such as the size of the company, organizational level, task demands, and the characteristics of superiors and subordinates.

3. The ability of the various scales designed to test for instrumental behavior to predict superior leader performance has not been demonstrated.


Proposition 4 (Great Man Theory)

The effective leader is characterized by both supportive and instrumental leadership behavior. (He is able to demonstrate a high concern for task as well as people.)

A number of studies found that supervisors rate leaders highly if they demonstrate instrumental behavior and subordinates judge leaders as effective if they demonstrate considerate behavior.\(^\text{85}\)

Several studies, particularly those of the Ohio group, conclude that those who score high on instrumental behavior and consideration will be rated as the most effective leaders.\(^\text{86}\) These findings tend to support Proposition four.

This researcher was unable to find evidence which was contrary to Proposition four.

Conclusions Pertaining to Proposition 4

1. Most of the studies pertaining to behavioral theory support the proposition that effective leaders will generally be characterized by both instrumental and supportive behavior.

2. However, there is evidence (as discussed under situational leadership) to suggest that different situations may call for emphasis on one rather than the other, if the leader is to be effective.

\(^\text{85}\)Stouffer, et al., The American Soldier; Moore and Smith, Non-Commissioned Officer Leadership; Moore, NCO Supervisors.

Behavioral Theory Conclusions

As in the case of trait theory, there are studies which support and negate the propositions of behavioral theory. The two approaches to the studying of leadership have the following commonalities:

1. Both deal with limited aspects of the leadership process—trait theory with what the leader is— and behavioral theory with what the leader does.

2. Both approaches tend to play down the impact of both subordinates' and superiors' expectations and perceptions and organizational of situational aspects which affect the manager-leader's role behavior.

3. Both are plagued by the elusiveness of measurable personality and behavioral dimensions which can be identified as relating to the demands of the managerial role.

4. Both approaches have yet to provide factors which are generally accepted as having predictive validity.

From behavioral research the following conclusions appear to be in order:

1. Further attempts to define an "ideal" style of leadership behavior will very likely fail.

2. Situational differences demand attention to appropriate styles for each situation or at least classes of situations.

3. While considerable evidence points to the need for a combination of supportive and instrumental behavior, some researchers
are skeptical of the ability and/or willingness of many to behave accordingly. 87

Situational Theory

Based on the research done in the area of trait and behavioral leadership theory, it is contended by situational theorists that leadership must be explained in terms of the interaction between the manager-leader and the situational variables in the organization. Thus, research conducted by those who hold a situational perspective seeks situational variables which allow or cause certain types of leader behavior to be effective. 88

According to situational theories of leadership, the behavior of a leader varies according to (1) the personality of the leader, (2) the requirements of the task of both the leader and of followers, (3) the personalities (attitudes, needs, and expectations) of followers, and (4) the organizational and physical environment of the group. 89

First, leadership is always relative to the situation. This relativity may be broken down with respect to each of the major variables in the situation: (a) It is relative to the group task and goal. Individual accession to the leader role is dependent upon the group goal, in the sense that the goal determines the needs which he must appear to satisfy by virtue of his particular combination of relevant attributes. There is a further dependence upon a group goal. Insofar as there can be no leadership in the abstract, it must be toward a goal, however weakly that goal may

87For example see, Fred E. Fiedler, "Engineer the Job to Fit the Manager," Harvard Business Review, XLIII, No. 5 (September, 1965), 115-122.

88Filley and House, Managerial Process, p. 396.

89Ibid.
be valued. (b) It is relative to group structure or organization. Leader behavior is determined in large part by the nature of the organization in which it occurs. (c) It is relative to the population characteristics of the group or, in other words, to the attitudes and needs of the followers. The leader inevitably embodies many of the qualities of the followers, and the relation between the two may be so close that it is often difficult to determine who affects whom and to what extent. For this reason it is possible for leadership to be nominal only.

Second, the basic psychology of the leadership process is that of social interaction. It is distinctly a quality of a group situation. No individual can be conceived of as a leader until he shares a problem with others, until he communicates with them about the problem, until he has succeeded in enlisting their support in giving expression to his ideas. Leader and follower must be united by common goals and aspirations and by a will to lead, on one side, and a will to follow on the other, i.e., by a common acceptance of each other. It is a corollary of this principle that the leader must have membership character in the group which sponsors him for that role, because leader and followers are interdependent. The leader must be a member of the group, and must share its norms, its objectives, and its aspirations.

Finally, given group-membership character . . . leader status depends upon perception of individual differences. It is because there are individual differences of capacity and skill that one of a group emerges as superior to others for meeting particular group needs.90

The proposition to be evaluated here is:

**Proposition 5**

Leadership behavior is multidimensional. The dimensions are finite in number, and vary according to leader personality, the requirements of the task to be performed by him and his followers, the attitudes, needs, and expectations of his followers, and the organizational and physical environment in which he and they operate.91


There has been a substantial amount of research done to test the various aspects of situational theory. The following citations are representative of research accomplished to date.

Different styles of leadership have been shown to be most effective when associated with such factors as the psychological climate of the group; the work requirements of the group; the size of the group being led; group member personalities; the type of management position held, the location of the position held, the level in the organization, and the type of organization; the cultural expectations of subordinates; the history of the organization, the age of the previous incumbent in the leader's position,


the leader's age, and the leader's work experience;\textsuperscript{98} the community in which the organization is located;\textsuperscript{99} the degree to which group member cooperation is needed;\textsuperscript{100} and the time required for decision making.\textsuperscript{101}

In 1967, F. E. Fiedler of the University of Illinois reported results of twelve years of research carried out to determine situational factors affecting leader behavior.\textsuperscript{102}

Based on this research, a leadership contingency model was developed which identifies three major situational variables which appear to determine whether a given situation is favorable or unfavorable to a leader: (1) His personal relations with the member of his group (leader-member relations), (2) the degree of structure in the task which the group has been assigned (task structure), and (3) the power and authority which his position provides (position power).\textsuperscript{103} Fiedler defines the favorableness of a situation as the


\textsuperscript{99}Seeman, Social Status and Leadership.

\textsuperscript{100}Lodahl and Porter, "Small Industrial Work Groups," pp. 73-79.


\textsuperscript{103}Ibid., p. 22.
"... degree to which the situation enables the leader to exert his influence over his group." He concludes that:

1. Task-oriented leaders tend to perform best in group situations which are either very favorable or very unfavorable to the leader.

2. Relationships-oriented leaders tend to perform best in situations which are intermediate in favorableness.

Fiedler's explanation of these findings is that in very favorable conditions, where the leader has power, informal backing, and a relatively well-structured task, the group is ready to be directed on how to go about its task. Under a very unfavorable condition, however, the group will fall apart unless the leader's active intervention and control can keep the members on the job. In moderate unfavorable conditions, the accepted leader faces an ambiguous task, or his relations with group members are tenuous. Under these circumstances, a relationships-oriented, nondirective, permissive attitude may reduce member anxiety or intragroup conflict, and this enables the group to operate more effectively (i.e., the members would not feel threatened by the leader, and considerate, diplomatic leader behavior under these conditions may induce group members to cooperate).

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104Ibid., p. 13.
106Ibid., pp. 145-146.
In a 1968 follow-up study of Fiedler's model, Rubin and Goldman concluded that: (1) A manager's effectiveness is unrelated to the degree of open communication which exists between himself and subordinates; (2) A manager's effectiveness is unrelated to his ability to differentiate among his subordinate's performance; (3) For managers who develop a high level of open communication with subordinates, the ability to differentiate performance correlates positively with effectiveness; (4) For those managers who do not develop a high level of communication, the ability to differentiate correlates negatively with effectiveness.\textsuperscript{107}

Due to the fact that Rubin and Goldman's methodology was substantially different than that used by Fiedler and his associates, the results are not directly comparable. However, there is enough overlap to suggest agreement in results, but disagreement in conclusions. The disagreement is very likely due to the moderating effects of subordinates' needs as identified in the Rubin and Goldman study and apparently omitted in Fiedler's model.\textsuperscript{108}

In 1970, Graen, Alvares, and Orris analyzed a number of research studies of the contingency model of leadership effectiveness from strategical and procedural perspectives. This review concluded that although the antecedent probability based upon previously published research appeared to be greater than zero, the evidential


\textsuperscript{108}\textit{Ibid.}, pp. 152-153.
probability based on the research in their review approached zero. Thus, grave doubt is cast on the plausibility of the contingency model.\textsuperscript{109}

In a 1971 review of research attempts to validate the contingency model of leadership, Fiedler concludes that when taken as a group "... these studies provide strong evidence that the situational favorableness dimension does indeed moderate the relationship between leadership style and group performance, and that it therefore provides an important clue to our understanding of leadership phenomena."\textsuperscript{110}

Situational Theory - Concluded

The following general conclusions appear to follow from the research on situation theory:

1. Except for the work of Fiedler and his associates, situational theory and research suffers from the lack of replication.

2. Effective manager-leader behavior is a function of the leader's personality, the personalities and needs of his subordinates and the demands of the situation in which he functions.

3. There is no one best style of leader behavior, but a particular style may be more appropriate than another depending on


the situation and the needs of followers. "Supervision is, therefore, always a relative process. To be effective and to communicate as intended, a leader must always adapt his behavior to take into account the expectations, values, and interpersonal skills of those with whom he is interacting [superiors, peers, and subordinates]."111

4. The effective manager-leader is able to adapt his style of behavior to the needs of subordinates and the needs of the situation. "The more a manager adapts his style of leader behavior to meet the particular situation and the needs of his followers, the more effective he will tend to be in reaching personal and organizational goals."112

5. Key managerial qualities leading to effectiveness are not task and relationship orientations but diagnostic skill and style flexibility.113

General Propositions

Based on the foregoing review of research pertaining to personal characteristics of the manager-leader and his behavior, the

111Likert, New Patterns of Management, p. 95.


1957 observations of Tannenbaum and Massarik, and the 1973 writing of Tannenbaum and Schmidt, the following propositions are offered as tentative statements of dimensions of personality and cognition which cause or allow the manager-leader to be effective. These propositions were not tested directly in this study but are presented as a prelude to this exploration of the open versus closed mind in management.

Proposition A

The effective manager-leader is capable of diagnosing relevant characteristics of his own personality, relevant characteristics of subordinates, peers, and superiors, and relevant characteristics of the situation in which he operates, and is able to adjust his style of behavior in response to those relevant cues or inputs.

Correlary A-1

Some relevant characteristics of the manager-leader are his: (1) skills—supervisory, technical, and diagnostic; (2) needs and goals; (3) motives; (4) attitudes toward subordinates; (5) style inclinations; (6) tolerance for ambiguity; (7) perceptual ability; and perhaps other factors of importance.


Correlary A-2

Some relevant subordinate characteristics are their:
(1) needs and goals; (2) attitudes; (3) motives and values; (4) skills; and (5) tolerance for ambiguity.

Correlary A-3

Some relevant characteristics of the situation are: (1) type of organization; (2) size of organization and work group; (3) physical setting; (4) level in the organization; (5) organizational structure or role expectations; (6) group syntality; (7) nature of the task; (8) time factor; (9) organizational goals and strategy; and (10) organizational climate.

Proposition B

Individual manager-leaders differ in their ability to take in relevant, undistorted cues from their environment and in their ability to adapt accordingly.

Correlary B-1

Individuals differ in their perceptual capacities which are defined as their potential for responding to a variety of external stimuli. Thus, they react differently to the same set of cues.\footnote{Tannenbaum and Massarik, "Leadership: A Frame of Reference," p. 9.}
Correlary B-2

Individual manager-leaders differ in their perceptual flexibility which is defined as their range of perceptions which provides a basis for influence attempts.\textsuperscript{117}

Correlary B-3

Manager-leaders differ in their ability to sort out and act on relevant versus irrelevant perceptions or cues. A correlate of leadership effectiveness may be the leader's ability to sort out and discard irrelevant stimuli.\textsuperscript{118}

Correlary B-4

Manager-leaders differ in their perceptual sensitivity which is defined as accuracy of perception or matching perceptions with criterion of reality (also, diagnostic skill and empathy).\textsuperscript{119}

Correlary B-5

Individuals differ in their capacities for behavior or action capacities. Also related, is action flexibility. Both flexibility and capacity are related to the leader's personality structure, experience, and training.\textsuperscript{120} Action flexibility is related to what William Reddin terms "style flexibility" which is defined as a

\textsuperscript{117}Ibid.

\textsuperscript{118}Ibid., p. 13

\textsuperscript{119}Ibid., pp. 14-15.

\textsuperscript{120}Ibid., pp. 16-17.
measure of the extent to which a manager changes his style appropriately to a changing situation.\textsuperscript{121} Reddin points out the importance of this attribute in the following way:

Over the course of their careers, managers are asked to be effective in a variety of situations. During one period of their career, they find themselves closely directed by a hard-driving, production-centered senior manager; during another period, they may be virtually independent and even work alone. At one time, they may find themselves supervising up to ten middle or junior managers and then, later, a small staff unit. At one time they wield a great deal of power; at other times they wield very little. What kind of manager succeeds in all of these situations? Certainly he is not one who reacts to all situations in the same way. He is the "flexible manager" who is currently the focus of much attention, as is the parallel personality type, "open-minded," and the roughly equivalent cultural type, "other-directed."\textsuperscript{122}

\textbf{Summary}

Leadership has been defined as the process of influencing the activities of a group toward goal achievement in a given situation. Further, leadership has been distinguished from management as a more narrowly defined concept. That is, management or managerialship is a process which includes leading plus planning and organizing, or decision making and physical efforts which are not directed exclusively toward leading.

Based on these definitions, it is argued that both cognitive and behavioral dimensions of the manager-leader must be considered in research on the management process. Also, it appears that what


\textsuperscript{122}Ibid., p. 51.
style of manager-leader behavior will be most effective is determined by the manager-leader personality, the needs and characteristics of his followers, and the demands of the situation.

Major conclusions which have been drawn from research on leadership theories included:

1. A fairly sizeable portion (30 to 50 percent) of the variance in general managerial effectiveness can be expressed in terms of personal qualities.

2. A great deal of evidence exists which supports the contention that there is a need for a combination of supportive and instrumental behavior in order to enhance the manager-leader's chances for effectiveness. However, the degree of or emphasis on either behavioral dimension may change with the situation.

3. The most effective manager-leader is able to adapt his style to meet the needs of his followers and the demands of the situation. Further, his ability to diagnose situations and adapt accordingly will determine his success in achieving effectiveness.

In Chapter III a review is made of a theory of personality and supporting research which appears to have potential for contributing to an understanding of managerial thinking and behaving. The theory of open versus closed-mindedness is presented in capsulized form to familiarize the reader with its pertinent attributes. Only correlaries and supporting research which were deemed similar in nature to the general proposition stated in this chapter and which were relevant to the managerial process have been delineated in Chapter III.
Out of the reviews in Chapters II and III have come specific propositions which were set down in Chapter IV to be tested in this exploration.
CHAPTER III

REVIEW OF THE LITERATURE - PERSONALITY STRUCTURE:
THE OPEN VERSUS CLOSED MIND

Introduction

Based on the leadership theory and research reviewed in Chapter II, and on the propositions drawn from them, it is apparent there should be some concern for the identification of individual differences in thinking and behaving as they relate to situational demands in the management of human organizations.

If the propositions of the situational theorists have merit, and effective leadership is a function of the manager-leader's ability to diagnose relevant situational characteristics or cues and act accordingly, and his ability to adapt or change his style of behavior as the situation changes--then it would follow that the identification of manager-leaders with these capabilities would be of considerable value in such areas as selection, placement, training, and promotion.

The theory of the open versus closed mind reviewed in this chapter was chosen for several reasons:

1. It explains individual differences in perception, cognition, and behavior resulting from differences in the relative openness of their belief system or personality structure to change...
or modify existing beliefs and does not concern itself with content. In this way neither ideological differences nor investigator biases affect the outcomes of research.\textsuperscript{123}

2. The theory of personality presented includes the viewpoints of Gestalt theory, psychoanalysis, and behaviorism, while eliminating the restrictive aspects of each.

Gestalt theorists represented by such people as Kohler, Katona, Asch, hold the position that man is primarily a rational being who acts in accordance with requirements of the situation. Irrational motives are not emphasized. An open belief system is assumed.

On the other extreme, the Behaviorists and Psychoanalysts start from the position of the closed belief system. Man acts not in regard to situational requirements, but in accord with external rewards and punishments in the case of behaviorism, and in accord with internal motives as determined by id and superego in the case of psychoanalysis.\textsuperscript{124} Neither position is an acceptable approach to the understanding of persons who have systems which are relatively open or relatively closed.

The open-closed belief systems approach is premised on the idea that each individual is motivated "by both rational and rationalizing forces." The assumption is that ". . . all belief-disbelief systems serve two powerful and conflicting sets of motives at the


\textsuperscript{124}Ibid., pp. 64-66.
same time; the need for a cognitive framework to know and understand, and the need to ward off the threatening aspects of reality."^{125}

This approach studies thinking indirectly and assumes a dynamic relationship between personality and thinking. Thinking then, becomes a means of studying the whole person who thinks in a certain way because of what he has become.^{126}

3. The research efforts directed at discovering relationships between personality structure and thinking and behaving have identified correlates which appear to be potentially useful in the analyzing of managerial thinking and behaving.

**Definitions and Critical Dimensions**

A belief is any simple proposition, conscious or unconscious, inferred from what a person says or does, capable of being preceded by the phrase "I believe that . . . ."^{127}

The belief system is made up of all the beliefs, sets, expectancies, or hypotheses, conscious and unconscious, that a person at a given time accepts as true about reality.^{128}

The disbelief system is made up of a series of subsystems which contain all the disbeliefs, sets, expectancies, conscious and

^{125}Ibid., p. 67.


^{128}Rokeach, *The Open and Closed Mind*, p. 33.
unconscious, that, to some degree, a person at a point in time rejects as false.  

The belief-disbelief system is a composite or organization of parts in which the most basic units are single beliefs and disbeliefs. Properties of or ways that belief-disbelief systems vary are:

1. Isolation—two or more beliefs said to be isolated from one another if they are intrinsically related to each other, but the individual fails to see them as interrelated. Indications of isolation are such factors as: (a) the coexistence of logically contradictory beliefs within the belief system; (b) the accentuation of differences and minimization of similarities between belief and disbelief systems; (c) the perception of irrelevance of what may be objectively relevant; and (d) the denial of contradiction.

2. Degree of differentiation—defined as articulation of detail. Indications of differences in differentiation are: (a) relative amount of knowledge possessed; (b) the perception of similarity between adjacent disbelief subsystems; and (c) comprehensiveness or narrowness of the system. This refers to the range of disbelief subsystems within a given belief-disbelief system.

129Ibid.
130Ibid., p. 34.
131Ibid., pp. 36-39.
Organization of Belief Systems

The belief-disbelief system is conceived to be composed of three layers organized along a central-peripheral dimension. The central region consists of beliefs which the individual has acquired concerning the nature of the physical and social world in which he lives. These beliefs are called "primitive" beliefs and include the person's self concept and his concept of others. These beliefs are formed early in life and, if challenged, will lead to considerable upset.

The intermediate region is composed of beliefs concerned with the nature of positive and negative authority which is depended upon for filling in information about reality. That is, the authority depended upon for the information about reality which we may wish to check or we already possess.

It is assumed that people range from rational, tentative reliance on authority to arbitrary, absolute reliance.

The peripheral region consists of all nonprimitive beliefs and disbeliefs coming from positive and negative authority, regardless of whether the beliefs are perceived as being derived from the authority figure. These beliefs are derived from the intermediate region.132

Another important aspect of belief-disbelief systems is the time perspective which refers to a person's beliefs about the past,

132 Ibid., pp. 39-47.
present, future and how they relate to one another. Time perspectives vary from narrow to broad.133

It is conceived that new information is communicated from the central or primitive region, to the intermediate or authority region, and then to the peripheral region where it takes form as a belief or disbelief. The belief may or may not relate to existing beliefs in the region depending on the degree of isolation present among beliefs. The extent to which information is coerced into the system depends on the degree of openness of the system.134

Closed Versus Open Systems

The following definitions serve to tie together the three major dimensions of all belief systems: the belief-disbelief dimension, the central-peripheral dimension, and the time-perspective dimension.

Definition I

Definition I: The Defining Characteristics of Open-Closed Systems

A Belief-Disbelief System Is

Open                                      Closed

A. to the extent that, with respect to its organization along the belief-disbelief continuum,

1. the magnitude of rejection of disbelief subsystems is relatively low at each point along the continuum;

1. the magnitude of rejection of disbelief subsystems is relatively high at each point along the disbelief continuum;

133Ibid., p. 51.

134Ibid., pp. 49-50.
Open

2. there is communication of parts within and between belief and disbelief systems;
3. there is relatively little discrepancy in the degree of differentiation between belief and disbelief systems;
4. there is relatively high differentiation within the disbelief system;

Closed

2. there is isolation of parts within and between belief and disbelief systems;
3. there is relatively great discrepancy in the degree of differentiation between belief and disbelief systems;
4. there is relatively little differentiation within the disbelief system;

B. to the extent that, with respect to the organization along the central-peripheral dimension,

1. the specific content of primitive beliefs (central region) is to the effect that the world one lives in, or the situation one is in at a particular moment, is a friendly one;
2. the formal content of beliefs about authority and about people who hold to systems of authority (intermediate region) is to the effect that authority is not absolute and that people are not to be evaluated (if they are to be evaluated at all) according to their agreement or disagreement with such authority;
3. the structure of beliefs and disbeliefs perceived to emanate from authority (peripheral region) is such that its substructures are in relative communication with each other, and finally;

1. the specific content of primitive beliefs (central region) is to the effect that the world one lives in, or the situation one is in at a particular moment, is a threatening one;
2. the formal content of beliefs about authority and about people who hold to systems of authority (intermediate region) is to the effect that authority is absolute and that people are to be accepted and rejected according to their agreement or disagreement with such authority;
3. the structure of beliefs and disbeliefs perceived to emanate from authority (peripheral region) is such that its substructures are in relative isolation with each other, and finally;
C. to the extent that, with respect to the time-perspective
dimension, there is a

1. relatively broad time perspective
2. relatively narrow future-oriented time perspective

Definition II

A person's belief system is open or closed to "... the
extent to which the person can receive, evaluate, and act on relevant
information received from the outside on its own intrinsic merits,
unencumbered by irrelevant factors in the situation arising from
within the person or from the outside."¹³⁶

When the latter definition is extended to include propositions
A and B as stated in Chapter II, the relationship between personality
structure and necessary characteristics of the manager-leader as
derived from situational theory becomes more apparent. A restatement
of the concepts presented might read in the following manner.

The effective manager-leader is capable of diagnosing relevant
characteristics of his own personality, relevant characteristics of
subordinates, peers, and superiors, and relevant characteristics of
the situation in which he operates, and is able to adjust his style
of behavior in response to relevant cues or inputs.

¹³⁵Reprinted by special permission: Milton Rokeach, The

¹³⁶Ibid., p. 57.
Individual manager-leaders differ in their ability to input relevant undistorted cues from their environment and in their ability to act accordingly.

The manager-leader’s ability to receive, evaluate, and act on relevant information received from the outside on its own intrinsic merits, unencumbered by irrelevant factors in the situation arising from within himself or from without is conceived (for the purposes of this study) to be a function of the degree of openness of his belief-disbelief system.

It is this overall dimension of openness which represents the focus of analysis in this research effort.

Structure Versus Content

Generally, the concept deals with the structure of belief systems and not the content. That is, it focuses on ideological structure rather than content so that the concepts may be employed in the description of belief systems, rather than any one particular belief system or any particular belief within a system.

The relative openness or closedness of a mind cuts across specific content and, therefore, the concept is not unduly restrictive. The following quote from Milton Rokeach, leading contributor to this concept, might lend to its clarification.

During the course of our investigation we have come more and more to view a given personality as an organization of beliefs or expectancies having a definable and measurable structure. We have also come to conceive of ideology, insofar as it is represented within the psychological structure of the person, in exactly the same way, as an organization of beliefs and
expectancies. And, finally we have come to conceive a man's
cognitive activities—thinking, remembering, and perceiving—as
processes and changes that take place within a person who has
already formed a system of beliefs, which we can describe and
measure.

Within this broad framework we will address ourselves to the
relation between belief and thought and to the possibility that
there is a basic unity between them. If we know something about
the way a person believes, is it possible to predict how he will
go about solving problems that have nothing to do with his
ideology?  

Closed Versus Open-Mindedness and
Authoritarianism

By virtue of the definition of open and closed-mindedness,
the theory also deals with general authoritarianism.

The point of departure for the major studies of Rokeach,
et al., is the study of "right authoritarianism" as depicted in
writings of Fromm and Maslow and the investigation of "authoritarian
personality" by Adorno, Frenkel-Brunswik, Levinson, and Sanford.  
This research began with the study of anti-Semitism and resulted in
the development of the California "F" Scale (F standing for fascism)
which has come to be used to identify the "authoritarian personality."
This came about due to the fact that high scores on this scale also
tend to score high on scales measuring ethnocentrism, anti-Semitism,
and anti-Negro feeling, and tend to be politically conservative.

137 Reprinted by special permission: Milton Rokeach, The

138 Eric Fromm, Escape from Freedom (New York: Farrar and
Rinehart, 1941); Abraham H. Maslow, "The Authoritarian Character
Daniel J. Levinson, and R. Nevit Sanford, The Authoritarian Personality
Rokeach points out that the shift from "facism" in the personality to the "authoritarian personality" gives rise to a good deal of conceptual confusion because there is an unwitting leap from the particular to the general.\textsuperscript{139}

In other words, what explanation can be offered for persons who appear to be authoritarian and intolerant, but are not fascistic, or anti-Semitic, or politically conservative.

The concept proposed and tested by Rokeach and others is an advancement in the study of authoritarianism toward generality. It does not deal with dichotomies of "left" or "right," but allows focus on general properties held in common by all forms of authoritarianism, regardless of specific ideological, theological, philosophic, or scientific content. This contention is supported by evidence reviewed later in this chapter.

\textbf{The Measurement of Open and Closed Systems}

Rokeach and his colleagues have developed a sixty-six item Likert-type scale which measures the degree of openness of a person's belief system and general authoritarianism. The instrument includes items which measure the various dimensions discussed of the belief-disbelief system as described earlier in the definition portion of this chapter. For simplicity's sake, the scale is called the Dogmatism Scale. Dogmatism represents the relatively closed-mind.

The scale, or a forty item version of it, has been widely tested and used. The statements included in the scale and initial

\textsuperscript{139}Rokeach, \textit{The Open and Closed Mind}, P. 13.
reliability and validity data are presented in *The Open and Closed Mind*, Chapter 4.¹⁴⁰ A short form of this scale was employed in this study and is discussed in the methodology chapter.

**Correlates of the Relatively Closed Personality Structure**

The following are statements of personality and performance correlates which have been derived through research dealing with theory of open versus closed-mindedness and the authoritarian personality. Only those correlates which appear to be potentially useful in the analysis of managerial thinking have been included.

**Childhood Antecedents**

The relationship between personality structure and parent-child relationships is not entirely clear. Although research results are conflicting, some consensus exists on the proposition that parental attitudes and child rearing practices are basic determinants of dogmatism.¹⁴¹

¹⁴⁰Ibid., pp. 71-98.

Dogmatism and Authoritarianism

The dogmatism scale is a measure of general authoritarianism and is superior to the California F Scale in that it measures authoritarianism of both the "left" and the "right."¹⁴²

Acceptance of Authority

The relatively closed mind tends to uncritically accept authority. The relatively open mind perceives authority figures more realistically recognizing both their negative and positive characteristics.¹⁴³


Message and Source of Message

The dogmatic thinker has difficulty distinguishing between the veracity of the authority and the status of the authority.144

Situational Threat and Cognitive Inconsistency

The dogmatic personality will be threatened by and avoid exposure to belief-discrepant information. That is, he will tend to reject information which is contrary to closely held beliefs.145

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Defense Mechanism


and more prone to utilize denial and repression mechanisms than the low dogmatic.147

Adjustment

There is a positive relationship between dogmatism, a poor self-concept and personality maladjustment. High dogmatics tend to have poorer self-concepts than low dogmatics, and are characterized by more and higher severity levels of psychological disorders.148


Empathy

The degree to which a person is perceived as being empathetic and positive in his regard for others is a function of his level of dogmatism. High dogmatics have difficulty relating to other people and their problems.

Rigidity, Flexibility, and Originality

Dogmatism is related to rigidity or resistance to change outside the belief system. Dogmatism is inversely related to flexibility and originality. Dogmatic thinking refers to the total configuration of ideas and beliefs organized into relatively closed systems, while rigidity is the difficulty in overcoming beliefs encountered in attacking, solving, or learning something specific.


Resistance to Change

Closed-mindedness is positively related to resistance to change and unwillingness to compromise.152

Time Perspective

The more closed a person's belief system, the more he will be oriented toward the future and tend to deny the importance of the present (interpreted as a defense against anxiety).153

Perception

The dogmatic thinker is not threatened by analysis, but has difficulty in making a synthesis if he perceives that the synthesis to which he is inclined will necessitate a change in his total belief system.154


Critical Thinking

There is an inverse relationship between critical thinking and closed-mindedness.155

Problem Solving

Open-minded individuals demonstrate greater problem solving ability than do closed-minded individuals.156

Learning

Dogmatism is inversely related to the ability to learn new beliefs. However, the intervening variables of: the authority source of the new beliefs, the syndrome relevance of the mode of communication, the congruence of the beliefs and novelty of the beliefs, and their centrality to the individual must be considered when relating closed-mindedness to learning.157

Intelligence

It appears that dogmatism is not related to intelligence.158

The relation of dogmatism to level of education is not entirely clear.


158Rokeach, The Open and Closed Mind, pp. 190-191.
Several studies demonstrate that dogmatism decreases with increases in education; however, Plant and Telford reported that a group of respondents not in college showed similar decreases in dogmatism over the same four year period.159

Summary

A theory of personality and empirically derived correlates have been presented as potentially useful in the analysis of managerial thinking and behaving.

The theory deals with the structure of personality rather than content by concerning itself with "how" individuals believe, rather than "what" they believe. Personality structures are said to exist along an open-closed continuum.

The term "dogmatism" has been employed synonymously with closed-mindedness which is contrasted with open-mindedness in extensive research. Out of this research has come a considerable number of personality and performance correlates which are characteristic of the dogmatic mind versus the open mind. A number

of these correlates were presented in this chapter as having relevance to the analysis of managerial thinking and behavior. The characteristics described are exactly or closely related characteristics which have been given considerable attention in theories and research concerning the leadership process.

In Chapter IV a methodology is described which was employed in this exploration. Hypotheses were constructed in order to facilitate analysis.
CHAPTER IV

METHODOLOGY

Introduction

As was stated in Chapter I, the primary purpose of this exploration is to determine what relationships might exist between manager-leader personality structure, attitudes toward subordinates, role perceptions, and certain situational variables. If relationships do exist in the anticipated directions, is there evidence to support further analysis of manager-leader thinking and behavior employing the personality structure dimension (dogmatism) described in Chapter III.

Conclusions and general propositions drawn from research on theories of leadership were presented in Chapter II. The propositions generally point to the desirability of the consideration of personality structure in explorations of managerial thinking. Specifically, the aspect of relative openness of personality and correlates such as perceptual distortion, cognitive flexibility, self-concept, critical thinking, problem solving ability, and action flexibility have been emphasized as important elements in manager-leader effectiveness and success.

75
In this chapter, the methodology which was employed to explore for relationships between personality structure and certain aspects of manager-leader thinking and situational variables is described.

**Hypotheses**

The following hypotheses were tested in this study. These hypotheses are to be considered highly tentative in nature and are proposed as guides for data analysis. In each case, a null hypothesis is stated along with an alternative hypothesis. The alternative hypothesis will be accepted upon rejection of the null.

**Personality Structure and Personal Background Variables**

**Null Hypothesis 1** - Dogmatism scores will not be related to age.

**Alternative Hypothesis 1** - Dogmatism scores will be related to age.

**Null Hypothesis 2** - Dogmatism scores will not be related to level of education.

**Alternative Hypothesis 2** - Dogmatism scores will be related to level of education.

**Null Hypothesis 3** - There will be no difference in dogmatism scores on the basis of collegiate major.

**Alternative Hypothesis 3** - There will be a difference in dogmatism scores when compared to collegiate major.

**Null Hypothesis 4** - There will be no difference in dogmatism scores based on order of birth (only borns, first borns, later borns).
Alternative Hypothesis 4 - There will be a difference in dogmatism scores based on order of birth (only borns, first borns, later borns).

Null Hypothesis 5 - Dogmatism scores will not be related to number of years in present position.

Alternative Hypothesis 5 - Dogmatism scores will be related to the number of years in present position.

Null Hypothesis 6 - Dogmatism scores will not be related to years with present company.

Alternative Hypothesis 6 - Dogmatism scores will be related to years in present company.

Null Hypothesis 7 - Dogmatism scores will not be related to years as a manager.

Alternative Hypothesis 7 - Dogmatism scores will be related to years as a manager.

Null Hypothesis 8 - Dogmatism scores will not be related to years of full-time working experience.

Alternative Hypothesis 8 - Dogmatism scores will be related to years of full-time working experience.

Personality Structure and Organizational Variables

Null Hypothesis 9 - There will be no difference in dogmatism scores based on organizational level.

Alternative Hypothesis 9 - There will be a difference in dogmatism scores based on organizational level.

Null Hypothesis 10 - There will be no difference in dogmatism scores based on line versus staff roles.

Alternative Hypothesis 10 - There will be a difference in dogmatism scores based on line versus staff roles.
Null Hypothesis 11 - There will be no difference in dogmatism scores based on functional role.

Alternative Hypothesis 11 - There will be a difference in dogmatism scores based on functional role.

Null Hypothesis 12 - Dogmatism scores will not be related to span of control.

Alternative Hypothesis 12 - Dogmatism scores will be related to span of control.

Personality Structure and Attitudes Toward Subordinates and Role Perception

Null Hypothesis 13 - Dogmatism scores will not be related to attitudes toward subordinates.

Alternative Hypothesis 13 - Dogmatism scores will be related to attitudes toward subordinates.

Null Hypothesis 14 - Dogmatism scores will not be related to consideration.

Alternative Hypothesis 14 - Dogmatism scores will be related to consideration.

Null Hypothesis 15 - Dogmatism scores will not be related to initiating structure.

Alternative Hypothesis 15 - Dogmatism scores will be related to initiating structure.

Concept

The concept of this exploratory study is as follows:

1. Obtain data from business organizations. The data should consist of an explicit measurement of personality structure, an explicit measurement of role perception, an explicit measurement of attitudes of managers toward subordinates, and explicit measurements
of as many situational variables as are relevant and are allowed by space and time constraints.

2. Analyze and interpret the data and refine hypotheses, supported by the data, describing any and all significant relationships between personality structure, role perception, attitudes toward subordinates, and selected situational variables.

The implementation of the concept required the following questions to be answered:

1. What measurement tools will be used to obtain the personality situational data?
2. How will the sample be taken and the measurement tools be administered?
3. How will the data be analyzed?

Following are the answers to these questions.

**Measurement Tools**

The questionnaire used in this study was composed of the following three parts.

**Part I**

Part I of the questionnaire consists of situational variables which were thought to be potentially valuable in the analysis of personality structure.

These variables are: (1) age, (2) educational level, (3) undergraduate major, (4) graduate major, (5) organizational level,
(6) number of managerial positions held in present company and in career, (7) number of years in present position, (8) line or staff, (9) years with present company, (10) years as a manager, (11) years of full-time working experience, (12) span of control, (13) functional area, (14) order of birth, and (15) family size. While not an exhaustive set of situational variables, it does include a number of those variables which research has shown to be important in exploration of situational leadership theory.

Particular attention was paid to the variables of organizational level (as a measurement of success), functional area (as an indication of task demands), span of control and staff or line (as an indication of task demands).

Part II

Part II of the questionnaire was composed of the Leadership Opinion Questionnaire developed by the staff of the Ohio State Leadership Studies. This Likert-type scale measures two independent dimensions--"initiating structure" and "consideration." Fleishman and Harris have defined consideration and initiating structure as follows:

Consideration includes behavior indicating mutual trust, respect, and a certain warmth and rapport between the supervisor and his group. This does not mean that this dimension reflects a superficial "pat-on-the-back," "first name calling" kind of human relations behavior. This dimension appears to emphasize a deeper concern for group members' needs and includes such behavior as allowing subordinates more participation in decision making and encouraging more two-way communication.
Structure includes behavior in which the supervisor organizes and defines group activities and his relation to the group. Thus, he defines the role he expects each member to assume, assigns tasks, plans ahead, establishes ways of getting things done, and pushes for production. This dimension seems to emphasize overt attempts to achieve organization goals.160

The thirty item scale (fifteen items measuring consideration and fifteen items measuring initiating structure) employed in this study, attempts to assess how the manager-leader thinks he should behave in his leadership role. The reader should be cautioned that the instrument in no way describes actual behavior. It was used here to describe role perceptions of the individual managers and to explore for relationships between role perception, personality structure, and attitudes toward subordinates. Permission for use of the questionnaire was granted by Ralph M. Stogdill, Director of the Ohio State Program for Research in Leadership and Organization.

Part III

Part III of the questionnaire was composed of two scales.

Attitudes

An eight item scale (Likert) was used to measure attitudes of managers toward their subordinates. This scale was designed to place respondents on a continuum of attitude make-up ranging from what Mason Haire et al. term the classical or traditional-directive

viewpoint to the modern or democratic-participative viewpoint.\textsuperscript{161} The items are essentially the same as those factors put forth by Douglas McGregor as Theory X versus Theory Y assumptions or attitudes.

The primary reason for inclusion of this scale in the questionnaire was that the beliefs of managers concerning the capabilities of subordinates and the way in which subordinates should be supervised appear to have an impact on how they supervise. Thus, it was deemed important to determine what relationships, if any, exist between attitudes toward subordinates, personality structure, and role perception. Permission to use the scale was granted by one of its developers, Professor Lyman W. Porter of the University of California-Irvine.

**Personality Structure**

A twenty item (Likert-type) scale was used to measure the openness of the respondents' belief systems. The items were scored in reverse fashion from those of past users, because it was desirable for the sake of analysis to have low scores represent dogmatic or closed-minded individuals and high scores represent the open-minded. This scale is a short form of the scale developed by Rokeach as mentioned in Chapter III. The items comprising this scale were mixed with the items making up the attitude scale in order to somewhat disguise them. They are items 2, 3, 5, 6, 8, 9, 11, 12, 14, 15, 17, 18, 19, 21, 22, 23, 24, 26, 27, and 28 contained in Part III

of the questionnaire. Permission to use the scale was granted by co-developer Dr. Verling Troldahl of Michigan State University.

The complete questionnaire appears in the appendix along with additional explanation where needed.

**Sampling Procedure and Questionnaire Administration**

Due to the constraints of time and resources, careful consideration was given to the selection of companies which would be asked to participate in the study.

The following decision rules were applied in choosing companies to participate:

1. In order to acquire the needed number of managers representing at least three organizational levels, more than one company would be required for sample purposes.

2. Since several companies would be combined in a total sample, the search should be restricted to a single industry. That is, companies should be chosen which are as similar as possible in objectives, technology, and organization structure. This criterion facilitates the analysis of the entire sample by organizational level.

3. While homogeneity is desirable in the area of objectives, technology, and structure—heterogeneity is desirable in the functional area. Therefore, companies to be chosen should include sub-organizations representing as many functional areas as possible.

Admittedly, the effect of the above criteria was a limiting one as far as generability of results is concerned. However, due to
the exploratory nature of this study, this limitation did not appear to be critical. They are:

1. The reliability and validity of this study were limited by the reliability and validity of the criterion of organizational level as a measure of relative success.

2. The reliability and validity of this study were limited by the reliability and validity of the mail survey method employed and the instruments used to measure for personality structure, attitudes and role perception.

3. As a result of the nature of personality measures, the study is limited to the analysis of responses to items in the instrument employed and in no way deals with actual behavior.

4. Conclusions drawn from the results of the study are necessarily descriptive and tentative in nature and are limited to the sample.

Sampling Procedure

The sampling procedure (including the above criteria) was implemented in the following ways:

1. The farm product industry was chosen as it was accessible through a personal contact and it met the major criteria.
   
   a. It contains a large number of companies which are similar in objectives, technology, and structure.

   b. There are a sufficient number of companies which contain a number of functional sub-units including: production,
marketing, finance, research, engineering, and personnel and related corporate services.

2. Telephone calls to key executives in nine companies in the farm product industry resulted in five favorable responses.

3. A follow-up letter explaining details of the study was sent to key executives of the five interested companies.

4. Four of the five agreed to participate after consulting their respective top executives.

5. Two other companies were surveyed for top management personnel only.

The six companies involved in the study have the following commonalities:

1. All are engaged, to some degree, in the acquisition of raw agricultural products, the processing of those products for resale, and the marketing of those products to intermediate and final consumers.

2. All contain sub-organizations designed to perform the functions of: purchasing, processing (production), marketing and the support functions such as personnel and industrial relations, finance, accounting, research and development, engineering, and data processing.

3. Product lines include: feed, grain, fertilizers, soybeans, eggs, poultry and other meat products, seed, farm chemicals, and farm supplies.
Questionnaire Administration

The questionnaire was administered in the following ways:

1. Key executives of three companies distributed the questionnaire to managerial personnel at all levels, along with a return envelope addressed to the author and a cover letter explaining the reason for the study and encouraging all recipients to fill the questionnaire out as promptly as possible.

2. One company was surveyed by the researcher with the aid of a directory of managerial personnel. Again, a cover letter from a key executive was included.

3. The top management of two companies were surveyed by the researcher. The questionnaire was accompanied by a letter defining the purpose of the study.

4. In all cases the respondents were assured of their anonymity. Instructions on the questionnaire pointed out the fact there were no "right" or "wrong" answers and asked each individual to be as completely honest as possible in answering each item as he truly felt.

5. In total, 646 questionnaires were distributed to the six participating companies. Four hundred and forty-five usable documents were returned (about 69 percent).

Each company which decided to participate was promised a summary of significant results along with a narrative description of the variables being measured.
Plan for Data Analysis

In order to facilitate testing of the hypotheses as stated earlier, the following groups were delineated:

Education

1. Up to college
2. Some college
3. College graduate
4. Graduate work

Undergraduate and graduate major

1. Business and economics
2. Agriculture
3. Engineering
4. Accounting
5. All others

Organizational level

1. First level or first-line managers
2. Second level or lower-middle managers
3. Third level or upper-middle managers
4. Fourth level or top managers

The individual managers were placed in one of the above categories based on:

a. Title and brief job description
b. Location in organizational chart
c. Whether they supervised managers or non-managers

Examples of titles in each category are as follows:

First level

1. Production foreman
2. Sales manager (first level)
3. Process engineer
4. Design engineer
5. Accountant
6. Assistant to department head
Second level

1. Plant manager (small plants and elevators)
2. Sales manager
3. Office administrators
4. Department head
5. Production superintendent
6. Area manager
7. Operation supervisor
8. Retail or branch manager

Third level

1. Division level department head
2. Assistant to division director
3. Regional manager
4. Operation manager (large plant or multi-plants)

Fourth level

1. President
2. Vice-president
3. General manager
4. Secretary-Treasurer
5. Controller
6. Division director (line and staff)

Functional designations

1. General management
2. Marketing and closely related functions
3. Production and closely related functions
4. Accounting and Finance
5. Engineering and Research
6. Personnel and Corporate services
7. Purchasing

Staff-line designations

1. The line designations were given to all those who were employed in those functions which contribute directly to the organization's task goals. In this industry, those functions are production or processing and marketing.
2. The staff designation was given to those who were employed in maintenance or support functions such as personnel, accounting, and finance, data processing, and other corporate service functions.

The variables of: age, years in present position, years with present company, years as a manager, years of full-time working experience, and span of control, were left as continuous variables.

The variables of number of managerial positions held—present company and number of managerial positions held—career, were not used, as a result of inadequate response caused by confusion in responses given to the questions.

Tools

The primary statistical tools used were:

1. Pearson Product Moment
2. Analysis of Covariance
3. Chi-square

Pearson product moment correlations were calculated to determine a pooled estimate of the varying amounts of agreement between the dogmatism variable and the variables of age, years in present position, years with present company, years as a manager, years of full-time working experience, span of control, role perceptions of consideration and structure, and attitudes toward subordinates. The lack of a significant correlation was construed as an acceptance of the null hypothesis in question as it relates to the entire distribution of dogmatism scores.

Analysis of covariance was performed to check for differences between groups in mean dogmatism scores adjusted for the possible
interaction effects of the variables under investigation. The covariance technique provides a statistical approach to control of interaction effects which cannot be controlled for experimentally. The groups analyzed using this technique were educational level, organizational level, function, line versus staff, collegiate major, and ordinal position in the family.

All variables were grouped and subjected to the chi-square test for independence using the upper and lower quartiles of the dogmatism scores as representing the relatively open versus relatively closed mind respectively. This analysis was made in keeping with the large majority of past investigations concerning dogmatism which have attempted to identify the thinking and behavior patterns of the two extreme groups. It was predicted that by using the extreme or high-low groups, relationships not apparent in the analysis of the total distribution of scores might present themselves.

Summary

The hypotheses tested in the study, as well as the questionnaire design, the sampling procedure, the plan for data analysis, and the statistical tools employed were described in this chapter.

The limitations of the study were:

The reliability and validity of this study were limited by the criterion of organizational level as a measure of relative success.
The reliability and validity of this study were limited by the mail survey method employed and the instruments used to measure for personality structure, attitudes, and role perception.

Because of the nature of personality measures, the study is limited to the analysis of responses to items in the instrument employed and in no way deals with actual behavior. Conclusions drawn from the results of the study are necessarily descriptive and tentative in nature and are limited to the sample. The findings relating to the analysis of the data are presented in Chapter V.
CHAPTER V

FINDINGS

The findings associated with the statistical analysis of the data in the present study are presented in this chapter. Interpretations of the findings, their implications for management, and further research are discussed in Chapter VI. The findings are presented in the order of the hypotheses as stated in Chapter IV.

Table 1 presents biographical and career variables of respondents by organizational level. From the total usable response of 445, there were 44 first level managers, 224 lower-middle managers, 117 upper-middle managers, and 60 top managers.

As expected, the mean age, the mean years of education, the mean years in present company, the mean years as a manager, and the mean years of full-time work experience generally increase positively with organizational level. With tradition, work and managerial experience along with education and tenure with the company were valued and rewarded, and with the exception of education can come only via the aging process.
<table>
<thead>
<tr>
<th>Variable</th>
<th>First Level Managers</th>
<th>Lower-Middle Managers</th>
<th>Upper-Middle Managers</th>
<th>Top Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total respondents</td>
<td>44.0</td>
<td>224.0</td>
<td>117.0</td>
<td>60.0</td>
</tr>
<tr>
<td>Mean age</td>
<td>42.5</td>
<td>41.0</td>
<td>45.3</td>
<td>52.4</td>
</tr>
<tr>
<td>Mean education</td>
<td>13.3</td>
<td>13.9</td>
<td>14.8</td>
<td>15.5</td>
</tr>
<tr>
<td>Mean years in present position</td>
<td>7.4</td>
<td>5.4</td>
<td>6.1</td>
<td>6.6</td>
</tr>
<tr>
<td>Mean years in present company</td>
<td>12.0</td>
<td>12.0</td>
<td>16.1</td>
<td>22.1</td>
</tr>
<tr>
<td>Mean years as a manager</td>
<td>12.6</td>
<td>13.0</td>
<td>16.2</td>
<td>22.4</td>
</tr>
<tr>
<td>Mean years full-time working experience</td>
<td>21.2</td>
<td>20.0</td>
<td>23.0</td>
<td>30.1</td>
</tr>
</tbody>
</table>

Source: Primary
Findings for Personality Structure (Dogmatism) and Personal Background Variables

Hypotheses one through eight are set up in the classical null and alternative form and deal with the variables age, education, collegiate major, birth order, years in present position, years with present company, years as a manager, and years of full-time work experience as they relate to personality structure or dogmatism.

As with all of the variables, the personal background variables were analyzed using the full range of dogmatism scores and the upper and lower quantities of dogmatism scores. The reader is urged to keep in mind that the items making up the dogmatism scale employed in this study were scored in reverse so that low scores represent the dogmatic personality and high scores represent the relatively open-minded individual.

Results for the Age Variable

Null Hypothesis one predicted no relationship between age and dogmatism scores. As age was left as a continuous variable, a Pearson product moment correlation was calculated to determine if a significant association existed between it and dogmatism. The correlation between age and dogmatism is found in Table 2 along with correlations between dogmatism and other continuous variables.

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>.00</th>
<th>.13</th>
<th>-.10</th>
<th>.08</th>
<th>.12</th>
<th>.91**</th>
<th>.77**</th>
<th>.64**</th>
<th>.48**</th>
<th>---</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yrs in present position</td>
<td>-.05</td>
<td>.07</td>
<td>-.11</td>
<td>.01</td>
<td>.07</td>
<td>.49**</td>
<td>.47**</td>
<td>.48**</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yrs with present company</td>
<td>.11</td>
<td>.20</td>
<td>-.15</td>
<td>-.02</td>
<td>.09</td>
<td>.65**</td>
<td>.68**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yrs as a manager</td>
<td>.03</td>
<td>.17</td>
<td>-.14</td>
<td>.10</td>
<td>.18</td>
<td>.79**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yrs full-time work</td>
<td>-.03</td>
<td>.09</td>
<td>-.07</td>
<td>.09</td>
<td>.13</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Span of control</td>
<td>.05</td>
<td>-.07</td>
<td>.08</td>
<td>.17</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consideration</td>
<td>-.03</td>
<td>.03</td>
<td>.32**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initiating structure</td>
<td>-.19</td>
<td>-.26**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes toward subordinates</td>
<td>.30**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dogmatism</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Significant at the .01 level.

Source: Primary
The correlations were tested at the .05 and .01 levels of significance and were corrected to take into account the number of variables being correlated.

It can be seen from Table 2 that age correlated .00 with dogmatism. Thus, the null hypothesis of no relationship between age and dogmatism was accepted for the full range of scores.

In keeping with past practices, the dogmatism scores were divided into extreme groups representing the relatively closed-mind and the relatively open-mind. This researcher chose the upper and lower quartiles of dogmatism scores as representing the two groups. The lower quartile of scores was represented by 116 respondents and labeled closed-minded, while the upper quartile was made up of 111 respondents and labeled open-minded. The inequality of sample sizes is corrected for internally by the method employed in calculating the chi-squares.

The top number in each cell in Table 3 is the observed frequency or actual number of respondents which fell into that particular cell. The number directly below the observed frequency is the expected frequency or the number of respondents expected to fall into that particular cell based on the percentage of total subjects, of each observed row, multiplied by the corresponding observed column total. The percentages were not included in the chi-square table, as they serve no useful purpose other than as an ingredient in the calculation of expected frequencies, which are in turn used to determine cell chi-squares. Cell chi-squares
TABLE 3

CHI-SQUARE TABLE FOR AGE VERSUS DOGMATISM

<table>
<thead>
<tr>
<th>Age</th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20.00</td>
<td>6.00</td>
<td>26.00</td>
</tr>
<tr>
<td></td>
<td>13.29</td>
<td>12.71</td>
<td>26.00</td>
</tr>
<tr>
<td></td>
<td>(3.39)</td>
<td>(3.55)</td>
<td>(6.94)</td>
</tr>
<tr>
<td></td>
<td>32.00</td>
<td>34.00</td>
<td>66.00</td>
</tr>
<tr>
<td></td>
<td>33.73</td>
<td>32.27</td>
<td>66.00</td>
</tr>
<tr>
<td></td>
<td>(0.09)</td>
<td>(0.09)</td>
<td>(0.18)</td>
</tr>
<tr>
<td></td>
<td>30.00</td>
<td>41.00</td>
<td>71.00</td>
</tr>
<tr>
<td></td>
<td>36.28</td>
<td>34.72</td>
<td>71.00</td>
</tr>
<tr>
<td></td>
<td>(1.09)</td>
<td>(1.14)</td>
<td>(2.22)</td>
</tr>
<tr>
<td></td>
<td>26.00</td>
<td>24.00</td>
<td>50.00</td>
</tr>
<tr>
<td></td>
<td>25.55</td>
<td>24.45</td>
<td>50.00</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>Over 60</td>
<td>8.00</td>
<td>6.00</td>
<td>14.00</td>
</tr>
<tr>
<td></td>
<td>7.15</td>
<td>6.85</td>
<td>14.00</td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>(0.10)</td>
<td>(0.20)</td>
</tr>
</tbody>
</table>

| TOTALS | 116.00 | 111.00 | 227.00 |

Total chi-square = 9.56 with 4 degrees of freedom

Probability of chi-square = 0.0478

Source: Primary
were computed by subtracting the expected frequency from the observed frequency and squaring, and then dividing by the expected frequency. The chi-square values for each cell are shown in parenthesis. Cell chi-squares represent the contribution of each cell to the total chi-square value. This method allows for overall comparison of the relatively closed-minded group and the relatively open-minded group of managers.

The procedure as applied to age versus dogmatism resulted in a chi-square of 9.56, which is significant at the .05 level. This result indicated that age was not independent of dogmatism when the extreme scores were analyzed. The largest contribution to the total chi-square came from the under 30 age group and the 41-50 age group. These results indicated an overrepresentation of managers under 30 years of age in the closed-minded group and a slight underrepresentation in this classification of managers in the 41-50 age category. It appears that dogmatism is not independent of age when respondents are divided into the upper and lower quartiles of dogmatism scores. It was necessary, then, to reject Null Hypothesis one as it relates to high dogmatics and low dogmatics and to offer the alternative hypothesis that dogmatism was related to age in this study as reflected in the statistically overrepresentation of the under 30 age group in the closed-minded classification. The acceptance of the alternative hypothesis in this case was made with a note of extreme caution, in that possible confounding effects of other
variables, identified in this study or not identified, are not controlled for and could well account for the significant chi-square. This note of caution applies to all cases where chi-square analysis was employed in this study. Due to the exploratory nature of this study, any relationships between the extreme groups were noted as needing further study even though the relationships may well have been noted as insignificant when employing the full range of dogmatism scores. More is said on this point in Chapter VI.

In summary, Null Hypothesis one was accepted when employing the full range of dogmatism scores. Age was not found to be significantly associated with dogmatism. However, when the closed-minded group was compared to the open-minded group, a significant dependency was found between age and dogmatism. It appears that the under 30 age group represents more closed-minded personalities than expected, and the 41-50 age group represents slightly fewer closed-minded personalities than expected statistically.

Results for the Education Variable

Null Hypothesis two predicted no relationship between dogmatism and education. To test this hypothesis, two methods of analysis were performed. First, the education variable was grouped so that group one consisted of a high school level or less, group two equated to some college, group three was made up of college graduates, and group four was composed of respondents with master's degrees and
beyond. Analysis of covariance was performed to check for significant differences between groups in mean dogmatism scores. The mean scores of each group were adjusted for the effects of the variables of age, organizational level, function, years in present position, years with present company, years as a manager, years of full-time work, staff versus line function, span of control, ordinal position in the family and family size. The regression approach to covariance analysis provides a statistical means of controlling for interaction effects which cannot be controlled for experimentally.

Table 4 contains an F ratio of 3.56 which is significant at the .05 level. Therefore, Null Hypothesis two was rejected and Alternative Hypothesis two of a significant difference in mean dogmatism scores across educational level is offered. That is, using the full range of dogmatism scores, there was a relationship found between dogmatism and education.

In order to test for significant difference between adjusted means, Scheffe's test for unequal sample size was made.¹⁶³

Table 5 contains the mean and adjusted mean dogmatism scores for each educational level. The critical differences of interest here are the differences between adjusted means for each combination of groups or levels. As depicted in Table 5, the significant differences between adjusted mean dogmatism scores for levels one

¹⁶³Ibid., pp. 323-324.
<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among</td>
<td>3</td>
<td>754.61</td>
<td>3.56*</td>
</tr>
<tr>
<td>Within</td>
<td>423</td>
<td>211.97</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>426</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*F value significant at the .05 level.

Source: Primary
TABLE 5

MEAN SCORES ON DOGMATISM BY EDUCATIONAL LEVEL - CORRECTED FOR AFFECTS OF AGE, ORGANIZATIONAL LEVEL, FUNCTION, YEARS IN PRESENT POSITION, YEARS WITH PRESENT COMPANY, YEARS AS A MANAGER, YEARS FULL-TIME WORKING EXPERIENCE, STAFF-LINE, SPAN OF CONTROL, BIRTH ORDER, FAMILY SIZE

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>High School or Less</th>
<th>Some College</th>
<th>College Degree</th>
<th>Master's Degree and Beyond</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>153</td>
<td>86</td>
<td>177</td>
<td>29</td>
</tr>
<tr>
<td>Means</td>
<td>87.92</td>
<td>94.20</td>
<td>95.86</td>
<td>100.07</td>
</tr>
<tr>
<td>Adjusted Means</td>
<td>88.49</td>
<td>93.17</td>
<td>93.06</td>
<td>97.31</td>
</tr>
<tr>
<td>Differences</td>
<td>1 &lt; 2 = 4.68</td>
<td>2 &gt; 3 = .09</td>
<td>3 &lt; 4 = 4.25</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 &lt; 3 = 4.57*</td>
<td>2 &lt; 4 = 4.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 &lt; 4 = 8.82*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

Source: Primary
and three of 4.57 and one and four of 8.82 were found. These results indicate that those with a high school education or less are significantly more dogmatic than those with a college degree and those with graduate work. The difference between high school or less and some college, and between some college and college degree, and between college degree and graduate work, were not found to be significant. The difference between the high school or less classification and the some college classification of 4.68 failed to reach significance due to the sample size adjustment made in Scheffe's test, which is based on the principle that large sample size produces more stable means than do small sample sizes, and that considerable differences in sample size must be taken into account when comparing mean scores.

The contribution to the significant F ratio of 3.56 was made, for the most part, by the differences in adjusted mean scores between the high school or less classification and the other three classifications. Note should be made of the less conservative mean differences prior to adjustment, which depict a decrease in dogmatism (or increase in open-mindedness) with each level of education.

The variable of education was also subjected to chi-square analysis. The results of this analysis are found in Table 6. A chi-square of 19.43, significant at the .01 level, resulted, and as expected, the primary contribution to the chi-square came from the high school or less group, which was overrepresented in the
### TABLE 6

**CHI-SQUARE TABLE FOR EDUCATION VERSUS DOGMATISM**

<table>
<thead>
<tr>
<th></th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>or less</td>
<td>61.00</td>
<td>29.00</td>
<td>90.00</td>
</tr>
<tr>
<td></td>
<td>45.99</td>
<td>44.01</td>
<td>90.00</td>
</tr>
<tr>
<td></td>
<td>(4.90)</td>
<td>(5.12)</td>
<td>(10.02)</td>
</tr>
<tr>
<td>Some college</td>
<td>19.00</td>
<td>21.00</td>
<td>40.00</td>
</tr>
<tr>
<td></td>
<td>20.44</td>
<td>19.56</td>
<td>40.00</td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>(0.11)</td>
<td>(0.21)</td>
</tr>
<tr>
<td>College degree</td>
<td>33.00</td>
<td>50.00</td>
<td>83.00</td>
</tr>
<tr>
<td></td>
<td>42.41</td>
<td>40.59</td>
<td>83.00</td>
</tr>
<tr>
<td></td>
<td>(2.09)</td>
<td>(2.18)</td>
<td>(4.27)</td>
</tr>
<tr>
<td>Master's degree and beyond</td>
<td>3.00</td>
<td>11.00</td>
<td>14.00</td>
</tr>
<tr>
<td></td>
<td>7.15</td>
<td>6.85</td>
<td>14.00</td>
</tr>
<tr>
<td></td>
<td>(2.41)</td>
<td>(2.52)</td>
<td>(4.93)</td>
</tr>
<tr>
<td>TOTALS</td>
<td>116.00</td>
<td>111.00</td>
<td>227.00</td>
</tr>
<tr>
<td></td>
<td>(9.50)</td>
<td>(9.93)</td>
<td>(19.43)</td>
</tr>
</tbody>
</table>

**Total chi-square = 19.43 with 3 degrees of freedom**

**Probability of chi-square = 0.0003**

*Source: Primary*
closed-minded category. The college graduate and master's and beyond groups were both underrepresented in the closed-minded category and, therefore, overrepresented in the open-minded category.

In summary, a significant relationship was found between dogmatism and educational level. Generally, the relationship is an inverse one with dogmatism decreasing with education, particularly as college education reached the advanced degree stage.

Results for the Collegiate Major Variable

Of the total response, there were 206 college graduates divided into five categories. The majors of business and economics, agriculture, accounting, and engineering, along with a fifth category of "all others" were analyzed using the analysis of covariance technique to determine if significant difference existed between them on dogmatism scores. Presented in Table 7 is an F ratio of .86 which fails to reach significance. Thus, Null Hypothesis three, which predicts no significant difference in mean dogmatism scores between collegiate majors, is accepted for the full range of scores. Table 8 depicts the unadjusted mean dogmatism scores by major. The adjusted means were not presented, as the F ratio failed to reach significance.

The chi-square test for independence, as presented in Table 9, was performed to determine if collegiate major was associated with dogmatism when comparisons were made using the upper and lower quartiles of the scores. The chi-square of 3.29 did not reach
TABLE 7

ANALYSIS OF COVARIANCE FOR DOGMATISM VARIABLE BY COLLEGIATE MAJOR

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among</td>
<td>4</td>
<td>159.20</td>
<td>.86</td>
</tr>
<tr>
<td>Within</td>
<td>183</td>
<td>185.13</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>187</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

F value nonsignificant.

Source: Primary
TABLE 8

MEAN SCORES ON DOGMATISM BY COLLEGIATE MAJOR

<table>
<thead>
<tr>
<th>Business &amp; Economics</th>
<th>Agriculture</th>
<th>Accounting</th>
<th>Engineering</th>
<th>All Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 56</td>
<td>N = 93</td>
<td>N = 13</td>
<td>N = 20</td>
<td>N = 24</td>
</tr>
<tr>
<td>Means</td>
<td>96.20</td>
<td>96.83</td>
<td>89.62</td>
<td>98.55</td>
</tr>
</tbody>
</table>

Source: Primary
TABLE 9

CHI-SQUARE TABLE FOR COLLEGIATE MAJOR VERSUS DOGMATISM

<table>
<thead>
<tr>
<th></th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business and</td>
<td>12.00</td>
<td>18.00</td>
<td>30.00</td>
</tr>
<tr>
<td>Economics</td>
<td>11.13</td>
<td>18.87</td>
<td>30.00</td>
</tr>
<tr>
<td>(0.07)</td>
<td>(0.04)</td>
<td>(0.11)</td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>11.00</td>
<td>26.00</td>
<td>37.00</td>
</tr>
<tr>
<td></td>
<td>13.73</td>
<td>23.27</td>
<td>37.00</td>
</tr>
<tr>
<td>(0.54)</td>
<td>(0.32)</td>
<td>(0.86)</td>
<td></td>
</tr>
<tr>
<td>Accounting</td>
<td>5.00</td>
<td>3.00</td>
<td>8.00</td>
</tr>
<tr>
<td></td>
<td>2.97</td>
<td>5.03</td>
<td>8.00</td>
</tr>
<tr>
<td>(1.39)</td>
<td>(0.82)</td>
<td>(2.21)</td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td>4.00</td>
<td>6.00</td>
<td>10.00</td>
</tr>
<tr>
<td></td>
<td>3.71</td>
<td>6.29</td>
<td>10.00</td>
</tr>
<tr>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.04)</td>
<td></td>
</tr>
<tr>
<td>All others</td>
<td>4.00</td>
<td>8.00</td>
<td>12.00</td>
</tr>
<tr>
<td></td>
<td>4.45</td>
<td>7.55</td>
<td>12.00</td>
</tr>
<tr>
<td>(0.05)</td>
<td>(0.03)</td>
<td>(0.07)</td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td>36.00</td>
<td>61.00</td>
<td>97.00</td>
</tr>
<tr>
<td></td>
<td>36.00</td>
<td>61.00</td>
<td>97.00</td>
</tr>
<tr>
<td></td>
<td>(2.07)</td>
<td>(1.22)</td>
<td>(3.29)</td>
</tr>
</tbody>
</table>

Total chi-square = 3.29 with 4 degrees of freedom

Probability of chi-square = 0.5128

Source: Primary
statistical significance and, therefore, the null hypothesis of no relationship between collegiate major and dogmatism scores was accepted for the extreme categories as well as the full range of dogmatic scores.

In summary, neither approach to the analysis of dogmatism scores (full distribution or quartile) and collegiate major resulted in significant results. For this sample there was no significant differences in dogmatism scores between the college majors of business and economics, agriculture, accounting, engineering and an "all other" category.

Results for the Birth Order Variable

As pointed out in Chapter III, there is research evidence which suggests that early parent-child relationships may contribute to the development of personality structure and, in particular, the authoritarian personality. It was for this reason that ordinal position in the family was defined as a variable and analyzed in respect to dogmatism scores. Also considered in the analysis was family size. Because of time and scope of study constraints, no attempt was made to manipulate the variables of birth order and family size together.

No hypothesis was stated originally in regard to family size. It was apparent after completion of the analysis of birth order that family size needed to be considered. A refined hypothesis concerning family size and dogmatism is stated in the conclusion to this chapter and discussed in Chapter VI.
To test Null Hypothesis four, that there is no difference in dogmatism scores based on order of birth, an F ratio was calculated using the analysis of covariance technique and is found in Table 10. In order to accomplish a comparison, the respondents were divided into only borns, first borns and later borns. The F ratio found in Table 10 of 2.65 approaches the .05 level of significance and was held worthy of note in this exploratory study. While the null hypothesis of no significant difference in dogmatism scores between birth order classification must be accepted at the .05 level, the alternative hypothesis of significant differences can be offered at the .06 level. (In exploratory studies such as this one, the .10 level of significance is often reported.)

Table 11 contains the mean and adjusted mean dogmatism scores by order of birth. It can be seen that first borns are more open-minded on the average than only borns and later borns and only borns are slightly more open-minded than later borns on the average. As with the education variable, the differences between mean scores were subjected to Scheffe's test for unequal sample sizes. The difference in the mean dogmatism scores between first borns and later borns of 5.67 was found to be significant at the .01 level. The differences between first borns and only borns and between only borns and later borns were not statistically significant. It can be stated that first borns in this sample were significantly more open-minded than later borns.
### TABLE 10

ANALYSIS OF COVARIANCE FOR DOGMATISM VARIABLE BY ORDINAL POSITION IN FAMILY (BIRTH ORDER)

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among</td>
<td>2</td>
<td>561.78</td>
<td>2.65</td>
</tr>
<tr>
<td>Within</td>
<td>423</td>
<td>211.96</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>425</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

F value is significant at the .06 level.

Source: Primary
TABLE 11

MEAN SCORES ON DOGMATISM BY ORDINAL POSITION IN FAMILY (BIRTH ORDER) - CORRECTED FOR THE AFFECTS OF AGE, ORGANIZATIONAL LEVEL, EDUCATION, FUNCTION, YEARS IN PRESENT POSITION, YEARS WITH PRESENT COMPANY, YEARS AS A MANAGER, YEARS FULL-TIME WORK EXPERIENCE, STAFF-LINE, SPAN OF CONTROL

<table>
<thead>
<tr>
<th></th>
<th>Only Borns</th>
<th>First Borns</th>
<th>Later Borns</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>N = 26</td>
<td>N = 107</td>
<td>N = 312</td>
</tr>
<tr>
<td>Means</td>
<td>94.04</td>
<td>97.05</td>
<td>91.64</td>
</tr>
<tr>
<td>Adjusted Means</td>
<td>92.99</td>
<td>96.79</td>
<td>91.12</td>
</tr>
<tr>
<td>Differences</td>
<td>Only &gt; Later = 1.87</td>
<td>First &gt; Later = 5.67**</td>
<td>Only &lt; First = 3.80</td>
</tr>
</tbody>
</table>

**Significant at the .01 level.

Source: Primary
Upon analysis of the upper and lower quartiles of dogmatism scores, a chi-square of 10.69 was found to be significant at the .01 level. The results of the chi-square analysis can be found in Table 12. From this table, it can be seen that the first born category contributes the most to the chi-square. First borns were underrepresented in the closed-minded category and overrepresented in the open-minded category. The later born group is overrepresented in the closed-minded category and underrepresented in the open-minded category. The only borns appear to fall into both categories as expected. It was in order then, to reject Null Hypothesis four and offer Alternative Hypothesis four of significant differences in dogmatism scores (analyzed in the upper and lower quartiles) based on order of birth.

As stated above, no hypothesis concerning family size and dogmatism was stated. However, a routine check on family size via chi-square analysis resulted in a chi-square of 16.77 which was significant at the .01 level. Family size was grouped into the classifications of three, four, five, and six and over. The results of this analysis are presented in Table 13. As expected, respondents with no siblings (family size = three) fell into both categories of open and closed-minded as expected. However, those with one brother or sister were underrepresented in the closed-minded group (overrepresented in the open-minded group). Those from families with five people were also underrepresented in the closed-minded group. Interestingly, the greatest contribution
TABLE 12

CHI-SQUARE TABLE FOR BIRTH ORDER VERSUS DOGMATISM

<table>
<thead>
<tr>
<th></th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only Born</td>
<td>4.00</td>
<td>3.00</td>
<td>7.00</td>
</tr>
<tr>
<td></td>
<td>3.58</td>
<td>3.42</td>
<td>7.00</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.10)</td>
</tr>
<tr>
<td>First Born</td>
<td>18.00</td>
<td>38.00</td>
<td>56.00</td>
</tr>
<tr>
<td></td>
<td>28.62</td>
<td>27.38</td>
<td>56.00</td>
</tr>
<tr>
<td></td>
<td>(3.94)</td>
<td>(4.12)</td>
<td>(8.05)</td>
</tr>
<tr>
<td>Later Born</td>
<td>94.00</td>
<td>70.00</td>
<td>164.00</td>
</tr>
<tr>
<td></td>
<td>83.81</td>
<td>80.19</td>
<td>164.00</td>
</tr>
<tr>
<td></td>
<td>(1.24)</td>
<td>(1.30)</td>
<td>(2.54)</td>
</tr>
<tr>
<td>TOTALS</td>
<td>116.00</td>
<td>111.00</td>
<td>227.00</td>
</tr>
<tr>
<td></td>
<td>116.00</td>
<td>111.00</td>
<td>227.00</td>
</tr>
<tr>
<td></td>
<td>5.23</td>
<td>5.46</td>
<td>10.69</td>
</tr>
</tbody>
</table>

Total chi-square = 10.69 with 2 degrees of freedom

Probability of chi-square = 0.005

Source: Primary
TABLE 13

CHI-SQUARE TABLE FOR FAMILY SIZE VERSUS DOGMATISM

<table>
<thead>
<tr>
<th>Family Size</th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4.00</td>
<td>3.00</td>
<td>7.00</td>
</tr>
<tr>
<td></td>
<td>3.58 (0.05)</td>
<td>3.42 (0.05)</td>
<td>7.00 (0.10)</td>
</tr>
<tr>
<td>4</td>
<td>15.00</td>
<td>26.00</td>
<td>41.00</td>
</tr>
<tr>
<td></td>
<td>20.95 (1.69)</td>
<td>20.05 (1.77)</td>
<td>41.00 (3.46)</td>
</tr>
<tr>
<td>5</td>
<td>16.00</td>
<td>33.00</td>
<td>49.00</td>
</tr>
<tr>
<td></td>
<td>25.04 (3.26)</td>
<td>23.96 (3.41)</td>
<td>49.00 (6.67)</td>
</tr>
<tr>
<td>6 and over</td>
<td>81.00</td>
<td>49.00</td>
<td>130.00</td>
</tr>
<tr>
<td></td>
<td>66.43 (3.19)</td>
<td>63.57 (3.34)</td>
<td>130.00 (6.53)</td>
</tr>
<tr>
<td>TOTALS</td>
<td>116.00</td>
<td>111.00</td>
<td>227.00</td>
</tr>
<tr>
<td></td>
<td>116.00 (8.20)</td>
<td>111.00 (8.57)</td>
<td>227.00 (16.77)</td>
</tr>
</tbody>
</table>

Total chi-square = 16.77 with 3 degrees of freedom

Probability of chi-square = 0.0009

Source: Primary
to the total chi-square came from the family size of six and over. Respondents in this category were overrepresented in the closed-minded group. Speculation as to reasons for this somewhat curvilinear relationship between family size and dogmatism is made in Chapter VI. A tentative hypothesis is that, when analyzed in the extremes, dogmatism scores are dependent on family size.

In summary, Alternative Hypothesis four was accepted at the .10 level of significance for the full range of dogmatism scores. More specifically, a relationship between dogmatism scores and order of birth was found to be significant at the .10 level or less. First borns were significantly more open-minded than later borns. As expected, when the chi-square test for independence was applied to the upper and lower quartiles of dogmatism scores as compared to the categories of only borns, first borns, and later borns, a significant dependence was found. Only borns were found equally represented in both groups as expected, however, the first borns were overrepresented in the open-minded category, while the later borns were underrepresented in the open-minded category. Thus, for this sample, first borns were found to be more open-minded than later borns. As a related result, family size was associated with dogmatism when scores were grouped into upper and lower quartiles. Those respondents from families of four and five persons were overrepresented in the open-minded group while those from the family size of six persons and over were underrepresented in the open-minded group.
Those respondents with no siblings were represented about equally in both categories.

Results for the Years in Present Position Variable

Null Hypothesis five predicted no relationship between dogmatism scores and the number of years in present position. In order to test this prediction a correlation coefficient was computed and is found in Table 2. The correlation of -.05 between dogmatism and years in present position is not significant and called for an acceptance of Null Hypothesis five for the full range of dogmatism scores.

As with the age variable, years in present position were grouped and a comparison made between the classifications of closed versus open-minded via chi-square analysis. The results of the comparison are found in Table 14. The total chi-square of 4.70 is not significant and, therefore, the null hypothesis of no relationship between dogmatism and years in present position when analyzed using the low and high dogmatism groups was accepted.

In summary, years in present position were found to be independent of dogmatism for the full range of dogmatism scores and for the classifications of closed-minded and open-minded.

Results for Years with Present Company Variable

Null Hypothesis six predicted no relationship between dogmatism scores and the number of years the respondent had served with his present company.
### TABLE 14

<table>
<thead>
<tr>
<th>Years in Present Position</th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2</td>
<td>24.00</td>
<td>29.00</td>
<td>53.00</td>
</tr>
<tr>
<td></td>
<td>27.08</td>
<td>25.92</td>
<td>53.00</td>
</tr>
<tr>
<td></td>
<td>(0.35)</td>
<td>(0.37)</td>
<td>(0.72)</td>
</tr>
<tr>
<td>2-5</td>
<td>50.00</td>
<td>36.00</td>
<td>86.00</td>
</tr>
<tr>
<td></td>
<td>43.95</td>
<td>42.05</td>
<td>86.00</td>
</tr>
<tr>
<td></td>
<td>(0.83)</td>
<td>(0.87)</td>
<td>(1.70)</td>
</tr>
<tr>
<td>6-10</td>
<td>21.00</td>
<td>23.00</td>
<td>44.00</td>
</tr>
<tr>
<td></td>
<td>22.48</td>
<td>21.52</td>
<td>44.00</td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>(0.10)</td>
<td>(0.20)</td>
</tr>
<tr>
<td>11-20</td>
<td>16.00</td>
<td>21.00</td>
<td>37.00</td>
</tr>
<tr>
<td></td>
<td>18.91</td>
<td>18.09</td>
<td>37.00</td>
</tr>
<tr>
<td></td>
<td>(0.45)</td>
<td>(0.47)</td>
<td>(0.91)</td>
</tr>
<tr>
<td>Over 20</td>
<td>5.00</td>
<td>2.00</td>
<td>7.00</td>
</tr>
<tr>
<td></td>
<td>3.58</td>
<td>3.42</td>
<td>7.00</td>
</tr>
<tr>
<td></td>
<td>(0.57)</td>
<td>(0.59)</td>
<td>(1.16)</td>
</tr>
</tbody>
</table>

TOTALS  
116.00  
111.00  
227.00  
(2.30)  
(2.40)  
(4.70)  

Total chi-square = 4.70 with 4 degrees of freedom  
Probability of chi-square = 0.3197  
Source: Primary
Table 2 presents a correlation between dogmatism scores and years with present company of .11, which was not found to be significant at the .05 level. Therefore, the null hypothesis of no significant relationship between dogmatism and years with present company was accepted for the full range of dogmatism scores. However, the results of a chi-square test for independence, as presented in Table 15, indicated a dependence did exist at the upper and lower quartiles of dogmatism scores. The chi-square of 13.72 was significant approaching the .01 level. The greatest contributions to the total chi-square were derived from the categories of two to five years and twenty-one to thirty years. Those who had been with their present company two to five years were underrepresented in the open-minded group and those with twenty-one to thirty years with their respective companies were overrepresented in the open-minded category. The general trend depicted in Table 15 appears to be that those with up to eleven years with present company are underrepresented in the open-minded group, while those with eleven years and over of service with present company are overrepresented in the open-minded group. Again, a caution made earlier in this chapter is raised. The confounding effects of other variables, accounted for and unaccounted for, are not controlled for in chi-square analysis. Thus, the resulting relationship may be spurious.

In summary, a .11 correlation between dogmatism and years in present company failed to reach significance. Consequently, Null Hypothesis six was accepted for the full range of dogmatism
### TABLE 15
CHI-SQUARE TABLE FOR NUMBER OF YEARS IN PRESENT COMPANY VERSUS DOGMATISM

<table>
<thead>
<tr>
<th>Years in Present Company</th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2</td>
<td>5.00</td>
<td>5.00</td>
<td>10.00</td>
</tr>
<tr>
<td></td>
<td>5.11 (0.00)</td>
<td>4.89 (0.00)</td>
<td>10.00</td>
</tr>
<tr>
<td>2-5</td>
<td>31.00</td>
<td>13.00</td>
<td>44.00</td>
</tr>
<tr>
<td></td>
<td>22.48 (3.22)</td>
<td>21.52 (3.37)</td>
<td>44.00</td>
</tr>
<tr>
<td>6-10</td>
<td>26.00</td>
<td>19.00</td>
<td>45.00</td>
</tr>
<tr>
<td></td>
<td>23.00 (0.39)</td>
<td>22.00 (0.41)</td>
<td>45.00</td>
</tr>
<tr>
<td>11-20</td>
<td>34.00</td>
<td>38.00</td>
<td>72.00</td>
</tr>
<tr>
<td></td>
<td>36.79 (0.21)</td>
<td>35.21 (0.22)</td>
<td>72.00</td>
</tr>
<tr>
<td>21-30</td>
<td>13.00</td>
<td>27.00</td>
<td>40.00</td>
</tr>
<tr>
<td></td>
<td>20.44 (2.71)</td>
<td>19.56 (2.83)</td>
<td>40.00</td>
</tr>
<tr>
<td>Over 30</td>
<td>7.00</td>
<td>9.00</td>
<td>16.00</td>
</tr>
<tr>
<td></td>
<td>8.18 (0.17)</td>
<td>7.82 (0.18)</td>
<td>16.00</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>116.00</strong></td>
<td><strong>111.00</strong></td>
<td><strong>227.00</strong></td>
</tr>
<tr>
<td></td>
<td><strong>116.00</strong> (6.71)</td>
<td><strong>111.00</strong> (7.01)</td>
<td><strong>227.00 (13.72)</strong></td>
</tr>
</tbody>
</table>

Total chi-square = 13.72 with 5 degrees of freedom

Probability of chi-square = 0.0175

**Source:** Primary
scores. A significant chi-square of 13.72 led to the acceptance of Alternative Hypothesis six as it applied to the upper and lower quartiles of dogmatism scores. Those respondents with eleven or more years with their present companies, appear to be overrepresented in the open-minded group, while those with ten years or less with their respective companies were underrepresented in the open-minded group.

Results for the Years as a Manager Variable

Null Hypothesis seven predicts no significant relationship between dogmatism and the number of years as a manager. The correlation of .03 between dogmatism and years as a manager as presented in Table 2 did not reach a significant level. Consequently, Null Hypothesis seven was accepted for the full range of dogmatism scores. Null Hypothesis seven was also accepted for the upper and lower quartiles of dogmatism scores as they relate to years as a manager. Table 16 presents the groupings of years as a manager and a chi-square value of 5.53, which was not found to be significant. In summary, no significant relationships were found for this sample when comparing dogmatism scores to number of years as a manager.

Results for the Years of Full-Time Work Experience Variable

Table 2 presents a nonsignificant correlation of -.03 between dogmatism scores and years of full-time work experience. Thus, Null Hypothesis eight which predicted no relationships would be found between the two variables was accepted for the full range of scores.
## TABLE 16

**CHI-SQUARE TABLE FOR NUMBER OF YEARS AS A MANAGER VERSUS DOGMATISM**

<table>
<thead>
<tr>
<th>Years as a Manager</th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2</td>
<td>4.00</td>
<td>4.00</td>
<td>8.00</td>
</tr>
<tr>
<td></td>
<td>4.09</td>
<td>3.91</td>
<td>8.00</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>2-5</td>
<td>23.00</td>
<td>17.00</td>
<td>40.00</td>
</tr>
<tr>
<td></td>
<td>20.44</td>
<td>19.56</td>
<td>40.00</td>
</tr>
<tr>
<td></td>
<td>(0.32)</td>
<td>(0.33)</td>
<td>(0.66)</td>
</tr>
<tr>
<td>6-10</td>
<td>27.00</td>
<td>17.00</td>
<td>44.00</td>
</tr>
<tr>
<td></td>
<td>22.48</td>
<td>21.52</td>
<td>44.00</td>
</tr>
<tr>
<td></td>
<td>(0.91)</td>
<td>(0.95)</td>
<td>(1.85)</td>
</tr>
<tr>
<td>11-20</td>
<td>29.00</td>
<td>42.00</td>
<td>71.00</td>
</tr>
<tr>
<td></td>
<td>36.28</td>
<td>34.72</td>
<td>71.00</td>
</tr>
<tr>
<td></td>
<td>(1.46)</td>
<td>(1.53)</td>
<td>(2.99)</td>
</tr>
<tr>
<td>21-30</td>
<td>26.00</td>
<td>24.00</td>
<td>50.00</td>
</tr>
<tr>
<td></td>
<td>25.55</td>
<td>24.45</td>
<td>50.00</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>Over 30</td>
<td>7.00</td>
<td>7.00</td>
<td>14.00</td>
</tr>
<tr>
<td></td>
<td>7.15</td>
<td>6.85</td>
<td>14.00</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>116.00</strong></td>
<td><strong>111.00</strong></td>
<td><strong>227.00</strong></td>
</tr>
<tr>
<td></td>
<td><strong>116.00</strong></td>
<td><strong>111.00</strong></td>
<td><strong>227.00</strong></td>
</tr>
<tr>
<td></td>
<td>(2.70)</td>
<td>(2.82)</td>
<td>(5.53)</td>
</tr>
</tbody>
</table>

Total chi-square = 5.53 with 5 degrees of freedom

Probability of chi-square = 0.3551

Source: Primary
When years of full-time work were grouped and compared to the upper and lower quartiles of dogmatism scores, a nonsignificant chi-square of 4.91 was derived as presented in Table 17. Null Hypothesis eight was accepted as indicating independence of dogmatism and years of full-time work experience. In summary, no relationship was found between dogmatism and years of full-time work experience.

**Findings for Personality Structure (Dogmatism) and Organizational Variables**

Hypotheses nine through twelve were concerned with the relationships between dogmatism and the variables of attained organizational level, line versus staff role, functional role, and span of control.

The variables organizational level, line/staff, and function were grouped and subjected to the analysis of covariance to determine if significant differences existed between group dogmatism means. Span of control was left as a continuous variable.

Respondents were also subclassified as closed and open-minded and a chi-square test for independence was made for each comparison. The upper and lower quartiles of dogmatism scores were analyzed.

**Results for the Organizational Level Variable**

Null Hypothesis nine predicted that there would be no significant difference in dogmatism scores based on organizational level. In order to test this hypothesis, analysis of covariance was performed to determine if there existed significant differences in mean dogmatism scores between groups. Organizational levels were defined
### TABLE 17

**CHI-SQUARE TABLE FOR NUMBER OF YEARS OF FULL-TIME WORK VERSUS DOGMATISM**

<table>
<thead>
<tr>
<th>Years of work</th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.00</td>
<td>4.00</td>
<td>11.00</td>
</tr>
<tr>
<td></td>
<td>5.62</td>
<td>5.38</td>
<td>11.00</td>
</tr>
<tr>
<td></td>
<td>(0.34)</td>
<td>(0.35)</td>
<td>(0.69)</td>
</tr>
<tr>
<td>6-10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13.00</td>
<td>11.00</td>
<td>24.00</td>
</tr>
<tr>
<td></td>
<td>12.26</td>
<td>11.74</td>
<td>24.00</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.09)</td>
</tr>
<tr>
<td>11-20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>35.00</td>
<td>33.00</td>
<td>68.00</td>
</tr>
<tr>
<td></td>
<td>34.75</td>
<td>33.25</td>
<td>68.00</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>21-30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>32.00</td>
<td>44.00</td>
<td>76.00</td>
</tr>
<tr>
<td></td>
<td>38.84</td>
<td>37.16</td>
<td>76.00</td>
</tr>
<tr>
<td></td>
<td>(1.20)</td>
<td>(1.26)</td>
<td>(2.46)</td>
</tr>
<tr>
<td>Over 30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>29.00</td>
<td>19.00</td>
<td>48.00</td>
</tr>
<tr>
<td></td>
<td>24.53</td>
<td>23.47</td>
<td>48.00</td>
</tr>
<tr>
<td></td>
<td>(0.82)</td>
<td>(0.85)</td>
<td>(1.67)</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>116.00</td>
<td>111.00</td>
<td>227.00</td>
</tr>
<tr>
<td></td>
<td>(2.40)</td>
<td>(2.51)</td>
<td>(4.91)</td>
</tr>
</tbody>
</table>

**Total chi-square = 4.91 with 4 degrees of freedom**

**Probability of chi-square = 0.2957**

**Source:** Primary
as first-line managers, lower-middle managers, upper-middle managers and top managers. Respondents were placed in each classification by the method described in Chapter IV. After mean scores of each group were corrected for interaction effects, an adjusted F ratio was calculated. The F value of 9.72 in Table 18 is significant at the .01 level and indicates that there are statistically significant differences between groups on mean dogmatism scores. Thus Alternative Hypothesis nine of a significant relationship between dogmatism and organizational level is offered.

To determine the nature of the differences in mean scores between groups, Scheffe's test for unequal sample sizes was made. The means, adjusted means, and differences between means are found in Table 19. The results show that first-line managers in this sample were significantly more dogmatic on the average than were upper-middle managers and top managers. Also, lower-middle managers were significantly more dogmatic on the average than were upper-middle managers and top managers. The difference in adjusted mean scores between the first-line group and the lower-middle group and between the upper-middle and top manager group failed to reach significance. The difference of 3.91 between first-line managers and lower-middle managers may be due to the instability of the mean score of the first-line category as a result of the small sample size.

The organizational level variable was also subjected to the chi-square test for independence. The results of this analysis are found in Table 20. The chi-square of 35.90 is significant at the .01 level. Alternative Hypothesis nine was supported as it applies
### TABLE 18
ANALYSIS OF COVARIANCE FOR DOGMATISM VARIABLE BY ORGANIZATIONAL LEVEL

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among</td>
<td>3</td>
<td>2060.35</td>
<td>9.72**</td>
</tr>
<tr>
<td>Within</td>
<td>423</td>
<td>211.97</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>426</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**F value significant at the .01 level.**

Source: Primary
TABLE 19
MEAN SCORES ON DOGMATISM BY ORGANIZATIONAL LEVEL — CORRECTED FOR EFFECTS OF AGE, EDUCATION, FUNCTION, YEARS IN PRESENT POSITION, YEARS WITH PRESENT COMPANY, YEARS AS A MANAGER, YEARS FULL-TIME EXPERIENCE, STAFF-LINE, SPAN OF CONTROL, BIRTH ORDER, FAMILY SIZE

<table>
<thead>
<tr>
<th></th>
<th>First-Line Managers</th>
<th>Lower-Middle Managers</th>
<th>Upper-Middle Managers</th>
<th>Top Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>44</td>
<td>224</td>
<td>117</td>
<td>60</td>
</tr>
<tr>
<td>Means</td>
<td>85.16</td>
<td>89.93</td>
<td>98.94</td>
<td>99.22</td>
</tr>
<tr>
<td>Adjusted Means</td>
<td>85.77</td>
<td>89.68</td>
<td>98.38</td>
<td>98.20</td>
</tr>
<tr>
<td>Differences</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 &lt; 2 = 3.91</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 &lt; 3 = 12.61**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 &lt; 4 = 12.43**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 &lt; 3 = 8.7**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 &lt; 4 = 8.52**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 &gt; 4 = .18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Significant at the .01 level.

Source: Primary
### TABLE 20

**CHI-SQUARE TABLE FOR ORGANIZATIONAL LEVEL VERSUS DOGMATISM**

<table>
<thead>
<tr>
<th></th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First-line managers</strong></td>
<td>16.00</td>
<td>5.00</td>
<td>21.00</td>
</tr>
<tr>
<td></td>
<td>10.73</td>
<td>10.27</td>
<td>21.00</td>
</tr>
<tr>
<td></td>
<td>(2.59)</td>
<td>(2.70)</td>
<td>(5.29)</td>
</tr>
<tr>
<td><strong>Lower-middle managers</strong></td>
<td>78.00</td>
<td>43.00</td>
<td>121.00</td>
</tr>
<tr>
<td></td>
<td>61.83</td>
<td>59.17</td>
<td>121.00</td>
</tr>
<tr>
<td></td>
<td>(4.23)</td>
<td>(4.42)</td>
<td>(8.65)</td>
</tr>
<tr>
<td><strong>Upper-middle managers</strong></td>
<td>15.00</td>
<td>38.00</td>
<td>53.00</td>
</tr>
<tr>
<td></td>
<td>27.08</td>
<td>25.92</td>
<td>53.00</td>
</tr>
<tr>
<td></td>
<td>(5.39)</td>
<td>(5.63)</td>
<td>(11.03)</td>
</tr>
<tr>
<td><strong>Top managers</strong></td>
<td>7.00</td>
<td>25.00</td>
<td>32.00</td>
</tr>
<tr>
<td></td>
<td>16.35</td>
<td>15.65</td>
<td>32.00</td>
</tr>
<tr>
<td></td>
<td>(5.35)</td>
<td>(5.59)</td>
<td>(10.94)</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>116.00</td>
<td>111.00</td>
<td>227.00</td>
</tr>
<tr>
<td></td>
<td>(17.55)</td>
<td>(18.35)</td>
<td>(35.90)</td>
</tr>
</tbody>
</table>

Total chi-square = 35.90 with 3 degrees of freedom

Probability of chi-square = 0.0001

**Source:** Primary
to the upper and lower quartiles of dogmatism scores as related to organizational level. The greatest contribution to the overall chi-square came from the upper-middle manager group who were overrepresented in the open-minded category. Top managers represent the next largest contribution to total chi-square and were also overrepresented in the open-minded category. First-line managers and lower-middle managers were underrepresented in the open-minded category.

In summary, Null Hypothesis nine which predicted no significant relationship would be found between dogmatism and organizational level, was rejected employing the full range of dogmatism scores and the upper and lower quartiles. The results of the analysis depicted an inverse relationship between dogmatism and organizational level or a positive relation between open-mindedness and organizational level. For this sample, upper-middle and top managers were significantly more open-minded on the average than were first-line and lower-middle managers.

**Results for the Line-Staff Classification Variable**

In order to test Null Hypothesis ten that there will be no difference in dogmatism scores based on line versus staff designations, an adjusted F ratio was calculated by the analysis of covariance technique. The F ratio of .94 found in Table 21 failed to reach the .05 level of significance and thereby called for the acceptance of Null Hypothesis ten. The mean dogmatism scores for the line versus staff classification are presented in Table 22.
TABLE 21

ANALYSIS OF COVARIANCE FOR DOGMATISM VARIABLE BY STAFF VERSUS LINE FUNCTIONS

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among</td>
<td>1</td>
<td>199.92</td>
<td>.94</td>
</tr>
<tr>
<td>Within</td>
<td>423</td>
<td>211.97</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>424</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

F value nonsignificant.

Source: Primary
TABLE 22

MEAN SCORES ON DOGMATISM BY STAFF VERSUS LINE FUNCTIONS

<table>
<thead>
<tr>
<th></th>
<th>Staff</th>
<th>Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Means</td>
<td>93.91</td>
<td>92.86</td>
</tr>
</tbody>
</table>

Source: Primary
A chi-square analysis was performed comparing the number of line and staff managers classified by closed-minded and open-minded in the present sample. Note once again that the observed frequencies are the top figures in each cell, the expected frequencies are the middle figures in each cell, and the bottom figure is the cell chi-square of the cells' contribution to the total chi-square.

As can be seen from Table 23, the total chi-square of .25 did not reach the .05 level of significance. Accordingly, Null Hypothesis ten was accepted. Dogmatism was found to be independent of line versus staff designations.

Results for the Function Variable

Null Hypothesis eleven predicted no relationship would be found between dogmatism scores and functional role. Respondents were classified as to primary role played in their respective companies. Functions represented were general management, marketing, production, accounting and finance, engineering and research, personnel and corporate services, and purchasing.

The F ratio calculated by the analysis of covariance method is found in Table 24. The value of 1.42 failed to reach significance at the .05 level and called for an acceptance of Null Hypothesis eleven for the full range of dogmatism scores. The mean dogmatism scores can be found in Table 25. Adjusted means were not shown as the F ratio failed to reach significance.

Chi-square analysis was performed to test for independence of dogmatism scores (upper and lower quartiles) from functional role
<table>
<thead>
<tr>
<th></th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25.00</td>
<td>27.00</td>
<td>52.00</td>
</tr>
<tr>
<td>Staff</td>
<td>26.57</td>
<td>25.43</td>
<td>52.00</td>
</tr>
<tr>
<td></td>
<td>(0.09)</td>
<td>(0.10)</td>
<td>(0.19)</td>
</tr>
<tr>
<td></td>
<td>91.00</td>
<td>84.00</td>
<td>175.00</td>
</tr>
<tr>
<td>Line</td>
<td>89.43</td>
<td>85.57</td>
<td>175.00</td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td>227.00</td>
</tr>
<tr>
<td></td>
<td>116.00</td>
<td>111.00</td>
<td>227.00</td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td>(0.13)</td>
<td>(0.25)</td>
</tr>
</tbody>
</table>

Total chi-square = 0.25 with 1 degree of freedom

Probability of chi-square = 0.6252

Source: Primary
TABLE 24

ANALYSIS OF COVARIANCE FOR DOGMATISM VARIABLE BY FUNCTION

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Among</td>
<td>6</td>
<td>300.99</td>
<td>1.42</td>
</tr>
<tr>
<td>Within</td>
<td>423</td>
<td>211.97</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>429</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

F value nonsignificant.

Source: Primary
### TABLE 25

**MEAN SCORES ON DOGMATISM BY FUNCTION**

<table>
<thead>
<tr>
<th>Function</th>
<th>N</th>
<th>Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Management</td>
<td>46</td>
<td>100.37</td>
</tr>
<tr>
<td>Marketing</td>
<td>221</td>
<td>91.15</td>
</tr>
<tr>
<td>Production</td>
<td>87</td>
<td>92.68</td>
</tr>
<tr>
<td>Accounting &amp; Finance</td>
<td>30</td>
<td>90.43</td>
</tr>
<tr>
<td>Engineering &amp; Research</td>
<td>20</td>
<td>96.85</td>
</tr>
<tr>
<td>Personnel &amp; Corporate Service</td>
<td>23</td>
<td>98.22</td>
</tr>
<tr>
<td>Purchasing</td>
<td>18</td>
<td>93.78</td>
</tr>
</tbody>
</table>

*Source: Primary*
as classified above. Table 26 presents the results of this analysis. A total chi-square of 15.34 was derived which is significant at the .05 level. The major contribution to the total chi-square came from the general management category who were overrepresented in the open-minded classification. Also, those respondents in the marketing category were underrepresented in the open-minded category. The other functional areas appear to be represented in both categories as expected. While the significant chi-square would ordinarily call for the acceptance of the alternative hypothesis in this case, a note of caution made earlier should be restated. There is no correction made for interaction effects in chi-square analysis. Thus, any resulting relationships are necessarily suspect. This case is an excellent example, for the largest contribution to the overall chi-square comes from the general management classification, which is made up of respondents for the most part from the upper-middle and top levels of management who have attained higher levels of education than the first-line and middle managers. Therefore, neither organizational level or educational level were accounted for, but each has a determined relationship with dogmatism. Both variables relate positively to open-mindedness. It should be apparent that the overrepresentation of general managers in the open-minded category may very likely have been due to higher average levels of education and higher attained organizational level than those of the other functional designations, and have no relationship whatsoever to functional role. As stated earlier, this caution applied to all
TABLE 26

CHI-SQUARE TABLE FOR FUNCTION VERSUS DOGMATISM

<table>
<thead>
<tr>
<th></th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>General management</td>
<td>4.00</td>
<td>18.00</td>
<td>22.00</td>
</tr>
<tr>
<td></td>
<td>11.24</td>
<td>10.76</td>
<td>22.00</td>
</tr>
<tr>
<td></td>
<td>(4.67)</td>
<td>(4.88)</td>
<td>(9.54)</td>
</tr>
<tr>
<td>Marketing and related functions</td>
<td>65.00</td>
<td>45.00</td>
<td>110.00</td>
</tr>
<tr>
<td></td>
<td>56.21</td>
<td>53.79</td>
<td>110.00</td>
</tr>
<tr>
<td></td>
<td>(1.37)</td>
<td>(1.44)</td>
<td>(2.81)</td>
</tr>
<tr>
<td>Production and related functions</td>
<td>22.00</td>
<td>24.00</td>
<td>46.00</td>
</tr>
<tr>
<td></td>
<td>23.51</td>
<td>22.49</td>
<td>46.00</td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>(0.10)</td>
<td>(0.20)</td>
</tr>
<tr>
<td>Accounting and Finance</td>
<td>12.00</td>
<td>7.00</td>
<td>19.00</td>
</tr>
<tr>
<td></td>
<td>9.71</td>
<td>9.29</td>
<td>19.00</td>
</tr>
<tr>
<td></td>
<td>(0.54)</td>
<td>(0.56)</td>
<td>(1.11)</td>
</tr>
<tr>
<td>Engineering and Research</td>
<td>4.00</td>
<td>6.00</td>
<td>10.00</td>
</tr>
<tr>
<td></td>
<td>5.11</td>
<td>4.89</td>
<td>10.00</td>
</tr>
<tr>
<td></td>
<td>(0.24)</td>
<td>(0.25)</td>
<td>(0.49)</td>
</tr>
<tr>
<td>Personnel and corporate service</td>
<td>3.00</td>
<td>6.00</td>
<td>9.00</td>
</tr>
<tr>
<td></td>
<td>4.60</td>
<td>4.40</td>
<td>9.00</td>
</tr>
<tr>
<td></td>
<td>(0.56)</td>
<td>(0.58)</td>
<td>(1.14)</td>
</tr>
<tr>
<td>Purchasing</td>
<td>6.00</td>
<td>5.00</td>
<td>11.00</td>
</tr>
<tr>
<td></td>
<td>5.62</td>
<td>5.38</td>
<td>11.00</td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.05)</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>116.00</strong></td>
<td><strong>111.00</strong></td>
<td><strong>227.00</strong></td>
</tr>
<tr>
<td></td>
<td><strong>(7.50)</strong></td>
<td><strong>(7.84)</strong></td>
<td><strong>(15.34)</strong></td>
</tr>
</tbody>
</table>

Total chi-square = 15.34 with 6 degrees of freedom

Probability of chi-square = 0.0178

Source: Primary
cases where hypotheses were tested using chi-square analysis. This is an apparent weakness of this nonparametric technique when employed in methodologies which do not control for interaction effects experimentally.

As the exact effects of other critical variables are not known in this analysis, Alternative Hypothesis eleven was offered with extreme tentativeness as it applies to the upper and lower quartiles of dogmatism scores as they relate to functional role.

Results for the Span of Control Variable

Null Hypothesis twelve predicted that there would be no relationship between dogmatism scores and span of control. As span of control was left initially as a continuous variable, a correlation coefficient was calculated to determine if a significant association existed between it and dogmatism. A .05 correlation between dogmatism and span of control, as presented in Table 2, was not significant. Therefore, Null Hypothesis twelve was accepted for the full range of dogmatism scores.

The span of control variable was grouped as shown in Table 27 and the chi-square test for independence was made to compare closed and open-minded respondents based on their span of control. The total chi-square of 1.04 resulting from this analysis did not reach the .05 level of significance. Thus, Null Hypothesis twelve was accepted as it pertains to independence of dogmatism and span of control. No dependence is evident.
### TABLE 27

**CHI-SQUARE TABLE FOR SPAN OF CONTROL VERSUS DOGMATISM**

<table>
<thead>
<tr>
<th>Number of Subordinates</th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1-3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20.00</td>
<td>18.00</td>
<td>38.00</td>
</tr>
<tr>
<td></td>
<td>19.42 (0.02)</td>
<td>18.58 (0.02)</td>
<td>38.00</td>
</tr>
<tr>
<td><strong>4-9</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50.00</td>
<td>42.00</td>
<td>92.00</td>
</tr>
<tr>
<td></td>
<td>47.01 (0.19)</td>
<td>44.99 (0.20)</td>
<td>92.00</td>
</tr>
<tr>
<td><strong>10-15</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18.00</td>
<td>19.00</td>
<td>37.00</td>
</tr>
<tr>
<td></td>
<td>18.91 (0.04)</td>
<td>18.09 (0.05)</td>
<td>37.00</td>
</tr>
<tr>
<td><strong>16-25</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.00</td>
<td>10.00</td>
<td>18.00</td>
</tr>
<tr>
<td></td>
<td>9.20 (0.16)</td>
<td>8.80 (0.16)</td>
<td>18.00</td>
</tr>
<tr>
<td><strong>26 and over</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20.00</td>
<td>22.00</td>
<td>42.00</td>
</tr>
<tr>
<td></td>
<td>21.46 (0.10)</td>
<td>20.54 (0.10)</td>
<td>42.00</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>116.00</td>
<td>111.00</td>
<td>227.00</td>
</tr>
<tr>
<td></td>
<td>116.00 (0.51)</td>
<td>111.00 (0.53)</td>
<td>227.00</td>
</tr>
</tbody>
</table>

Total chi-square = 1.04 with 4 degrees of freedom

Probability of chi-square = 0.9037

Source: Primary
Findings for Personality Structure (Dogmatism) and Attitudes Toward Subordinates and Role Perceptions

Hypotheses thirteen through fifteen deal with relationships between dogmatism scores and scores on two measures which are purported to identify the respondents' attitudes toward their subordinates and the respondents' perception of how they should perform their managerial role.

Results for the Attitudes Toward Subordinates Variable

Null Hypothesis thirteen predicted that there would be no relationship between dogmatism scores and respondents' attitudes toward their subordinates. The items used to measure this variable were similar in nature to the propositions of McGregor's Theory X and Theory Y and were described in Chapter IV.

To test Null Hypothesis thirteen, the scores on this attitude scale were initially left as continuous and subjected to a correlation analysis test for association.

A significant correlation of .30 between dogmatism and attitudes was found at the .01 level of significance. This correlation is presented in Table 2. Since increasing dogmatism scores represent increasing open-mindedness, and increasing attitudes scores represent movement toward Theory Y attitudes, the positive .30 correlation between the two sets of scores indicates that as dogmatism scores moved toward open-mindedness, attitudes scores moved toward Theory Y. The alternative hypothesis, predicting that there is a
relationship in this sample between dogmatism scores and attitudes toward subordinates, is offered.

To learn something more about the association found in the correlation analysis, a chi-square analysis was made to test for independence of dogmatism and Theory X versus Theory Y attitudes. Attitudes toward subordinates were classified as Theory X attitudes, moderate Theory X attitudes, moderate Theory Y attitudes, and Theory Y attitudes. These groups were then compared for the number of respondents falling into the closed-minded and open-minded categories.

Table 28 contains a total chi-square of 37.83 which was significant at the .01 level. The alternative hypothesis of a significant relationship is offered. As can be seen from Table 28 the largest contribution to the total chi-square comes from the moderate Theory X group which is underrepresented in the open-minded category. The next largest contribution came from the Theory Y group which was overrepresented in the open-minded category. Moderate Theory Y respondents were also overrepresented in the open-minded category. Theory X respondents appear to have fallen into each category as expected statistically.

In summary, for this sample of managers there is evidence that open-minded respondents were more likely to hold Theory Y attitudes toward subordinates and that more closed-minded individuals were more likely to hold Theory X attitudes toward subordinates.

As this researcher was surprised that the relationship between open-mindedness and Theory Y attitudes was not stronger than
### TABLE 28

**CHI-SQUARE TABLE FOR ATTITUDES TOWARD SUBORDINATES VERSUS DOGMATISM**

<table>
<thead>
<tr>
<th></th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theory X</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>attitudes</td>
<td>6.00</td>
<td>5.00</td>
<td>11.00</td>
</tr>
<tr>
<td></td>
<td>5.62 (0.03)</td>
<td>5.38 (0.03)</td>
<td>11.00</td>
</tr>
<tr>
<td><strong>Moderate</strong></td>
<td>61.00</td>
<td>20.00</td>
<td>81.00</td>
</tr>
<tr>
<td>Theory X</td>
<td>41.39 (9.29)</td>
<td>39.61 (9.71)</td>
<td>81.00</td>
</tr>
<tr>
<td>attitudes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Moderate</strong></td>
<td>43.00</td>
<td>57.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Theory Y</td>
<td>51.10 (1.28)</td>
<td>48.90 (1.34)</td>
<td>100.00</td>
</tr>
<tr>
<td>attitudes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Theory Y</strong></td>
<td>6.00</td>
<td>29.00</td>
<td>35.00</td>
</tr>
<tr>
<td>attitudes</td>
<td>17.89 (7.90)</td>
<td>17.11 (8.25)</td>
<td>35.00</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>116.00</td>
<td>111.00</td>
<td>227.00</td>
</tr>
<tr>
<td></td>
<td>116.00</td>
<td>111.00</td>
<td>227.00</td>
</tr>
<tr>
<td></td>
<td>(18.50)</td>
<td>(19.33)</td>
<td>(37.83)</td>
</tr>
</tbody>
</table>

Total chi-square = 37.83 with 3 degrees of freedom

Probability of chi-square = 0.0001

Source: Primary
results indicated, a test of internal consistency was made using Cronbach's Alpha.\textsuperscript{164} This technique is an indication on a 0-1 scale of how consistent the managers were in responding to the items making up the Theory X versus Theory Y Likert-type scale. For this sample an alpha of .31 was found. This low consistency coefficient was interpreted as meaning that respondents were not particularly consistent in their responses to the eight items in this scale. Further, that the resulting relationship was conservative--to say the least--and needs to be examined after scale analysis is performed. More is said of this problem in Chapter VI under implications of the relationship between dogmatism and attitudes toward subordinates.

Results for the Consideration Variable

Null Hypothesis fourteen predicted no relationship between dogmatism and the perceived need of the managers to act in a considerate manner. The fifteen item scale used to measure the perception of this need was described in Chapter IV. A test of internal consistency resulted in a coefficient of .66.

To test the hypothesis in question, the scores on consideration were initially left as continuous. A correlation of -.03, as presented in Table 2, was found between dogmatism and consideration. The correlation was not significant at the .05 level. Therefore, Null Hypothesis fourteen was accepted for the full range of dogmatism scores.

\textsuperscript{164}Stanley and Hopkins, \textit{Educational and Psychological Measurement}, p. 126.
To further test this null hypothesis, a chi-square test for independence was made comparing the number of managers classified as low considerates, middle considerates, and high considerates found in the categories of closed-minded and open-minded. The chi-square of 3.30 found in Table 29 failed to reach the .05 level of significance. Null Hypothesis fourteen was accepted as it pertains to independence of dogmatism scores and perceived need to act in a considerate manner.

Results for the Initiating Structure Variable

Null Hypothesis fifteen predicted no relationship would be found between dogmatism scores and the managers' perceived need to initiate structure or order relationships affecting their managerial role in the work place. The nature of the fifteen item Likert-type scale was described in Chapter IV. Low scores represent little perceived need to initiate structure, while high scores represent greater need. A test for internal consistency resulted in a coefficient of .72.

A correlation coefficient for dogmatism and initiating structure was calculated and is presented in Table 2. The correlation of -.19 failed to reach the .05 level of significance. Null Hypothesis fifteen was accepted for the full range of dogmatism scores.

Chi-square analysis was also performed to test for independence of dogmatism scores at the upper and lower quartiles from perceived need for initiating structure. To facilitate this analysis,
### TABLE 29

**CHI-SQUARE TABLE FOR CONSIDERATION VERSUS DOGMATISM**

<table>
<thead>
<tr>
<th></th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low</strong></td>
<td>7.00</td>
<td>14.00</td>
<td>21.00</td>
</tr>
<tr>
<td>Consideration</td>
<td>10.73</td>
<td>10.27</td>
<td>21.00</td>
</tr>
<tr>
<td></td>
<td>(1.30)</td>
<td>(1.36)</td>
<td>(2.65)</td>
</tr>
<tr>
<td><strong>Middle</strong></td>
<td>64.00</td>
<td>61.00</td>
<td>125.00</td>
</tr>
<tr>
<td>Consideration</td>
<td>63.88</td>
<td>61.12</td>
<td>125.00</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
<tr>
<td><strong>High</strong></td>
<td>45.00</td>
<td>36.00</td>
<td>81.00</td>
</tr>
<tr>
<td>Consideration</td>
<td>41.39</td>
<td>39.61</td>
<td>81.00</td>
</tr>
<tr>
<td></td>
<td>(0.31)</td>
<td>(0.33)</td>
<td>(0.64)</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>116.00</td>
<td>111.00</td>
<td>227.00</td>
</tr>
</tbody>
</table>

Total chi-square = 3.30 with 2 degrees of freedom

Probability of chi-square = 0.1902

Source: Primary
the initiating structure variable was grouped into scores representing low structure, middle structure, and high structure.

From Table 30 it can be seen that the total chi-square of 16.81 was significant at the .01 level. The results indicate that dogmatism is not independent of the perceived need of managers in this sample to order relationships. The largest contribution to the total chi-square came from the low structure group which was overrepresented in the open-minded category. The next largest contribution comes from the high structure group which was underrepresented in the open-minded category. The middle structure category was also overrepresented in the open-minded category. These results indicate that the open-minded respondents perceived significantly less need to initiate structure than did their closed-minded counterparts. Alternative Hypothesis fifteen was offered as it relates to the upper and lower quartiles of dogmatism scores. Dogmatism was not independent of perceived need to initiate structure.

Table 31 presents the results of a chi-square analysis which was performed to test for independence of dogmatism and selected combinations of consideration and structure. The chi-square found in Table 31 of 5.27 failed to reach the .05 level of significance. It was concluded from these results that dogmatism scores in their extremes were independent of the perceived need for the various combinations of consideration and initiating structure as shown in Table 31.
### TABLE 30

**CHI-SQUARE TABLE FOR STRUCTURE VERSUS DOGMATISM**

<table>
<thead>
<tr>
<th></th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low</strong></td>
<td>4.00</td>
<td>16.00</td>
<td>20.00</td>
</tr>
<tr>
<td>Structure</td>
<td>10.22</td>
<td>9.78</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>(3.79)</td>
<td>(3.96)</td>
<td>(7.74)</td>
</tr>
<tr>
<td><strong>Middle</strong></td>
<td>40.00</td>
<td>53.00</td>
<td>93.00</td>
</tr>
<tr>
<td>Structure</td>
<td>47.52</td>
<td>45.48</td>
<td>93.00</td>
</tr>
<tr>
<td></td>
<td>(1.19)</td>
<td>(1.24)</td>
<td>(2.44)</td>
</tr>
<tr>
<td><strong>High</strong></td>
<td>72.00</td>
<td>42.00</td>
<td>114.00</td>
</tr>
<tr>
<td>Structure</td>
<td>58.26</td>
<td>55.74</td>
<td>114.00</td>
</tr>
<tr>
<td></td>
<td>(3.24)</td>
<td>(3.39)</td>
<td>(6.63)</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>116.00</td>
<td>111.00</td>
<td>227.00</td>
</tr>
<tr>
<td></td>
<td>(8.22)</td>
<td>(8.59)</td>
<td>(16.81)</td>
</tr>
</tbody>
</table>

Total chi-square = 16.81 with 2 degrees of freedom

Probability of chi-square = 0.0003

Source: Primary
<table>
<thead>
<tr>
<th></th>
<th>Closed-Minded</th>
<th>Open-Minded</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low consideration</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High structure</td>
<td>22.00</td>
<td>25.00</td>
<td>47.00</td>
</tr>
<tr>
<td></td>
<td>24.02</td>
<td>22.98</td>
<td>47.00</td>
</tr>
<tr>
<td></td>
<td>(0.17)</td>
<td>(0.18)</td>
<td>(0.35)</td>
</tr>
<tr>
<td><strong>High consideration</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low structure</td>
<td>4.00</td>
<td>8.00</td>
<td>12.00</td>
</tr>
<tr>
<td></td>
<td>6.13</td>
<td>5.87</td>
<td>12.00</td>
</tr>
<tr>
<td></td>
<td>(0.74)</td>
<td>(0.77)</td>
<td>(1.52)</td>
</tr>
<tr>
<td><strong>Low consideration</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low structure</td>
<td>8.00</td>
<td>14.00</td>
<td>22.00</td>
</tr>
<tr>
<td></td>
<td>11.24</td>
<td>10.76</td>
<td>22.00</td>
</tr>
<tr>
<td></td>
<td>(0.94)</td>
<td>(0.98)</td>
<td>(1.91)</td>
</tr>
<tr>
<td><strong>High consideration</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High structure</td>
<td>82.00</td>
<td>64.00</td>
<td>146.00</td>
</tr>
<tr>
<td></td>
<td>74.61</td>
<td>71.39</td>
<td>146.00</td>
</tr>
<tr>
<td></td>
<td>(0.73)</td>
<td>(0.77)</td>
<td>(1.50)</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>116.00</td>
<td>111.00</td>
<td>227.00</td>
</tr>
<tr>
<td></td>
<td>116.00</td>
<td>111.00</td>
<td>227.00</td>
</tr>
<tr>
<td></td>
<td>(2.58)</td>
<td>(2.69)</td>
<td>(5.27)</td>
</tr>
</tbody>
</table>

Total chi-square = 5.27 with 3 degrees of freedom

Probability of chi-square = 0.1510

Source: Primary
A significant correlation of .32 was found between consideration and initiating structure and may partially account for the lack of relationships between the two dimensions and dogmatism analyzed in the full range of scores. This unanticipated correlation is discussed further in Chapter VI.

**Summary of Results**

**Null Hypothesis 1:** Dogmatism scores will not be related to age.

**Results:** Null Hypothesis one was accepted when employing the full range of dogmatism scores. Age was not found to be significantly associated with dogmatism. However, when the closed-minded group was compared to the open-minded group, a significant dependency was found between age and dogmatism. It appears that the under 30 age group represents more closed-minded personalities than expected and the 41-50 age group represents slightly fewer closed-minded personalities than expected statistically.

**Null Hypothesis 2:** Dogmatism scores will not be related to level of education.

**Results:** A significant relationship was found between dogmatism and educational level. Generally, the relationship is an inverse one with dogmatism decreasing with education, particularly as college education reached the advanced degree stage. The null hypothesis was rejected for the full range of dogmatism scores and for the upper and lower quartile scores.

**Null Hypothesis 3:** There will be no difference in dogmatism scores based on collegiate major.

**Results:** Neither approach to the analysis of dogmatism scores (full distribution or quartile) and collegiate major resulted in significant results. For this sample there was no significant
difference in dogmatism scores between the college majors of business and economics, agriculture, accounting, engineering and an all other category.

Null Hypothesis 4: There will be no difference in dogmatism scores based on order of birth categorized as only borns, first borns, and later borns.

Results: A relationship between dogmatism scores and order of birth was found to be significant at the .10 level or less. First borns were significantly more open-minded than later borns. As expected, when the chi-square test for independence was applied to the upper and lower quartiles of dogmatism scores as compared to the categories of only borns, first borns, and later borns, a significant dependence was found. Only borns were found equally represented in both groups as expected, however, the first borns were overrepresented in the open-minded category, while the later borns were underrepresented in the open-minded category. Thus, for this sample, first borns were found to be more open-minded than only borns and later borns.

Derived Hypothesis 4a: Dogmatism scores will be related to family size.

Results: Family size was associated with dogmatism when scores were grouped into upper and lower quartiles. Those respondents from families of four and five persons were overrepresented in the open-minded group while those from the family size of six persons and over were underrepresented in the open-minded group. Those respondents with no siblings were represented about equally in both categories.

Null Hypothesis 5: Dogmatism scores will not be related to number of years in present position.

Results: Number of years in present position was found to be independent of dogmatism for the full range of dogmatism scores and for the classification of closed-minded and open-minded. Null Hypothesis five was accepted.
Null Hypothesis 6: Dogmatism scores will not be related to years with present company.

Results: Null Hypothesis six was accepted for the full range of dogmatism scores. A significant chi-square of 13.72 led to the acceptance of Alternative Hypothesis six as it applied to the upper and lower quartiles of dogmatism scores. Those respondents with eleven or more years with their present companies appear to be overrepresented in the open-minded group, while those with ten years or less with their respective companies were underrepresented in the open-minded group.

Null Hypothesis 7: Dogmatism scores will not be related to years as a manager.

Results: Null Hypothesis seven was accepted as no significant relationships were found between dogmatism and the number of years as a manager.

Null Hypothesis 8: Dogmatism will not be related to years of full-time work experience.

Results: Null Hypothesis eight, which predicted no relationships would be found between the two variables, was accepted for the full range of scores. When years of full-time work were grouped and compared to the upper and lower quartiles of dogmatism scores, a nonsignificant chi-square was derived. Null Hypothesis eight was accepted as indicating independence of dogmatism and years of full-time work experience.

Null Hypothesis 9: There will be no difference in dogmatism scores based on organizational level.

Results: Null Hypothesis nine, which predicted no significant relationship would be found between dogmatism and organizational level, was rejected employing the full range of dogmatism scores and the upper and lower quartiles. The results of the analysis depicted an inverse relationship between dogmatism and organizational level or a positive relation between open-mindedness and organizational level. For this sample, upper-middle
and top managers were significantly more open-minded on the average than were first-line and lower-middle managers.

**Null Hypothesis 10:** There will be no difference in dogmatism scores based on line/staff roles.

**Results:** Dogmatism was found to be independent of line/staff designations for the full range of dogmatism scores and the upper and lower quartile scores.

**Null Hypothesis 11:** There will be no difference in dogmatism scores based on functional role.

**Results:** Null Hypothesis eleven was accepted for the full range of dogmatism scores. No significant difference was found between mean dogmatism scores of general managers, marketing managers, production managers, accounting and financial managers, engineering and research managers, personnel and corporate services managers and purchasing managers. However, a significant dependency was found when the open-minded and closed-minded groups were compared. Those in the "general management" category were over-represented in the open-minded category. The alternative hypothesis of a significant relationship was offered with a note as to the tentativeness of the results due to possible interaction effects.

**Null Hypothesis 12:** Dogmatism scores will not be related to span of control.

**Results:** No dependence was found for dogmatism based on span of control for either the full range of dogmatism scores or the upper and lower quartile scores.

**Null Hypothesis 13:** Dogmatism scores will not be related to attitudes toward subordinates.
Results: Null Hypothesis thirteen was rejected due to a resulting significant positive correlation between open-mindedness and Theory Y attitudes toward subordinates. Also, a significant chi-square was found which indicated that dogmatism was not independent of attitudes toward subordinates. The largest contribution to the total chi-square came from the moderate Theory X group which is underrepresented in the open-minded category. The next largest contribution came from the Theory Y group which was overrepresented in the open-minded category. Moderate Theory Y respondents were also overrepresented in the open-minded category. Theory X respondents appear to have fallen into each category as expected statistically. For this sample of managers there is evidence that open-minded respondents were more likely to hold Theory Y attitudes toward subordinates and that more closed-minded individuals were more likely to hold Theory X attitudes toward subordinates.

Null Hypothesis 14: Dogmatism will not be related to consideration.
Results: Null Hypothesis fourteen was accepted as it pertains to both approaches (full range and quartile) to the analysis of dogmatism scores. There was no evidence that a significant relationship existed between dogmatism and the respondent's perceived need to act in a considerate manner.

Null Hypothesis 15: Dogmatism scores will not be related to initiating structure.
Results: Null Hypothesis fifteen was accepted for the full range of dogmatism scores as they relate to the perceived need of respondents to initiate structure or order relationships in their role. As a significant chi-square was derived from the analysis of the number of respondents in the categories of low structure, middle structure, and high structure who fell into the categories of open-minded or closed-minded, Alternative Hypothesis fifteen was offered. The largest contribution to the total chi-square came from the low structure group which was overrepresented in the open-minded category. The next
largest contribution comes from the high structure group which was underrepresented in the open-minded category. The middle structure category was also overrepresented in the open-minded category. These results indicate that the open-minded respondents perceived significantly less need to initiate structure than did their closed-minded counterparts.

Derived Null Hypothesis 15a: 

Dogmatism will be independent of the classifications of low consideration-high structure, low consideration-low structure, high consideration-low structure, and high consideration-high structure.

Results: 

No significant dependence was found between dogmatism and the classifications of consideration and structure as defined in Derived Null Hypothesis fifteen a. Thus, the null hypothesis is accepted for the upper and lower quartiles of dogmatism scores.
CHAPTER VI

ANALYSIS AND IMPLICATIONS OF RESULTS FOR FURTHER RESEARCH AND MANAGERIAL ACTION

In this chapter, the findings presented in the previous chapter are discussed in terms of possible meanings for further research and management consideration. First, a restatement is made of some of the propositions concerning the manager-leader as derived from the literature reviewed in Chapter II. These propositions serve as indications of the need to be concerned for managerial thinking in terms of cognition and personality and their critical interactions. Secondly, a brief review is made of the correlates of the closed-minded personality which were presented in Chapter III and which point to a potentially useful construct in assessment of the managerial mind.

The significant findings of this study pertaining to dogmatism and its relationships to the personal background variables, the organizational variables, and the attitudinal variables, are discussed first, followed by those findings which were not statistically significant.
Propositions Concerning Managerial Thinking and Behaving

From the small amount of agreement which can be found in the literature dealing with managerial behavior, and in particular the leadership process, the following tentative statements of dimensions of personality and cognition which cause or allow the manager-leader to be effective were set down in Chapter II.

Proposition A

The effective manager-leader is capable of diagnosing relevant characteristics of his own personality, relevant characteristics of subordinates, peers, and superiors, and relevant characteristics of the situation in which he operates, and is able to adjust his style of behavior in response to those relevant cues or inputs.

Correlary A-1

Some relevant characteristics of the manager-leader are his:
(1) skills—supervisory, technical, and diagnostic; (2) needs and goals; (3) motives; (4) attitudes toward subordinates; (5) style inclinations; (6) tolerance for ambiguity; (7) perceptual ability; and perhaps other factors of importance.

Correlary A-2

Some relevant subordinate characteristics are their:
(1) needs and goals; (2) attitudes; (3) motives and values; (4) skills; and (5) tolerance for ambiguity.
Correlary A-3

Some relevant characteristics of the situation are: (1) type of organization; (2) size of organization and work group; (3) physical setting; (4) level in the organization; (5) organizational structure or role expectations; (6) group syntality; (7) nature of the task; (8) time factor; (9) organizational goals and strategy; and (10) organizational climate.

Proposition B

Individual manager-leaders differ in their ability to take in relevant, undistorted cues from their environment and in their ability to adapt accordingly.

Correlary B-1

Individuals differ in their perceptual capacities which are defined as their potential for responding to a variety of external stimuli. Thus, they react differently to the same set of cues.

Correlary B-2

Individual manager-leaders differ in their perceptual flexibility which is defined as their range of perceptions which provides a basis for influence attempts.

Correlary B-3

Manager-leaders differ in their ability to sort out and act on relevant versus irrelevant perceptions or cues. A correlate of
leadership effectiveness may be the leader's ability to sort out and discard irrelevant stimuli.

Correlary B-4

Manager-leaders differ in their perceptual sensitivity which is defined as accuracy of perception or matching perceptions with criterion of reality (also, diagnostic skill and empathy).

Correlary B-5

Individuals differ in their capacities for behavior or action capacities. Also related is action flexibility. Both flexibility and capacity are related to the leader's personality structure, experience, and training. Action flexibility is related to what William Reddin terms "style flexibility," which is defined as a measure of the extent to which a manager changes his style appropriately to a changing situation. Reddin points out the importance of this attribute and suggests that "style flexibility" is a parallel to the personality characteristic "open-mindedness." 165

It was the personality types, "open-minded" versus "closed-minded" referred to by Reddin, which are explored in this study. The assumption was made that perceptual capacity, flexibility and sensitivity, and action capacity and flexibility are critical factors in effective managerial behavior. Therefore, it would be useful to explore for relationships between scores on a measure which purports

165Reddin, Managerial Effectiveness, p. 52.
to correlate with the above dimensions, and personal, organizational, and attitudinal variables affecting the manager-leader.

**Significant Findings Related to Personality Structure (Dogmatism)--Past Research**

The research accomplished to date on the open versus closed personality has resulted in characterizations of the types which appear to have implications for the analysis of managerial thinking and behaving. The correlates of personality as stated in Chapter III pertain to the relatively closed-minded or the dogmatic personality. Briefly, the dogmatism personality:

1. May be an authoritarian of the "right" or the "left."
2. Is derived, for the most part, from parental attitudes and child rearing practices.
3. Tends to uncritically accept authority and authority figures.
4. Has difficulty in distinguishing between the source of a message and the message itself.
5. Will tend to reject information which is contrary to closely held beliefs.
6. Tends to be psychologically immature, defensive, stereotyped in his thinking, restrained and conservative.
7. Tends to have a poor self-concept.
8. Has a difficult time relating to others.
9. Tends to be inflexible and resists change.
10. Tends to be future oriented and tends to deny the importance of the present.

11. Has difficulty in making a synthesis, if that synthesis will necessitate a change in his total belief system.

12. Is deficient in critical thinking.

13. Demonstrates less problem solving ability than does his open-minded counterpart.

14. Must be approached in a learning situation differently than the open-minded personality.

15. Has a likely chance of being as intelligent as the open-minded personality, but will probably have achieved a lower level of education.

Significant Findings Relating to Personality Structure (Dogmatism)—This Research

The purpose of this exploratory study was to learn as much as possible about the "open" versus "closed" mind in management as is possible in a survey methodology. Specifically the following questions were asked:

1. What relationship exists between personality structure and the variables of age, education, collegiate major, number of years in present position, number of years with present company, years as a manager, years of full-time working experience, and ordinal position in the family?

2. How do scores on the personality structure dimension of relatively closed versus relatively open-mindedness relate to
functional role, span of control, line versus staff role, and organizational level?

3. Is there a relationship between the manager's personality structure, his attitudes toward subordinates, and how he perceives his managerial role?

The results as presented in the preceding chapter provide at least partial answers to these questions. As explained earlier, the dogmatism scores were analyzed employing the full range of scores and the upper and lower quartiles of scores. In both cases the items making up the dogmatism scale were scored in reverse so that high scores represented the relatively open-minded individual, and low scores represented the relatively closed-minded individual. In the following section those relationships which proved to be significant in, at least, one of the two methodologies employed are presented.

**Personality Structure and Personal Background Variables--Significant Relationships**

The question was asked: What relationship exists between personality structure (dogmatism), and respondents' age, educational level, collegiate major, number of years in present position, number of years with present company, years as a manager, years of full-time work experience, and ordinal position in the family? In this section, the significant relationships between dogmatism and the above mentioned personal background variables are discussed. The nonsignificant relationships are treated in a separate section in this chapter.
Dogmatism and Age

Findings. For the full range of dogmatism scores a correlation of .00 was found when tested against age. Age was said not to be related to dogmatism over the entire distribution of scores.

When the dogmatism scores were analyzed in the upper and lower quartiles or open-minded and closed-minded categories, a significant dependence was found between dogmatism and age. Managers under thirty years of age were overrepresented in the closed-minded group while managers in age category of 41-50 were slightly underrepresented in the closed-minded group.

Implications for research. This researcher suggests that age be retained as a variable to be considered when the dogmatism variable is under investigation, particularly when extreme scores are being employed as group boundaries. If possible, age should be controlled for experimentally.

Implications for managerial consideration. While the results produced in this study concerning age as it related to dogmatism are not entirely conclusive, a recommendation appears to be in order for managerial consideration.

Since no relationship was found between dogmatism and age for the full distribution of scores, and since the under thirty group was overrepresented in the closed-minded category and the age group 41-50 was underrepresented in that category, the stereotype which suggests that people grow more inflexible in their thinking, or closed-minded, as they grow older is called into question. The
results of this study suggest that not only was this not true for this sample, but that older managers were more likely to be found in the open-minded category than were the younger managers.

It is recommended that the assumption that older managers are necessarily more closed-minded than younger managers is very likely a false assumption and could lead to making costly errors in the hiring, training, promoting, transferring and separation of the "older" manager.

Dogmatism and Education

Findings. Those respondents with a high school education or less were found to be significantly more dogmatic than those with some college, those with a college degree, and those with master's degrees and beyond. An overall inverse relationship between dogmatism and education can be partially supported from the results presented in Table 5. The results of chi-square test for independence of dogmatism and education as presented in Table 6 also supports the general inverse relationship between the two variables. Stated another way, education appears to relate positively with open-mindedness. This result generally agrees with those of studies performed by Lehmann, Marcus, Plant, and others.166

Implications for research. As education and dogmatism were shown to be related in the present study, it is recommended that the education variable be included and controlled for experimentally or statistically in future research involving the personality structure variable.

Also, the time spent in company related education or training should be analyzed for possible relationships with dogmatism.

Ideally, as with all the variables, educational level should be compared to dogmatism scores from a longitudinal perspective. That is, personality structure should be assessed before and after formal education, and again after a number of years of organizational tenure, to determine if significant changes have taken place.

Implications for managerial consideration. Business organizations have placed an ever increasing emphasis on formal education as a requirement for managerial positions at all levels. This emphasis is particularly evident in the value placed on the master's degree in business administration and related fields. With technology and task requirements obsolescing at an increasing rate, it appears that education which provides technical as well as social skill will continue to be of considerable value.

Based on the results of this exploration, it may well be that formal education, particularly advanced education, allows the individual to acquire more than technical and social skills. It is likely that education has some impact on the development of an open mind. From what we have learned from situational leadership research
about the changing role of today's managers, it is becoming clear that the effective manager will not only possess the technical and human skill required for role performance, but over time and with the adoption of new or different roles, will possess the cognitive and personality characteristics which facilitate adaptive behavior.

The dimension of personality structure takes on special meaning in light of continued obsolescence of managerial technology and the ever increasing additions to our knowledge about human behavior in organizations. Since our business managers' formal training takes place early in their careers, it may well be that entry level skill takes on less and less importance over time, while the cognitive and behavioral flexibility which allow the inputting of new technical and human skills take on greater and greater importance.

It is recommended that higher education be given value as a criterion for managerial positions not only for the technical and social skill it aids in developing, but also for its likely effect on personality structure defined early as the openness of the belief system.

**Dogmatism and Birth Order**

**Findings.** A statistical difference in dogmatism scores was found between only born, first born and later born managers at .06 level of significance. First borns were significantly more open-minded than later borns. While first borns were more open-minded
than only borns and only borns were slightly more open-minded than later borns, the differences failed to reach the .05 level of significance. Chi-square analysis of the upper and lower quartiles of dogmatism scores provided results which supported the above relationships.

As a related result, family size was found to be related to dogmatism scores grouped in the extreme quartiles. Those from families of four and five persons were overrepresented in the open-minded group while those from the family size of six and over were underrepresented in the open-minded group. Respondents with no brothers or sisters were represented about equally in both groups.

Implications for research. Based on the results of the analysis of dogmatism as it relates to birth order and family size, it is recommended that both variables be defined and considered in future research. It is apparent that early childhood relationships (particularly with parents), may in fact have a long standing effect on the personality structure of the adult.

A procedural recommendation is that birth order and family size be analyzed in relationship to each other in a manner such as--only child, first of two, first of three, first of four, first of five or more, second of two, second of three, second of four, and so forth. Particular attention should be given to first born managers from family sizes of four and five as compared to first borns of family sizes of six and over.
Implications for managerial consideration. Concrete recommendations concerning dogmatism, birth order and family size are not readily available from this exploratory study. It appears that first born managers may be more open-minded than later born managers and consequently, a recommendation that should be held in abeyance until more research is accomplished is that first borns be given special considerations in placement decisions concerning positions requiring considerable flexibility in thinking and behaving (other requirements having been met). Again, this recommendation must wait for research involving replication and, hopefully, variables relating directly to manager-leader behavior.

Once the relationship between dogmatism, birth order, and family size becomes clear, there may be a basis for recommendations concerning the consideration of the variables in selection and placement decisions.

Dogmatism and Years with Present Company

Findings. No significant relationship was found between dogmatism and the years with present company variable employing the full range of dogmatism scores. However, a significant chi-square resulted when high and low dogmatics were grouped into years with present company. The general trend appeared to be that those with up to eleven years with their present companies were underrepresented in the open-minded group while those with eleven years of service and over were overrepresented in the open-minded category.
Implications for research. Due to the significant chi-square pertaining to years with present company, it is recommended that this variable be included in future research and controlled for if possible.

Implications for managerial consideration. There are no apparent recommendations for managerial action in regard to the years in present company variable.

Personality Structure and Organizational Variables—Significant Relationships

The question was asked: How do scores on the personality structure dimension relate to functional role, span of control, line versus staff designations and organizational level? Presented in this section is a discussion of the statistically significant findings relating to the organizational variables as identified. The nonsignificant relationships are treated in a separate section in this chapter.

Dogmatism and Organizational Level

Findings. The results of the analysis of dogmatism scores as they related to organizational level were that first-line managers were significantly more dogmatic on the average than were upper-middle and top managers. Also, lower-middle managers were significantly more dogmatic than were upper-middle managers and top managers. The mean difference between first-line and lower-middle managers and between upper-middle and top managers failed to reach the .05 level of significance. The results of a chi-square analysis of the upper and lower quartiles of dogmatism scores tended to support this relationship with the two lower levels of managers being under-
represented in the open-minded category and upper-middle and top managers being overrepresented in the open-minded category.

Generally, the scores moved toward the open-minded end of the range as organizational level went from bottom to top. These results were not particularly surprising in light of the background material presented in Chapters II and III.

Implications for research. Even though there was evidence of an inverse relationship between dogmatism and organizational level, the evidence does not point to causality. The question that needs asking in future research is whether open-minded managers tend to reach high levels in business organizations, or whether managers become more open-minded as they progress up the organizational ladder. While there are some indications in this study that personality structure may be related to childhood antecedents and early formal education, the stability of structure over time is still in question. Point-in-time studies such as this one cannot answer this question adequately. A longitudinal study is necessary in order to test for changes in structure over time and with changes in role prescriptions.

Consideration must also be given to other important variables such as achievement drive, intelligence, and technical skills, when relating dogmatism to organizational level. Variables previously tied in with managerial success need to be controlled for either experimentally or statistically.
Another recommendation applicable to all future studies of dogmatism in management is to use one of the longer dogmatism scales available in order to increase reliability. The scale employed in this study resulted in a minimally acceptable coefficient of slightly more than .70. A longer scale with carefully selected items would enhance the chances for improving this coefficient and consequently the chances for results which demonstrate stronger relationships. This researcher is presently engaged in the development of a longer scale made up of items which are less student specific than those making up present scales measuring dogmatism. (Items should relate as much as possible to characteristics of the managerial process.)

**Implications for managerial consideration.** As stated above, the resulting relationship between dogmatism and organizational level was associative in nature and did not demonstrate causality. Nonetheless, the fact that a significant inverse relationship did exist between dogmatism and organizational level makes the dimension of personality structure worthy of managerial consideration.

In the first case of open-minded managers having greater chances for reaching the top levels in their organizations, the merits of considering the effects of this variable not only on chances for success, but on task performance and/or social skills would be readily discernible.

If, on the other hand, managers who proceed up the corporate ladder and do, in fact, perform role prescription satisfactorily, also become more open-minded, then too does the variable of dogmatism merit consideration. We would then need to determine what types of
events or role alterations take place within the organization which may facilitate or cause the individual to alter his belief system. How might role prescription at the lower levels be impeding the development of open minds? Also, what processes are at work outside of the organization which might affect personality structure over time?

As stated above, a point-in-time study such as this exploration cannot provide answers to these questions directly. However, if the latter case is true, this researcher would have expected several findings to develop from this study:

1. The relationship between age and dogmatism over the full range of scores was not only nonsignificant, the correlation coefficient was .00. Top level managers are older on the average than lower level managers. Therefore, a relationship between dogmatism and age would be expected if the aging process affected personality structure.

2. As top and upper-middle managers had also been with their present companies longer, had been managers longer, and had more work experience than did the lower two levels of managers, significant relationships between dogmatism and these variables would also be expected. Yet, in only the case of years with present company, did any evidence of association fall out of the analysis.

3. If the personality structure of a good number of the managers who reach the top levels had changed in the "open" direction, the relationship found in this study between dogmatism,
birth order, and family size would be an unexpected one. We would expect no relationship at all if, in fact, personality structure changes dramatically over time. This relationship is most likely the strongest indication available from this study of the likelihood of the first case mentioned above. Considerably more work needs to be done to establish the degree of stability that can be attached to the dimension of personality structure.

Based on the indirect indicators mentioned above, this researcher suspects that those managers in the sampled organizations with relatively open minds enjoyed greater chances to reach the top levels of management than did their relatively closed-minded counterparts. However, until the questions raised earlier concerning the stability of the dogmatism variable over time has been answered and other critical variables affecting managerial success have been controlled for, the suspicion must remain at just a slightly higher level than the level of speculation.

Dogmatism and Functional Specialization

Findings. The functional areas of specialization represented in this study were: general management, marketing, production, accounting and finance, engineering and research, personnel and corporate services, and purchasing. The analysis of covariance applied in this case failed to produce a significant F-ratio. While chi-square test for independence resulted in a significant overall chi-square, the largest contribution to the chi-square came from the
general management category which was composed primarily of upper-middle and top management personnel. As these managers also represented higher levels of education than did those managers in the other functional classifications, the contribution to the total chi-square coming from the general management category must be discounted as resulting from functional specialization.

Implications for research. As in the case of most of the other variables analyzed in this study, functional specialization should be reanalyzed in studies of replication. A particularly important need is for the delineation of other areas of specialization not identified in this study.

Once again, the failure to find significant differences in mean dogmatism scores of functional areas may have been due to the author's classification scheme. For example, if sample size had allowed, the accounting and finance managers would have been separated, along with the engineering and research managers and the personnel and corporate service managers. In other words, the designations should be kept as "pure" as possible to insure the greatest degree of intrarole homogeneity.

The category of general management should be either eliminated from the analysis or considered as a special category and the effects of education controlled for.

Implications for managerial consideration. As both approaches to analysis failed to provide a clear picture of a relationship between dogmatism and functional specialization, no
generalizations for managerial consideration are apparent. After a number of studies have provided mean scores for the various areas of specialization, a pattern might present itself, which in turn, may lead to implications for management action.

Personality Structure and Attitudes Toward Subordinates and Role Perceptions

Are there relationships between the manager's personality structure, his attitudes toward his subordinates, and how he perceives his managerial role? A discussion of the statistically significant findings related to this question is found in this section. The nonsignificant findings relating to this question are treated in a separate section in this chapter.

Dogmatism and Attitudes Toward Subordinates

Findings. A correlation coefficient of .30 between dogmatism scores and attitude scores was significant at the .01 level. This coefficient indicated that as personality scores moved toward the open-minded end of the range, attitude scores moved toward the Theory Y end of the range. A chi-square test of independence tended to support this relationship, as the moderate Theory X group was underrepresented in the open-minded category, while the moderate and extreme Theory Y groups were overrepresented in the open-minded group. For this sample of managers there is evidence that open-minded respondents were more likely to hold Theory Y attitudes toward subordinates, and that the more closed-minded individuals were likely to hold Theory X attitudes toward subordinates.
Implications for research. Before a replication is made using the Theory X--Theory Y attitude scale employed in this study, a thorough analysis must be made of the items making up the scale. This recommendation is based on the fact that, for this sample of managers, an internal consistency coefficient of .31 was found which is far below the minimally acceptable level of say .70. The low coefficient implies a low degree of consistency in respondent reaction to the items making up the scale. This means that the scale is not particularly reliable and that it is very likely composed of items which may be misinterpreted by the respondents. Also, the short length of the scale has to be suspected in contributing to doubtful reliability. As a general rule, the longer the scale (the more items) the greater the reliability.

Even though the internal consistence factor was low, the results do tend to be in the expected direction and point to desirability of the inclusion of a similar scale in future research. Preferably, the scale should include a larger number of items which have been tested for reliability.

Implications for managerial consideration. Due to the factors mentioned above and in Chapter V concerning the nature of the findings in regard to dogmatism and attitudes toward subordinates, generalizations made here must be stated with extreme tentativeness.

From what is known of the characteristics of the closed-personality type, it can be suggested from the results of this
study that the manager who holds Theory X attitudes about subordinates tends to do so in a relatively closed fashion. That is, those managers holding Theory X attitudes tended to score toward the closed-minded side of the personality continuum. If, upon further research, this is found to be true, there will be several considerations to be made.

First, past research has shown that closed-minded individuals must be approached differently in a learning situation than the ways in which relatively open-minded individuals are approached. If attempts are going to be made to change managerial attitudes about subordinates from Theory X to Theory Y, then it would behoove managers and scholars to understand "how" the individual managers hold these attitudes as well as "what" the attitudes are. Here, may be a partial explanation of why sensitivity training has a positive effect on some managers in regard to attitude change, and no effect or a negative effect on others. It could be that too much concentration has been made on what managers think and not enough on how they think.

Another consideration which may be called for in the future concerns placement decisions. If we have positions that require Theory Y behavior and therefore Theory Y attitudes, we need to know something about the attitudes of the candidates for those positions. First, we need to know what their current attitudes or propensities are, and; secondly, we need to know something about their capacity to change those attitudes, if necessary. It appears
that the concept of personality structure as discussed in this study is potentially useful in respect to capacity to change.

The same comments might be made concerning selection decisions. If we wish to choose managerial personnel who will develop attitudes in line with those attitudes deemed desirable for the generation of a favorable organizational climate, we will need to understand something about the candidates' propensity to change both attitudes and behavior.

Again, what a prospective employee's attitudes and beliefs are, may not be nearly so important as how closely he holds them, or what his capacity is to change them.

Because of the exploratory nature of this study, concrete recommendations concerning personality structure and attitudes toward subordinates will have to wait until further research is accomplished.

**Dogmatism and Role Perception**

**Findings.** The results of the study depicted no significant relationship between the managers' personality structure and their perceived need to be considerate, warm, and supportive. A chi-square test for independence of the open-minded versus closed-minded categories from groupings of perceived need for structure resulted in a significant chi-square. This result indicated that dogmatism is not independent of the perceived need to order relationships, emphasize production, and achieve organizational goals. Those scoring low on need for structure were overrepresented in the
open-minded category, while those scoring high on need for structure were underrepresented in the open-minded category. The results of a chi-square test for independence of the dogmatism groups and selected combinations of consideration and structure, failed to demonstrate significant relationships. A check on the relationship between consideration and structure resulted in a significant correlation of .32.

Implications for research. The results of this study point to several recommendations for future research which attempts to analyze personality structure and role perception:

1. As a result of the .32 correlation between consideration and structure, we must expect possible response bias or that the true dimensions are not independent as the developers of the scales suggested. Before the scales are used again they should be analyzed and tested for independence and reliability.

2. Again, the longer forms of the two scales will probably produce greater reliability and, if space allows, should be used.

3. The relatively narrow range and standard deviation of scores on both scales appears to have interfered with possible relationships between the two dimensions and personality structure. The longer forms of the scales may help clear up this problem in the future.

While the results of no relationship between consideration and personality structure was unexpected, the relationship between initiating structure and dogmatism was as expected. It is
recommended that a role perception variable be retained in future studies on personality structure with the problems encountered in this exploration eradicated prior to implementation of methodology.

Implications for managerial consideration. In that the open-minded personality has been found in past research to be more empathetic and willing to entertain ideas of other group members, the result of no relationship between consideration and dogmatism is difficult to explain. The failure to find a significant relationship between the two variables could be explained in part by subject response set, the correlation between consideration and structure, and the lack of a sufficient range and standard deviation of scores. Because of these problems, any generalization concerning the relationship between personality structure and perceived need to be considerate and group oriented would be premature.

The finding that a disproportionate number of managers in the closed-minded category perceived a high need for structure and a disproportionate number of those in the open-minded category perceived a low need for structure was anticipated and is in line with past research dealing with this concept of personality. A high need for structure would be expected to be felt by those with authoritarian personalities. As with the relationship between attitudes toward subordinates and personality structure, the relationship between perceived need to initiate structure and personality structure found in this study provides at least partial support for the tendency of authoritarian personalities to perceive their
managerial role as requiring authoritarian attitudes and behavior patterns. Recommendations for managerial action must wait until the relationship between personality structure and need to initiate structure can be tied into overt managerial behavior. In order to accomplish this analysis the problems concerning the scales used to measure role perception must be overcome.

Nonsignificant Findings Relating to Personality Structure (Dogmatism)--This Research

The tests of the hypotheses relating to dogmatism and collegiate major, years in present position, years as a manager, years of full-time work, line versus staff designations, span of control, resulted in no significant relationships employing both the covariance and the chi-square methods of analysis.

The following discussion is a brief summary of those nonsignificant results.

Dogmatism and Collegiate Major

Findings. No significant difference was found for mean dogmatism scores of the collegiate majors business and economics, agriculture, accounting, engineering and an all other category. Also, a chi-square test for independence failed to reach a significant level.

Implications for research. Although dogmatism and collegiate major appear to have been independent of one another in this study, it is recommended that collegiate major be retained as variable in
future research on dogmatism and managerial characteristics. This recommendation rests on the fact that due to the nature of the sampled industry there was a disproportionate number of agriculture majors represented in the study and an underrepresentation of other majors normally found in business organizations. Of particular interest should be the accounting majors who scored ten points lower (more dogmatic) than the other majors analyzed in this study.

Implications for managerial consideration. Based on the results of the analysis of dogmatism as it relates to collegiate major, there are no apparent recommendations to be made for managerial consideration.

Dogmatism and Years in Present Position, Years as a Manager and Years of Full-Time Working Experience

Since the results of tests for relationships between dogmatism and the above mentioned variables were basically the same, they will be treated together.

Findings. No significant relationships were found between dogmatism and the variables of years in present position, years as a manager and years of full-time working experience.

Implications for research. It is recommended that the consideration of the variables, years in present position, years as a manager and years of full-time working experience, in future research dealing with dogmatism is not likely to be productive. However, for replication purposes it may be in order to obtain the information from samples of other industries.
Implications for managerial consideration. This researcher saw no apparent recommendation to make in regard to the above variables for managerial consideration.

Dogmatism and Line Versus Staff

Findings. Both the analysis of covariance, and chi-square analysis, conducted to test the hypothesis concerning dogmatism and line versus staff roles, failed to produce significant results. Dogmatism was found to be independent of line versus staff designations.

Implications for research. It is proposed that future researchers will not likely find differences in personality structure between line managers and staff managers. Failure to find differences may have come from the author's classification scheme. It was apparent that a good number of respondents held functional authority in their areas of specialization and could not be placed neatly into categories of line or staff. Future researchers should attempt to develop a more realistic scheme for classifying managers in respect to role relationships.

Implications for managerial consideration. The implications in this case is, as was the implication of the relationship between age and dogmatism, derived from a finding of no relationship.

In a good bit of management literature we have found the staff manager characterized as the empathetic, flexible, supportive, human relations oriented giver of advice, while the line manager is often pictured as prone to structure, impersonal in his attitudes
and authoritarian in his methods. The lack of a relationship between dogmatism and staff or line designations in this study at least calls this kind of stereotyping into question. The line and staff managers in this study apparently were equally as likely to be closed-minded or general authoritarians. This finding is in line with the proposition of Rokeach and others concerning the content free aspects of the theory of personality structure.

**Dogmatism and Span of Control**

**Findings.** A .05 correlation coefficient for dogmatism scores and span of control was not significant at the .05 level. A chi-square test for independence also failed to reach a significant level.

**Implications for research.** Although a significant relationship between dogmatism and span of control was not found, the variable should be retained in future studies for replication purposes.

**Implications for managerial consideration.** The manager's personality structure appears to be independent of the number of subordinates under his direct control.

**Summary of Implications for Research and Managerial Consideration**

**Implications for Research.**

The following statements are summarizations of the recommendations which appeared to be in order for research performed in
the future on personality structure (dogmatism) as it relates to managerial thinking and behaving:

1. As a result of the fact that this study represents the first known research effort directed at discovering relationships concerning personality structure and managerial thinking, it was recommended that as many as possible of the variables identified here for analysis purposes be employed in future studies.

2. In that internal consistency coefficients derived from item analysis of the dogmatism, attitude toward subordinates, and role perception scales were at best minimally acceptable, it was recommended that longer scales be used in each case, that items be analyzed for individual contributions to reliability, and that items in the dogmatism scale be assessed for student specificity.

3. The stability of personality structure needs to be assessed over a number of years. Ideally managerial candidates should be tested prior to employment, and again after a period of time, along with another group of people who have chosen non-business occupations.

4. Variables which have demonstrated effects on managerial success and effectiveness, such as education, technical skills, achievement drive, and supervisory ability, need to be accounted for either experimentally or statistically.

5. Business organizations in other industries should be sampled to determine if results consistent with those of this study are to be found.
6. Scores on the personality structure variable should be compared to objective and subjective performance criteria (superior ratings, peer ratings, subordinate ratings) as well as achieved organizational level.

7. It appears that the most fruitful approach to the study of personality structure of managerial personnel will be the analysis of the extreme ends of the range of scores. The quartile grouping used in this study was arbitrary and very likely not as productive as the upper and lower 10 percent or 5 percent would have been. However, if the lower percentages of high and low scores are used, a considerable sample size is necessary to allow for adequate expected cell counts as demanded by chi-square analysis. Regardless of how the categories are defined, adequate measures must be taken to control for interaction effects of variables such as education, birth order, and organizational level.

**Implications for Managerial Consideration**

The following statements are summarizations of tentative considerations for management resulting from this exploration. In all cases, these considerations are necessarily limited by the nature of the study and the methodology involved, and to the organizations sampled from the agri-product industry:

1. The stereotype that managers grow more inflexible or closed-minded in their thinking as they grow older was challenged in this study. A .00 correlation was found between dogmatism and age. Managers who make selection, placement, transfer, and
retirement decisions should be cautioned against assuming the older manager will necessarily be more closed-minded than his younger counterpart.

2. Managers involved in selection, placement and training decisions should view formal education as contribution to open-mindedness as well as job related technical and social skills. In training matters in particular, it was recommended that those setting up learning situations be as concerned about how individuals learn as they are about the content make up of specific courses. What the individual knows, or what beliefs and attitudes he holds toward an object, event or an aspect of human behavior, may not be as important as his perceptual capacity and sensitivity and his action capacity and flexibility.

3. It was recommended that management be cognizant of the effects of early childhood relationships on adult personality, particularly in the case of authoritarian personality and its correlates. As proposed from the results of this study, the development of personality structure may be influenced by order of birth and family size. Future research may demonstrate the usefulness of considering those effects when making selection and placement decisions.

4. It was proposed that the results of the analysis of dogmatism and organizational level provide some indirect evidence that open-minded managers have a better chance of achieving higher levels than do their more closed-minded counterparts. This
relationship must rest on the unproven proposition that personality structure is determined primarily by early childhood relationships and early formal education, and remains fairly stable over time. This proposition must be tested in future research.

5. As a result of the failure of the analysis developed in this study to identify differences in dogmatism between line and staff managers, it was recommended that the assumption that staff personnel are likely to be more open-minded than their line counterparts be put on the shelf, at least until replication can be made.

6. In regard to dogmatism as it related to attitudes toward subordinates, it was recommended that how closely the attitudes are held may be as important as what the attitudes are. In this study, managers who held Theory X attitudes toward subordinates were more likely to fall into the closed-minded category than were those managers who held Theory Y attitudes. This result was not surprising in light of the nature of the items comprising the "attitudes" scale. What needs to be considered is what differences in learning, thinking, and behaving might exist between those managers who are closed-minded and hold Theory X attitudes and those who are open-minded and hold Theory X attitudes. The differences will very likely manifest themselves in the individuals' ability to make a lasting change in a desired direction.

7. As the results of the analysis of dogmatism and role perception appears to have been distorted by interaction effects and low respondent consistency, concrete recommendations must
await further research. However, the finding that closed-minded managers are more likely to perceive a need for a higher degree of structure than their open-minded counterparts, points to the possibility that consideration of personality structure may be useful in placement decisions regarding positions which require a minimum of structure for effective manager behavior.

In summary, this researcher is satisfied that the overall results of this exploratory study indicate that the personality structure dimensions described and analyzed here have potential as a useful construct in decisions regarding selection, placement, training, and development of managerial personnel. As a result of the exploratory nature of this study, it was expected that a minimal number of implications for managerial action would result. The most useful aspects of the results of this research are the remedial and expansionary actions recommended for future research dealing with personality structure and the managerial mind.
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APPENDIX

A STUDY OF MANAGERIAL THINKING

The following pages constitute a questionnaire in three parts. Please read the instructions to each part carefully. I hope that you will be as frank and honest as possible, and that you will spend enough time to put down what you really feel is true.

These are not tests. There are no right or wrong answers.

Do not sign any page. Answer all items.

Your answers cannot be traced to you.

Questionnaire booklets will be kept strictly confidential.

M. John Close
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PART I

DIRECTIONS: To help with the statistical analysis of the data, please give the following information about yourself.

1. Age: ________________  2. Sex: (check) Male ___ Female ___

3. Education: (Please complete the section that indicates the highest educational level obtained. If you have done graduate work or obtained an advanced degree(s), please complete both the section on undergraduate as well as graduate education.)
   a. Attended High School, years completed: (circle one) 1 2 3 4
   b. Attended college, years completed: (circle one) 1 2 3 4
   c. Bachelor's Degree: (check) ___
   d. Master's Degree: (check) ___
   e. Years beyond Master's: (circle one) 1 2 3 4 5
      Specify degree if obtained ________________________________
   f. Other: (please specify) ________________________________

4. Area of college major: (e.g., Engineering, Accounting, Business Administration, etc.)
   Undergraduate __________ Graduate __________

5. Present Position:
   Title ______________________ Department __________________________

6. Briefly state the nature of your duties: ____________________________

7. Number of different managerial positions held:
   Present Company _________ Career __________________________

8. Number of years in present position: ____________________________

9. Your position is a: (circle one) a. Staff Position
   b. Line Position

10. Total years with present company: ____________________________
11. Total years as a supervisor, foreman, or manager: _________________

12. Total years of full-time working experience: _________________

13. Number of employees directly under your supervision: ______________

14. Do you have under your direct supervision employees who are supervisors, foremen, or managers? (check) No ___ Yes ___

15. You were the ______ born of _______ children in your family. (number: e.g., first, second, etc.)

PART II

The word GROUP, in this part, refers to the work group, department or division that you supervise.

DIRECTIONS:

a. Read each item carefully.

b. Think about how frequently you SHOULD engage in the behavior described by the item.

c. Decide whether you SHOULD always, often, occasionally, seldom or never act as described by the item.

d. Draw a circle around one of the five letters following the item to show the answer you have selected.

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

When acting as a leader, I OUGHT to:

1. Do personal favors for group members ------------- A B C D E

2. Make my attitudes clear to the group ------------- A B C D E

3. Do little things to make it pleasant to be a member of the group ------------------------------- A B C D E

4. Try out my new ideas with the group ------------- A B C D E

5. Act as the real leader of the group ------------- A B C D E

6. Be easy to understand ---------------------------- A B C D E

7. Rule with an iron hand -------------------------- A B C D E
8. Find time to listen to group members------------------- A B C D E
9. Criticize poor work-------------------------------------- A B C D E
10. Give advance notice of changes------------------------ A B C D E
11. Speak in a manner not to be questioned--------------- A B C D E
12. Keep to myself---------------------------------------- A B C D E
13. Look out for the personal welfare of individual group members-------------------------- A B C D E
14. Assign group members to particular tasks------------ A B C D E
15. Be the spokesman of the group------------------------ A B C D E
16. Schedule the work to be done------------------------- A B C D E
17. Maintain definite standards of performance-------- A B C D E
18. Refuse to explain my actions------------------------ A B C D E
19. Keep the group informed----------------------------- A B C D E
20. Act without consulting the group--------------------- A B C D E
21. Back up the members in their actions---------------- A B C D E
22. Emphasize the meeting of deadlines------------------ A B C D E
23. Treat all group members as my equals---------------- A B C D E
24. Encourage the use of uniform procedures------------ A B C D E
25. Get what I ask for from my superiors---------------- A B C D E
26. Be willing to make changes-------------------------- A B C D E
27. Make sure that my part in the organization is understood by group members-------------------------- A B C D E
28. Be friendly and approachable------------------------- A B C D E
29. Ask that group members follow standard rules and regulations-------------------------- A B C D E
30. Fail to take necessary action------------------------- A B C D E
31. Make group members feel at ease when talking with them------------------------------------------ A B C D E
32. Let group members know what is expected of them--- A B C D E
33. Speak as the representative of the group--------- A B C D E
34. Put suggestions made by the group into operation------------------ A B C D E
35. See to it that group members are working up to capacity------------------ A B C D E
36. Let other people take away my leadership in the group------------------ A B C D E
37. Get my superiors to act for the welfare of the group members------------------ A B C D E
38. Get group approval in important matters before going ahead------------------ A B C D E
39. See to it that the work of group members is coordinated------------------ A B C D E
40. Keep the group working together as a team--------- A B C D E

(Leadership Opinion Questionnaire: Copyright, Ohio State University, 1957.)

PART III

DIRECTIONS:

In the section below you will see a series of statements. Please indicate your agreement or disagreement. Use the scale below:

A = Agree B = Agree On C = Agree D = Disagree E = Disagree On
Very Much The Whole A Little A Little The Whole

F = Disagree Very Much

There are no right or wrong answers. I am interested in your opinion about the statements which follow:

1. The average human being prefers to be directed, wishes to avoid responsibility, and has relatively little ambition------------------ A B C D E F
2. In this complicated world of ours the only way we can know what's going on is to rely on leaders or experts who can be trusted--------- A B C D E F

3. My blood boils whenever a person stubbornly refuses to admit he's wrong------------------ A B C D E F

4. Leadership skills can be acquired by most people regardless of their particular inborn traits and abilities-------------------------- A B C D E F

5. There are two kinds of people in this world: those who are for the truth and those who are against the truth------------------- A B C D E F

6. Most people just don't know what's good for them------------------------------------------- A B C D E F

7. The use of rewards (pay, promotion, etc.) and punishment (failure to promote, etc.) is not the best way to get subordinates to do their work------------------------ A B C D E F

8. Of all the different philosophies which exist in this world there is probably only one which is correct---------------------------------- A B C D E F

9. The highest form of government is a democracy and the highest form of democracy is a government run by those who are most intelligent--------------------------- A B C D E F

10. In a work situation, if the subordinates cannot influence me then I lose some influence on them--------------------- A B C D E F

11. The main thing in life is for a person to want to do something important-------------------- A B C D E F

12. I'd like it if I could find someone who would tell me how to solve my personal problems------ A B C D E F

13. A good leader should give detailed and complete instructions to his subordinates, rather than giving them merely general directions and depending upon their initiative to work out the details---------------- A B C D E F

14. Most of the ideas which get printed nowadays aren't worth the paper they are printed on------ A B C D E F
15. Man on his own is a helpless and miserable creature-------------------------------- A B C D E F

16. Group goal setting offers advantages that cannot be obtained by individual goal setting-- A B C D E F

17. It is only when a person devotes himself to an ideal or cause that life becomes meaningful---- A B C D E F

18. Most people just don't give a "damn" for others----------------------------------------- A B C D E F

19. To compromise with our political opponents is dangerous because it usually leads to the betrayal of our own side----------------------------- A B C D E F

20. A superior should give his subordinates only that information which is necessary for them to do their immediate tasks----------------------------- A B C D E F

21. It is often desirable to reserve judgment about what's going on until one has had a chance to hear the opinions of those one respects--------- A B C D E F

22. The present is all too often full of unhappiness. It is only the future that counts-------- A B C D E F

23. The United States and Russia have just about nothing in common----------------------------------------------- A B C D E F

24. In a discussion I often find it necessary to repeat myself several times to make sure I am being understood---------------------------------- A B C D E F

25. The superior's authority over his subordinates in an organization is primarily economic------ A B C D E F

26. While I don't like to admit this even to myself, my secret ambition is to become a great man, like Einstein, or Beethoven, or Shakespeare---------------------------------- A B C D E F

27. Even though freedom of speech for all groups is a worthwhile goal, it is unfortunately necessary to restrict the freedom of certain political groups--------------------------------- A B C D E F

28. It is better to be a dead hero than to be a live coward------------------------------------- A B C D E F
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